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# THE GREAT COURSE OF MEDICAL ENDEAVOR

## PRESIDENT'S ADDRESS

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Suppose we stand on the high bridge that crosses the stream of knowledge, to gain a perspective of the entrance of medicine into the affairs of man. Far up the tortuous course we look, and strive to interpret the events which have influenced the flow of the thoughts of man—which have set him free. We see an infinite variety of streams, some sluggish, some strong, all entering the channel, with here and there a beacon light to illumine the way. Men of letters, scientists, artists and philosophers have had the opportunity of contributing to this stream. For this ability they have needed one requisite—an open mind; for fixed opinions retard the waters of clear-flowing truth.

We recognize with humility that, although truth is eternal, there can be reasonable doubt even as to accepted certainties. An open mind is the bulwark of wisdom. Some one has spoken of the deep slumber of a decided opinion.

Ever so often there is added something to the river of knowledge which broadens the stream.

We behold the men of medicine, who have contributed so largely to this ever flowing and deepening river. Some of these men we classify as fathers of our art, for they contributed to that thinking which in easy stages led to the fuller development of the underlying physical sciences. The oldest treatise that can be classified as a beginning of imparted science, written in Egypt some five thousand years ago, concerned itself with surgery.

Nature, as harsh as she has seemed to man, has always offered the same problems for solution, but man's early interpretations were in a large measure defensive; hence they required adjustment. The chronology of man's escape from the bondage of his ignorance of natural laws is almost as simple as the story of certain individuals whose interpretations of certain facts became the mainspring in changing the thinking and activity of those who could carry on.

### CONTRIBUTORS TO KNOWLEDGE

To trace the details of the sequential development of the different sciences is not my purpose. The number of men who have influenced the field of workers has been limited. Geniuses have at all times been terribly misunderstood, handicapped and abused; yet, as God will have it, men arise to interpret the past and to project possibilities for the future.

Apparently there is always a contributor toward the sequence of things. The high points are reached by the interpreters of nature, as disclosed to them by their stimulated senses. But we must not forget that the men who left us our heritage were patient observers; they were willing to repeat their observations, to recheck their conclusions, and to correlate those conclusions with the results of previous researches.

Shortly before his death, Isaac Newton wrote: "I know not what the world will think of my labor, but to myself it seems that I have been but as a child playing on the seashore; ever finding some prettier pebble, or more beautiful shell than my companions, while the unbounded Ocean of Truth lay undiscovered before me." He did not close the door to investigating minds to come. He did see far beyond his own environment and influenced the life of man for all time. Einstein may have changed a fixed conception; but one that was evidently so in harmony with correlated knowledge remains still useful and as yet unbroken.

We have here an illustration of the importance of landmarks. They serve a great purpose, but they should never check the flow of the mind. If a so-called immutable law, such as Newton's, is at variance with the truth, how can any man be intolerant or dogmatic? Schiller suggests that "Truth never is,—always is a-being."

While hurriedly traversing in the most cursory manner both time and its content, to reach a point when medicine became an important branch of the stream of knowledge, we are reminded that the fanaticism of the zealot has been eternally at war with progress; and even in the Reformation, which is the basis of our liberty and of our scientific development, there was great weakness in interpreting the physical status of man. John Stuart Mill says on liberty: "Truth, in the great practical concerns of life, is so much a question of reconciling and combining of opposites that very few have minds sufficiently capacious and impartial to make the adjustment with an approach to correctness; and it has to be made by the rough process of the struggle between combatants, fighting under hostile banners."

As wonderful as the world was to the brilliant Greeks, who had observed the best thought of preceding civilization, their information of scientific value necessarily was exceedingly limited. Yet it is interesting to note that they have been credited with suggesting nearly all of our present-day accepted facts, even that of relativity. It is not my purpose to describe or to delve into the well known causes of their failure. Disraeli, speaking of the successors to the Greeks, said: "The Romans were practical men who practiced the errors of their forefathers."

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President's address before the American Medical Association at the Eighty-Third Annual Session, New Orleans, May 10, 1932.

### PROGRESS IN SCIENTIFIC IDEAS

Yet it is certain that both science and the true method of science existed in antiquity, without the basic thought being properly developed. It was not so much the errors of the ancient world as the errors of the Middle Ages in interpreting the lore of the ancient world that retarded development. The undue importance assigned to Aristotle held back science during the first century of the Renaissance. William Harvey's book presents an illuminating contrast between the false learning of the Middle Ages and the positive knowledge of modern times. As we approach the twentieth century, when the minute things of this world were revealed and their purposes discovered, the study of physiology was opening new vistas. The wonders of the mechanism of life therein contained only accentuated the ever increasing regard which man must have for his Creator. It is not difficult to understand why mental and spiritual readjustments are all on a higher plane. Our present conception of that Power which governs all is not by any means the same view which the mass of men held not so long ago.

There apparently exists today greater capacity in more places than ever before. Truth in all its ramifications is more willingly viewed from every angle. Our modern facilities for spreading correlated information makes it so.

In our day there has been both liberty and science. There has been opportunity for gaining information of all kinds, and the children of the present have frequently become the teachers of the parent. The kindness of the state has made it easy for parents to conclude that all knowledge, both moral and physical, should become the work of the state, and it is only natural for them to shirk their responsibility. Gradually the social fabric is changed.

This condition is but one of the fruits of our educational system, and similarly the opportunity arises through that system to discourage individualism. If this is true, the effect may tend to paternalism. We who are concerned in preserving the individualism of medical practice in the interest of the people must recognize the danger from any mechanism, whether educational or otherwise, that tends to create a paternalistic interference by the state. While we cannot dam the stream we may divert it, to protect the art of medicine from flood waters.

Science is yet young, and in the days to come there are bound to be radical alterations in our present conceptions, particularly those which concern mind and its place in the scientific scheme.

Change in scientific ideas is counted a distinct progress, while change in religious ideas is looked on in a different way. Change is conceded in the one, fixed opinion in the other. This should not be true. We should never mistake wish for fact. A strong desire is no proof that the object of that desire exists. Widespread application of a correct approach to knowledge, and the study of cause and effect in the underlying branches, have hastened the day of scientific medicine.

The great technological age has brought its joys and sorrows. It has led man to the mountain tops; he has ridden from one oasis to another and sailed from port to port. Our era has exaggerated production and has had to stop for adjustment, thereby distressing the world. Medical men share the world's despair, but as men of science we cannot believe in the inevitability of these unfortunate cycles. Meanwhile, in the present crisis, the training and mental equipment of the diagnostician should make the wise medical man helpful in finding causes of distress and enable him to offer valuable suggestions for relief.

It has been said by Wilde that "Life and the world are not struggling against an alien force, but struggling to overcome simply the past."

When a boy, while in a small church, I saw over the baptistry a great circle with letters in gold saying "God is Love," which emotion in the spiritual world is said to be similar to the action of gravitational force in the physical world. This interpretation was emphasized beautifully by the lowly Nazarene. But God, too, is truth, a creator and scientific maker of law, the manifestation of which, in minutia and in magnitude, is our greatest evidence of this fact. Science, art, religion and philosophy, as well as the human mind, have, we believe, evolved from somewhere and are forever on the way.

Science is striving to interpret and discover, bit by bit, this magnitude of mind, and man is nobler and nearer the Creator by each interpretation thereof—his horizon broadened and his soul awed by the immensity and beauty of this vision.

Truth, that ever elusive force, is difficult to circumscribe—a different point of view, a different mental slant, may destroy that which we believe; yet a broader, deeper interpretation of accepted truths is developed as we willingly submit all suppositions to a searching analysis.

Onward goes the march of the science and art of medicine, eliminating the enemies of man, one or more at a time, binding the wounds and tending the weak, working for a more perfect condition.

Huxley said: "Science inculcates veracity of thought and action, without which there can be no alleviation to the suffering of mankind."

Pasteur said: "The cultivation of science in its highest expression is perhaps more necessary to the moral condition than to the material prosperity of a nation."

### THE SCIENTIFIC CULTIVATION OF MEDICINE

Contributing perhaps more than any other factor to the furtherance of this scientific cultivation of medicine is the great channel the American Medical Association affords the different branches of medical knowledge, which collaborate therein, obtaining thereby the best opportunity for the highest development of our art.

This great organization, imbued with this larger conception, centered its attention on education and on what could be accomplished through concerted educational zeal, as one of its chief claims for cooperative effort. So it came to pass that the great motif, from 1847 until now, has been the advancement of the science of medicine through educational achievements, so that both the theory and practice of medicine could be harmonized, through an ever growing art and science, for the good of humanity.

When we speak of the achievements of the American Medical Association, we start with the educational program outlined by our forefathers, recognizing their wisdom and foresight and the fruits of their planting as they were ripened in the most orderly fashion by the astute leaders who have directed and guided the affairs of this great power and body.

Strangely true, most of this monumental work can be seen by these men who have survived and are here to see and enjoy the accomplishments of their planning. One of these men approaches the honorable age of the octogenarian, another has already achieved this remarkable goal—both are still contributing their unstinted interest and inspiration to the American Medical Association. While personal allusion is unnecessary, any student of our history will recognize these outstanding characters.

No child of this parent body should ever grow so lusty, ambitious or proud as to disturb the confidence in, or function of, this great organization in building reliance in the policies of the profession as a whole. Voluminous data have been furnished me by the heads of the different departments which comprise the American Medical Association, making complete its service. I regret that time prevents me from presenting more of this information. No one man could comprehend the vast endeavors carried on by our organization without devoting time to a daily survey of the work being accomplished. I commend this ever increasing program of service to your attention, hoping that more of our members will visit headquarters and become acquainted with its high purposes and extensive and effective routine. It bridges the chasm between professional accomplishments and public needs.

### ACTIVITIES OF THE AMERICAN MEDICAL ASSOCIATION

When the body of American physicians developed our organizations into a representative government, it was made possible for the ideals of the noblest of all professions to evolve in a most orderly manner. It became the duty of The Journal to mold the minds and develop the aspirations of the medical profession—to guide its hopes and clarify its problems; to give support to all things which elevate the profession.

That this has been accomplished is acknowledged by all who know. Today the greatest medical journal printed in the world is ours. It has its satellites, which illumine all branches of the art and science of medicine, assuring a perpetuation of the hopes and aspirations of those pioneers in our profession who led the way for the organization in special journals, until we were ready to take over their task and make permanent the labor so freely given in the years gone by.

What a vast and beneficent work this organization does for its members! One of the most clarifying yet prosaic printed abstractions, which is so necessary for our common information, is the dignified Medical Directory. It brings to us an intimate knowledge of 156,000 doctors, all based on the most extensive biographic material, which increases with the individuals' activities.

Few of our members realize the world-wide significance of our taking over the important task of publishing the laboriously gathered data into the *Quarterly Cumulative Index Medicus,* which serves the scientifically minded world and is a tremendous aid to research. It records the efforts of medical men appearing in 1,400 journals.

This improved service has made every library more efficient. Medical literature has become more intimate to those interested. This great work is a real contribution of no mean proportion. It is undertaken at an expense far beyond the monetary return and is an outstanding philanthropic activity of the American Medical Association.

At this point, I might call your attention to the ever increasing importance of our effort, through the publication of *Hygeia,* to invade the homes and reach the people of this country in a language easily understood, regarding the health and welfare of the people themselves. If the people were educated in the basic sciences, they would not so readily yield to propaganda harmful to themselves. The truth is easily perverted and pseudoscience is attractive. *Hygeia* fills a need in carrying health messages. While its distribution has reached 60,000 copies a month and it is no longer a financial burden to the organization, its true worth to the public will be better exemplified when ten times this number of copies is printed and read each month.

### WORK OF THE COUNCILS

The Council on Medical Education and Hospitals has by study, example and inspection played the leading rôle in developing the present strong group of well established and efficiently operated medical schools. Through its interest in the educational possibilities of the hospital, and its classification of hospitals for interns, it has contributed in a striking manner to the nation-wide improvement of public and private hospitals. Clinical laboratories have also been elevated to a generally acceptable basis. Roentgenologists in our profession have suggested and aided in grading the standards for the x-ray laboratories of the country.

The Council has wisely coordinated all other forces in these fields and has been able to accomplish results through cooperation. Public information about the many conferences has been printed, particularly the regular conferences held each year in which various other bodies, including the Association of American Medical Colleges, the National Federation of State Licensing Boards and the American Hospital Association, have taken part. In this open forum the leaders have been heard, and policies regarding medical education and medical practices have been determined.

The Council is now making a study of mental hospitals and anticipates that it can bring about improvement in this vital and important field.

The leadership exerted by the Council on Medical Education and Hospitals has been of world-wide interest, particularly to those seeking development of higher standards of medical education, correct hospital procedure and a more satisfactory practice of medicine.

Another important council is the Council on Pharmacy and Chemistry. Let me take your thoughts backward to that period from 1900 to 1906 when a most constructive work was initiated, the magnitude of which rises with the increased perspective of the last twenty-five years.

In America, the development of so-called ethical preparations began about 1875 and grew to serious proportions in the first part of this century. The profession was aware that it had no means of determining in which new drugs it could have confidence, claims for which were preposterous even then. The informed public, aided by organized medicine and other agencies, such as *Collier's Magazine* and the following of Dr. Harvey W. Wiley, demanded protection against impure foods as well as drugs. This was a period of crusading for the public's own protection in these health sustaining commodities.

The medical organization and the legislatures became alive to the situation. The passage of the Food and Drugs Act in 1906 was an outgrowth of this agitation. The necessity for this reform is attested by the fact that even in the issues of our own Journal in 1900 may be found the advertisements of seventy-two proprietary preparations. Of these only about 12.5 per cent were subsequently admitted to New and Nonofficial Remedies, and of these nine not a single one is now included in the book, thus showing how therapeutics has progressed since that time.

The Council has carried on its work for twenty-seven years. It created a set of rules which in essence stands today as a guide to the Council. Thirty years ago the advertising pages of medical journals were not dignified nor creditable. This has all been corrected through the Council's efforts in furthering rational therapy.

In strong contrast, many European journals carry the advertisements of products which are not permitted in our journals. Under the influence of the Council, the profession has become more critical in regard to drugs—and more scientifically minded.

Drug manufacture has been materially benefited by the work of the laboratory. It has caused the directors of pharmaceutic houses to recognize the importance of scientific research and control, so that today most of the pharmaceutic houses have competent research staffs and are adding their contributions to the advancement of materia medica.

This contribution to public service is maintained by the Association as a safeguard to the public.

It is possible that some day the Chemical Laboratory may be enlarged, so that many activities can be broadened; market specimens of accepted drugs should be examined frequently, giving greater assurance of the quality and continued compliance with standards. We should also develop a bacteriologic laboratory which will control and report on the sutures which are used every day by physicians, and which will examine vaccines and serums for purity and potency.

The work of the Council on Pharmacy and Chemistry and the work of the Laboratory has been an altruistic effort in practical education.

The Council on Pharmacy and Chemistry has made the medical profession articulate against the unscrupulous who manufacture and distribute proprietary medical preparations. Without its work, without the cooperation of the fine minds directing the manufacture of medicaments, we would not have the distinction of having accomplished this great program of practical education, which is a program valuable to the public and inspiring to the profession.

Here I would call attention to the fact that each of the councils created by you has a separate fund for making grants for special research. These have been wisely administered. If you will read the report of the Board of Trustees, you will see how far reaching, how helpful and stimulating are these grants of money to the furtherance of medical accomplishments, through which many young minds find material assistance at the most opportune time.

### LEGISLATIVE ACTIVITIES

While it is true that medical men in a general way have avoided the legislative halls of this country, it is also true that those who legislate for us cannot deal with matters relating to the public health intelligently without taking council of informed medical opinion. It is conceivable that confusion might be even worse confounded if there were not an organization such as ours to develop policies and indicate our views for the common good of the doctor and the protection of the public.

A legislative committee was created by the last House of Delegates. The cooperation of this committee with members of the American Legion and with the American Hospital Association has already demonstrated the wisdom of exchanging different points of view. Out of the many conferences has grown a permanent committee representing the three organizations, which it is hoped will more sagely guide legislation in the interest of the public as well as the physician. Allow me to suggest that you become thoroughly familiar with this committee's activities. Your active support would be of great value.

The legislative committees of the states should stand ready to cooperate with the central committee created by the House of Delegates, whenever they are called on, making concentrated effort on national legislation when desired.

### EDUCATION OF THE PUBLIC

Regarding the education of the public, we conceive it to be our duty to disseminate as much of our knowledge as the people will absorb. We realize human attitudes and aptitudes, and we know that the art of medicine is best expressed in the wise use of the science of medicine.

As to the control of quackery, we have all observed that it is not the quantity of learning that individuals have but the quality they possess which makes it possible for them to differentiate between what is true or false. The most widely read and most expressive editor in the secular press may enlarge on his interpretation of progress, formulating a doctrine dangerous to the health of the community, because he lacks knowledge of the fundamental sciences. It is also true that the exaggerated statements of our co-workers, claiming specific knowledge or new discoveries which have not been proven, are quite as embarrassing. We have a right as physicians to enter a protest against unripe conclusions, hurriedly projected as scientific facts, from either source.

A too ready credence of such statements by both the profession and the public is a compliment to the high place science has reached in the minds of the people. Our chief danger from quackery at this time seems to be from the pseudoscientists and the overambitious, who make exaggerated claims and yet remain in the eyes of the public a part of the scientific world.

The radio, which is capable of bringing happiness and information, is being diverted and prostituted by designing and resourceful charlatans, who enrich themselves at the expense of decency, truth and humanity. The Radio Commission should protect the people who are not able to differentiate for themselves.

We must commend the enlightened secular press, which has made it difficult for quackery to exist. The radio must not be the door to the people which that enlightened press had succeeded in closing.

### MEDICAL ECONOMICS

I come now to the Bureau of Medical Economics, which was established to study all the phases of general economics which have a bearing on the practice of medicine. In every consideration of this subject it must be remembered that a profession has for its prime object the service it can render to humanity. Reward for financial gain should be a subordinate consideration. The practice of medicine must remain a profession.

Although business methods and economic principles are essential to an orderly conduct of the financial phase of the practice of medicine, they must serve, rather than dominate, the profession; they must be secondary to the primary object of service, and they must conform to the accepted principles of medical ethics. The principles of medical economics should not be perverted to defend the borderline activities of the charlatan. There is a vast detail of activity going on in our organization to meet the necessities of the situation. This technological age has brought new conditions and strange fellowships, altogether diverting, and sometimes perverting. I hold that it is within our province to solve all the problems concerned in the practice of medicine. The people await our decision.

If we are to preserve individualism and the fine relation that has ever existed between physician and patient, we must with renewed zeal and exceptional energy seek an answer to the problems which are related to the economic side of the practice of medicine. I shall bring to the attention of the House of Delegates certain matters related to this subject.

### FURTHER ACCOMPLISHMENTS

I should now like to direct attention to one of the most important committees connected with the organization—the Council on Scientific Assembly. The gradual improvement of the section programs has been made possible by the larger number of applications for places and the care with which the papers have been selected. The Scientific Exhibit has steadily improved. From now on a greater effort will be made to coordinate the scientific exhibit with the section program. Increasingly popular are those exhibits in which a competent demonstrator remains during the session.

With the proper speakers, the clinical lectures will fulfil a useful function by giving a large number of physicians a chance to hear the practical results of new methods of diagnosis and treatment which have been sufficiently well proved to be of value in everyday work. In a similar manner the public addresses, the valuable scientific contributions being read within the sections, together with the scientific and technical exhibits, produce a tremendous mass attack for enlightenment—an attack which undoubtedly advances the science of medicine, both locally and throughout the nation.

Medicine is popularized; it is brought home to the people; and I am glad to say that our distinguished editor fully appreciates his opportunity. He has cooperated faithfully with the press and has proved to it the value of exact information.. This contact is increasingly important, for the responsible press is sincerely interested in the truth.

### REMAINING TASKS

So I might go on and on with the accomplishments and possibilities of organized medicine as it is now progressing. We know that there are problems in the process of solution, and that there are others highly important, made more complex through social maladjustments. It is our bounden duty to bring to bear on these problems the best thought of the members of our own profession, men who are guided by education and wisdom based on experience.

We realize that the public weal is the chief concern of our profession, and that there are two methods of approach in the application of medical knowledge to the welfare of the people.

We encourage the graduation of Doctors of Public Health. We continue to educate the majority of medical men for individualistic practice.

There should be no conflict between those who are primarily interested in preventive medicine and those whose lives are devoted more definitely to curative medicine.

The public health officers who best understand the needs of the people jealously direct their departments toward a correction of those errors in sanitation and other community problems which do not fall directly within the scope of the general practitioner of medicine. Medical men wish to cooperate with health officers in protecting humanity from conditions that bring disease, despair and economic disaster.

We believe that far-seeing public health officials want to be of general service and yet not invade the rights and prerogatives of medical men. I take it that I am stating the attitude of those who ought to be able to control the purposes and practices of public health officials.

We, as a profession, must be willing to cooperate and to aid in every manner the education of the public, so that we become a part of the program which contemplates the control and prevention of disease. But this cooperation should lead to an acceptance of the principle that the continued practice of medicine by individuals is most desirable, and should be rewarded through an economic structure which contemplates a definite place for the medical man. His practice should not be invaded from any source.

It is our task through education and established practice to meet the changing conditions and yet to preserve the all-important relationship of the physician and patient.

I come to you as your President with limited time at my disposal. I have given you but a brief exposition of your affairs. The American Medical Association has grown marvelously until now our interest touches the affairs of the nation, as well as the individual citizen. We aim high when we match our patriotism with the brilliant and lofty humanitarianism of our profession.

Our traditions are not in danger but our interest in the problems of the day requires the direction of the combined wisdom of our leaders, whose immediate interest in the science of medicine separates them into scientific groups, and often keeps them out of the council of the organization.

Medicine needs its men, the lowest to the highest. Let no man hide back of his ego and critically deride the profession. Rather let him become an interested worker, and if he has ideas or talent let him assume leadership. He is always welcome.

With the unbounded ocean of truth yet to discover, why take our present status too seriously? The practice of medicine has always been an art. It has developed into a science; science is systematized knowledge. Knowledge is accumulating; its detail is sometimes overpowering; but clinical medicine, when most efficiently practiced, requires that something of the practitioner which is the highest of all arts.

For those in medicine who feel the urge, there is food for both mind and soul. Human need is the great incentive. Impelled as we are by high purposes, this underlying motive binds us to the living. There is some heaven on earth for every sincere physician. There should be a benediction beyond for all who live within the code.

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**A Remedy for Fear.**—The one outstanding condition menacing the mental health of every one, at least apparently of every youth, is some form of the emotion of fear. . . . This is reflected in pessimists and sentimentalists who demand a world according to their own wishes. . . . The great remedy for this fear is the attainment of the scientific attitude, together with the insight that in any case one's task is worth doing.—Burnham, W. H.: The Wholesome Personality, New York, D. Appleton & Co., 1932.

# ABDOMINAL PAIN DUE TO HYPOTHYROIDISM

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Reference has been made by Crile[1] to the association of hyperthyroidism with gastric and duodenal ulcers, but having had an opportunity from Jan. 1, 1928, to Oct. 1, 1931, to observe 444 ulcers in the gastro-enterologic clinic of the Fourth Medical and Surgical Divisions of Bellevue Hospital, my associates and I were unable to detect any patient with an ulcer and a goiter, or with hyperthyroidism. Of the ulcers seen, there were 318 cases in which operation had not been performed and 126 postoperative cases admitted to the clinic. During the past seven years in the thyroid clinics at the New York Post-Graduate Hospital and St. Mark's Hospital, 1,173 cases of goiter have been seen, and in none of these was there a history of pain referable to the stomach or the duodenum. I myself have seen and am familiar with all the aforementioned stomach and goiter cases, and I believe that if Crile's observation were of common occurrence we should have detected it in some of these cases. Verbrycke[2] in a recent article has referred to abdominal pain in association with hyperthyroidism. Any patient suffering from hyperthyroidism of a moderately severe type may have abdominal symptoms manifested in pain, nausea, vomiting or diarrhea, but of course these cases are easily diagnosed, and the abdominal symptoms disappear on correction of the hyperthyroidism.

During the past four years a much more significant observation has been noted in the gastro-enterologic clinic at Bellevue Hospital; patients are frequently referred to the clinic with typical ulcer symptoms and negative roentgen observations, to be treated for an ulcer, and occasionally these patients are found to be suffering from hypothyroidism. As this clinic is a "refer clinic" and the patient is registered only if he has a positive roentgen diagnosis or has been operated on for an ulcer, we have not studied all these cases in detail but have referred them back to the clinic from which they originally came; in a certain selected group, however, in which the patient has been either a hospital employee or a nurse, we have gone into the complaints more carefully and have found that the symptoms suggested a hypothyroidism, and to our gratification there are now six cases under treatment for hypothyroidism in which the complaint was pain referable to the upper part of the abdomen. Brown[3] recently called attention to the effect of hypothyroidism on the gastric and intestinal function, but emphasized constipation as a symptom of the dysfunctioning gland on the gastro-intestinal tract.

The symptoms of hypothyroidism are rather vague and indefinite, and there is no classic group of symptoms for the condition. In the thyroid clinic at the New York Post-Graduate Hospital we have had under observation, during the past fifteen months, seventeen cases of hypothyroidism; the symptoms have been nervousness, irritability, mental depression, instability, dry skin and falling of hair, but pain referable to the upper portion of the abdomen is not the rule in cases with a diminished thyroid secretion. It is the group complaining of abdominal pain, with negative roentgen observations and an associated minus metabolic reading, that will be discussed, and a summary of some of the cases will be given:

Case 1.—A woman, aged 48, a graduate nurse, seen, May 21, 1931, because of pain in the upper portion of the abdomen, nausea and vomiting, gave a negative history. She had been bothered with abdominal pain, nausea and vomiting for twenty years. Numerous physicians had treated her for nervous indigestion and early ulcer of the stomach, but she had become gradually worse. She was not bothered by constipation. Five years before admission, a roentgenologic examination of the gastro-intestinal tract was done for an ulcer but gave negative results. Again one week before I saw the patient, the gastro-intestinal series was negative, but in spite of the negative roentgen observations she was referred to our clinic for treatment. On being questioned, the patient complained of dry skin, scalp trouble and hair falling out. In the mornings she was tired but felt better after she was up for some time. Physical examination gave essentially negative results except for a blood pressure of 90 systolic and 70 diastolic, dry skin and epigastric tenderness. Hypothyroidism was suspected, and the metabolic rate, June 4, was minus 21. The patient was started on thyroxine, one-sixtieth grain (1 mg.) intravenously every week for eight weeks, and then the dose was reduced to 1 mg. every two weeks, with thyroid extract, 1 grain (0.065 Gm.) by mouth, three times a day. The patient has shown a marked improvement, and the metabolic rate, October 15, was minus 8; the abdominal symptoms have almost entirely disappeared, and the other symptoms have greatly improved, but she is still under treatment.

Case 2.—A man, aged 58, seen, May 1, 1929, because of attacks of severe upper abdominal pain for two years, gave a negative history. The patient first had an attack of severe upper abdominal pain, which lasted twenty-four hours, two years before consulting the clinic. During this period he had had three other attacks of severe pain and between the attacks had been troubled by gas, indigestion and heartburn after eating, but on being questioned he complained also of lassitude, dry skin which chapped easily, irritability and constipation. The patient was slightly obese being 30 pounds (13.6 Kg.) overweight, with definite tenderness in the right upper quadrant. The roentgenologic examination of the gastro-intestinal tract gave negative results, but the dye test did not visualize the gallbladder. A metabolic reading revealed a rate of minus 16, and in spite of the observations on the gallbladder the patient was given a diet excluding baked beans, peas, lentils, in fact, all legumes; eggs, fish, especially salmon, bluefish, mackerel and herring; brains, shad roe, fat fish, spicy or fat soups, fatty gravies, highly spiced sauces, pickles, radishes, mustard, pickled meats or fish, pickled fruits, acid fruits, rich pastries, candies or cakes, alcoholic drinks, ice water and sodas, cream and fat, and any other heated fats, as in entrées, pastries and the like. The patient was given thyroid extract, 2 grains (0.13 Gm.) three times a day. He has lost 40 pounds (18 Kg.) has not had any complaints in two years, and was symptom free three months after treatment was started. This patient was not given thyroxine intravenously, but the thyroid by mouth was continued for six months; the metabolic determination in March of this year was minus 6, and the patient stated that he was feeling perfectly well.

Case 3.—A woman, aged 28, a graduate nurse, seen, Aug. 21, 1931, because of abdominal pain after eating, and of nausea and vomiting, gave a negative history. Since she was about 17, she had been bothered with abdominal pain, nausea and vomiting, which had become worse. The pain came on after a heavy meal and was usually worse about 11 p. m., but vomiting gave relief. Ten years ago a roentgenologic examination of the gastro-intestinal tract was done in the Boston City Hospital, and the result was pronounced negative. In spite of medications and a careful diet, her symptoms had become worse, and since May of this year she had had persistent discomfort. In August of this year she had two roentgenologic examinations of the gastro-intestinal tract at Bellevue Hospital which were pronounced negative, but because of the history she was referred to us for an ulcer. On being questioned the patient complained of extreme tiredness in the morning, dry skin, brittle nails, loss of hair, and skin chapping easily. A hypothyroidism was suspected, and the metabolic determination, done August 29, revealed a rate of minus 18. Physical examination revealed a dry skin, epigastric tenderness, pulse 64, and blood pressure 98 systolic and 70 diastolic. The patient is now on thyroxine, one-sixtieth grain (1 mg.) intravenously, every seven days, and thyroid extract, one-half grain (32 mg.) three times a day. Her condition at this time has greatly improved; the abdominal pain has diminished, and she has much more energy.

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[1] Crile, G. S.: Factors Influencing the End-Results of Operations for Hyperthyroidism, read before the Medical Society of the County of New York, Jan. 26, 1931.

[2] Verbrycke, J. R., Jr.: Masked Gastro-Intestinal Hyperthyroidism: Report of Thirty-Four Cases, J. A. M. A. **97**: 513 (Aug. 22) 1931.

[3] Brown, T. R.: The Effect of Hypothyroidism on Gastric and Intestinal Function, J. A. M. A. **97**: 511 (Aug. 22) 1931.

CASE 4.—A woman, aged 35, seen, Aug. 24, 1931, because of abdominal pain, nausea, vomiting and constipation, gave a negative history. She had had abdominal pain and constipation since adolescence, but the conditions had become gradually worse during the past ten years. Because of abdominal pain she was unable to eat heavy, fried or acid foods, and for the past three or four years she had had constant nausea after meals, and frequently vomited if she ate a heavy meal. There was less pain and discomfort after very light meals or when the stomach was empty. She even had no night pain, but constipation was very marked, and only with strong cathartics was a bowel movement possible. She stated that she had been treated for an ulcer of the stomach for several years but said that the condition had gradually grown worse. On being questioned, she complained of mental depression, a very poor memory and extreme nervousness; also, her hair was falling out, the skin was dry and chapped easily, and she objected to cold weather. She was undernourished, weighing 104 pounds (47 Kg.); her best weight was 125 pounds (57 Kg.). The blood pressure was 80 systolic and 60 diastolic, and the pulse was 70. The right kidney was palpable and movable; there was slight epigastric tenderness; the skin was dry, and the reflexes were normal. A diagnosis of hypothyroidism was made, and the basal metabolism, August 25, was minus 17.

The patient was informed of her trouble, and then she volunteered the information that a recent roentgenologic examination of the gastro-intestinal tract had been done; she had been told that a small tumor of the stomach existed and that she needed an immediate operation. Roentgenologic study of the gastro-intestinal tract was repeated and pronounced negative. The patient was given thyroid extract, 1 grain (0.065 Gm.) three times a day, and thyroxine, one-sixtieth grain (1 mg.), intravenously for six doses. October 25, she had gained 6 pounds (2.7 Kg.), and was not tired, nervous or depressed. The constipation had shown some improvement, and the pain, nausea and vomiting had practically disappeared, but she is still under treatment.

The symptoms in the foregoing cases were so suggestive of an ulcer that all diagnostic methods and treatment had been directed to the gastro-intestinal tract. The conditions found were probably due to a hypoperistalsis with a pylorospasm and retention of undigested food in the stomach; after the patient vomited the retained food, or the stomach slowly emptied, the symptoms were relieved.

The other patients gave essentially the same history and are improving on thyroid medication.

## COMMENT

It is my desire to call attention to hypothyroidism as a factor in producing abdominal pain, and to emphasize that patients giving negative roentgen evidence of changes in the gastro-intestinal tract, the gallbladder and the genito-urinary region, as well as negative results in the other laboratory procedures, may in a small percentage of cases be suffering from hypothyroidism; in this group with negative roentgen observations a metabolic determination should be done before any treatment is instituted or before the patients are submitted to an exploratory laparotomy, as occasionally a diagnosis will be established and the symptoms relieved with thyroxine and thyroid extract, the patient being saved a needless operation. There seems little question that, in the past, probably quite a few exploratory procedures have been undertaken with negative results or at least with symptoms persisting after the operation, in which case the entire trouble was referable to the thyroid gland.

I do not want to leave the impression that all patients with abdominal pain in which the roentgenologic observations are negative are suffering from hypothyroidism, for such is not the case; but if this condition is borne in mind a definite diagnosis can be made in a small percentage of cases, and the individual can be benefited by the proper medication. On the other hand, a patient may have a minus metabolic rate and a definite intra-abdominal lesion which will need either medical or surgical treatment. Of course, no benefit could be expected from the abdominal pain by treating the hypothyroidism and neglecting the other condition that is actually causing the pain. I have such a case under observation at this time; the patient is waiting to have a cholecystectomy in the near future for the relief of abdominal pain, but her symptoms of lassitude, constipation, irritability and mental depression have improved on thyroxine intravenously and thyroid extract by mouth.

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# TREATMENT OF OLDER DIABETIC PATIENTS WITH CARDIOVASCULAR DISEASE

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In the past few years, arteriosclerosis and heart disease have become increasingly prominent as causes of death in diabetes mellitus. A recent article by Joslin [1] starts with the words "Every other diabetic now dies of arteriosclerosis, and the percentage of such cases has been rapidly rising." In the period between 1894 and 1914, 15 per cent of the total number of deaths of diabetic patients in Joslin's series of 342 deaths were due to arteriosclerosis; in the period 1926-1929, the death rate from arteriosclerosis had risen to 48 per cent. The coma death rate, during the same period, had dropped from 61 per cent to 11 per cent. The organ most frequently involved by the arteriosclerotic process in Joslin's series is the heart (43.1 per cent of all arteriosclerotic deaths). Similar statistics have been published by Warren,[2] Wilder,[3] Root and Graybiel,[4] Blotner [5] and Nathanson.[6] Coronary sclero-

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Aided by Max Pam Fund for Study of Metabolic Diseases and the Emil and Fanny Wedels Fund of the Michael Reese Hospital for the Study of Diseases of the Heart and Circulation.

[1] Joslin, E. P.: Arteriosclerosis in Diabetes, Ann. Int. Med. **4:** 54 (July) 1930.

[2] Warren, Shields: The Pathology of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1930.

[3] Wilder, R. M.: Necropsy Findings in Diabetes, South. M. J. **19:** 241 (April) 1926.

[4] Root, H. F., and Graybiel, Ashton: Angina Pectoris and Diabetes Mellitus, J. A. M. A. **96:** 925 (March 21) 1931.

[5] Blotner, Harry: Coronary Disease, New England J. Med. **203:** 709 (Oct. 9) 1930.

[6] Nathanson, M. H., to be published.

sis, coronary thrombosis, infarction of the heart and varying degrees of myocardial degeneration are common pathologic manifestations in the group of diabetic patients who die of cardiac complications.

Careful analysis of the published statistics seem clearly to involve the disease diabetes as an etiologic factor in the production of arteriosclerosis. A statistical study by Levine[7] led him to believe that diabetes is a common cause for coronary thrombosis. In Levine's group of 145 cases, approximately 23 per cent showed glycosuria. It is, of course, recognized that the prolongation of life brings more individuals to the arteriosclerotic age, but comparative statistics and autopsies performed on diabetic and nondiabetic patients show that the incidence of arterial disease in the diabetic is considerably greater than in the nondiabetic patient. Nathanson has studied two series and finds that in 100 autopsies on diabetic patients 41 showed severe coronary disease. Above the age of 50 the incidence of coronary disease was 52.7 per cent, as compared with 8 per cent in an even larger series of nondiabetic patients of the same age.[8] Furthermore, in diabetic patients the incidence of coronary disease in the female is almost as high as in the male, as compared with the ratio of 1:3.5 in Levine's nondiabetic series. But perhaps the most convincing evidence that diabetes is an etiologic factor in arteriosclerosis is furnished by a study of the frequency of arteriosclerosis in younger diabetic patients. Shepardson[9] emphasizes the incidence of arteriosclerosis in diabetic patients under 40. The minimum duration of the disease in these cases was five years. It is true that the evidence furnished by Shepardson's studies is not final, as his conclusions are based almost entirely on evidence furnished by roentgen studies of the arteries during life. Nevertheless, of fifty patients studied with an average age of 23.4 years and an average duration of the disease of 6.9 years, he found peripheral arteriosclerosis in 36 per cent of his patients with an average age of 25.4 years and an average duration of the disease of 7.6 years. Joslin,[1] too, has called attention to the incidence of arteriosclerosis in the young whose diabetes has lasted from five to ten years.

The change in the cause of diabetic death from coma to coronary disease definitely followed the introduction of insulin. Insulin has made coma an almost completely preventable cause of death, as is witnessed in the Joslin series, in which the rate changed from 61 to 11 per cent. Yet a paradoxical situation now has arisen in that insulin has been accused of being responsible for some of the cardiac deaths in diabetes. The evidence involving insulin is both clinical and experimental. Turner[10] and Modern[11] have discussed the "heart-pain" due to insulin shock and hypoglycemia. Middleton and Oatway[12] thoroughly reviewed the literature on the experimental aspects of this subject and themselves added further studies to show that insulin shock presents a real hazard to the heart. They strongly urge that insulin shock and hypoglycemia should be avoided in the presence of any type of myocardial involvement. Parsonnet and Hyman[13] described the development of the stenocardial syndrome following the administration of insulin to diabetic patients with coronary thrombosis. Their communication is particularly important because in the four cases reported by them no symptoms of coronary disease were present before the administration of insulin, and in only one patient, a very large overweight woman, had there been any previous suggestion of heart disease. These authors also mention three other diabetic patients who developed milder symptoms of angina without electrocardiographic evidence of coronary thrombosis, following the use of insulin. Blotner[5] concluded that acidosis and a rapid lowering of the blood sugar level with insulin play contributory parts in inducing mortalities in coronary thrombosis.

The question of proper therapy of the diabetic patient with vascular disease has received very little experimental study. As a result of their experiences with insulin shock and hypoglycemia, some authors, as Middleton and Oatway,[12] advise caution in the therapeutic use of insulin in such cases. But granting that insulin shock and hypoglycemia are dangerous, we do not know whether the continued use of insulin as a therapeutic procedure in doses small enough to avoid abnormally low blood sugar levels carries with it a similar menace to the cardiovascular system of this class of patients. The more rigid control of the metabolic manifestations of diabetes, made possible by insulin, has emphasized the clinical observation that during such treatment the patient may grow worse as the diabetes improves. The lack of experimental evidence concerning this increasingly important therapeutic problem has led us to the present investigation. Since all previous experimental work dealt almost entirely with acute insulin shock or with the effects of acutely produced hypoglycemia, we felt that it was necessary to emphasize the long term, therapeutic experiment.

## PROCEDURE

We studied seven patients with diabetes and clinical evidence of coronary sclerosis or angina pectoris. All these patients were placed in the Max Pam Metabolism Unit of the Michael Reese Hospital under conditions approaching laboratory control. Their cardiac status varied from complete well being to mild congestive failure while at rest. Their diabetic status also varied from mild to moderately severe. Cases of mild and severe Heberden's angina pectoris were included. Each patient was kept for from two to four weeks on a given diet which permitted his accustomed high blood sugar level and glycosuria, no attempt being made to control the diabetic manifestations to a greater extent than was usual with that patient. This period was followed by a similar period in which the diet remained unchanged but insulin was used in therapeutic doses (from 30 to 70 units daily). The blood sugar was kept at a low normal level and at no time was sufficient insulin given to produce persistent hypoglycemia. In other words, during the latter period, these patients received a moderately strict treatment for their diabetes without regard to their cardiovascular status. We wish to emphasize again at this point that the nature of these experiments was distinctly therapeutic; we wanted to learn the reaction of these cardiovascular diabetic patients to treatment aimed entirely toward the improvement of their diabetes.

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[7] Levine, S. A., and Brown, C. L.: Coronary Thrombosis: Its Various Clinical Features, Medicine **8**:245 (Sept.) 1929.

[8] Nathanson, M. H.: Disease of the Coronary Arteries: Clinical and Pathological Features, Am. J. M. Sc. **170**:240 (Aug.) 1925.

[9] Shepardson, H. C.: Arteriosclerosis in the Young Diabetic Patient, Arch. Int. Med. **45**:674 (May) 1930.

[10] Turner, K. B.: Insulin Shock as the Cause of Cardiac Pain, Am. Heart J. **5**:671 (June) 1930.

[11] Modern, F. S.: Chronic Heart Pain Due to Prolonged Hypoglycemia, J. A. M. A. **96**:357 (Jan. 31) 1931.

[12] Middleton, W. S., and Oatway, W. H., Jr.: Insulin Shock and the Myocardium, Am. J. M. Sc. **181**:39 (Jan.) 1931.

[13] Parsonnet, A. E., and Hyman, A. S.: Insulin Angina, Ann. Int. Med. **4**:1247 (April) 1931.

In addition to the foregoing experiments a set of acute experiments was performed in which each patient, after a careful period of observation, received one large dose of insulin. The results of the acute experiments form a basis for comparing our work with previously reported studies. The observations made after the insulin injection included the effect of the intravenous injection of dextrose.

## RESULTS

The results summarized here are concerned chiefly with observations on the heart. More comprehensive studies of the cardiovascular system are projected. The complete details and the experimental data collected from this series of patients on changes in blood pressure, pulse rate, cardiac rhythm, electrocardiogram and metabolism will be reported elsewhere. In the present report we wish to make a brief summary, and since the results following the acute experiments are the more striking, they will be given first.

*Objective Phenomena.*—After insulin the blood pressure tended to fall, the heart rate to increase, extrasystoles of various origins were induced, and in one case a run of paroxysmal auricular fibrillation was initiated. Some or all of the typical symptoms of insulin shock were observed, and in two cases typical attacks of angina pectoris were precipitated.

The electrocardiogram showed, in brief, a decrease in amplitude, slight prolongation and increased slurring of the Q-R-S complex, increase in the deviation of the S-T segment in a direction opposite to the major initial complex, and a prolongation and deviation of the T wave in a direction opposite to the major initial complex, occasionally going so far as to produce a change in its direction. We interpreted these changes as indicative of the development of intraventricular block. Intravenous administration of dextrose always alleviated the symptoms and restored the electrocardiogram to its original contour.

These results can be correlated with a previously reported inversion of the T wave caused by insulin. The fact that the T wave became more positive or changed from a negative to a positive deflection when the initial complex was inverted shows that the inversion of the T wave in such cases is a sign of slowing in intraventricular conduction. In one case in which a striking attack of angina was precipitated, changes in the electrocardiogram similar to those described during such attacks (Wood, Wolferth and Livezey;[14] Feil and Siegel[15]) were noted even before the symptoms appeared.

The effects observed in the therapeutic experiments were similar to but of lesser magnitude than those just reported. The blood sugar level was maintained below that to which the patients were accustomed, and the doses of insulin used did not produce persistent hypoglycemia. A constant slowing of heart rate occurred, and extrasystoles and electrocardiographic changes similar to those described in the acute experiments were noted. The magnitude of the electrocardiographic deviations in the therapeutic experiments did not depend entirely on the absolute level at which the blood sugar was maintained. The length of time over which insulin was administered and the extent of the change from the accustomed blood sugar level to the new level seemed to be important factors.

*Subjective Phenomena.*—In all patients particular attention was paid to the subjective symptoms during the therapeutic experiments. It is known, of course, that patients may have mild anginal attacks without tangible objective signs, and it is not always easy to decide whether pain is truly anginal in type. Almost invariably during the period of insulin administration the patients complained of a decreased sense of well being. The usual complaints were weakness, prostration, dizziness, nervousness, palpitation, precordial pain and constriction and, in some cases, typical angina pectoris. One patient refused to continue on the insulin period as he said that he "felt bad all the time." It was interesting to note that these symptoms occurred at blood sugar levels compatible with complete comfort in younger diabetic patients. The interpretation of symptomatology uncontrolled by such objective data as we collected would be difficult. But in view of the fact that the patients' complaints and the objective manifestations were so well correlated, the symptoms must be accepted as important.

One case, of a woman in her late fifties, is of unusual interest and is important for two reasons. First, she had mild diabetes, frequent attacks of angina pectoris associated with paroxysmal auricular fibrillation, and no evidence of coronary thrombosis. This unusual combination made it possible to correlate the subjective complaints with the objective demonstrable phenomena. Second, because of the mild diabetes she was given no insulin at any time during the therapeutic experiment, her diabetes being controlled by diet alone. This made it possible, in reviewing our results, to evaluate the direct effects of insulin on the heart as opposed to the effects of the metabolic changes induced by insulin.

On a diet of protein 50, fat 100, carbohydrate 50, which for purposes of comparison we shall call a low carbohydrate diet, she had frequent attacks of angina pectoris and paroxysmal auricular fibrillation. During this time she would have attacks even when at rest in bed in her room. The substitution of an isocaloric comparatively high carbohydrate diet of protein 50, fat 50, carbohydrate 160 caused an immediate and complete cessation of the attacks. This is especially significant, since her fasting blood sugar was on the average only about 20 mg. per hundred cubic centimeters higher during the high carbohydrate diet than during the low carbohydrate diet. On the latter diet she remained in bed without protest. In fact, during one experimental period of low carbohydrate diet, her attacks became so severe and frequent that this diet had to be discontinued. In marked contrast to this is the difficulty we experienced in keeping her in bed during the high carbohydrate regimen. Indeed, her only attack while on the high carbohydrate diet was precipitated when she walked down a long hospital corridor and up several stairs in order to use a telephone. The contrasting effects of the two diets were confirmed by repetition. This case showed, in a most striking way, that all the phenomena following the use of insulin noted in the other therapeutic experiments could be reproduced by the use of a low carbohydrate diet alone.

The acute experiment with insulin on this woman yielded completely confirmatory results. It was carried out after a prolonged period of high carbohydrate diet. At the time of the acute experiment she was in excellent condition, having had no anginal attacks nor any abnormal cardiac rhythm for a month. Fifty minutes after the administration of 25 units of insulin subcutaneously, she complained of precordial pain, which soon radiated to the left arm. Simultaneously with the appearance of angina there developed a paroxysm of auricular fibrillation interspersed with ventricular extrasystoles. This irregularity was shown by the electrocardiogram taken at the moment she first complained. It is interesting to note that the typical electrocardiographic changes usually seen during angina pectoris appeared in the records taken during this experiment even before the pain developed.

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[14] Wood, F. C.; Wolferth, C. C., and Livezey, Mary M.: Angina Pectoris, Arch. Int. Med. **47**: 339 (March) 1931.

[15] Feil, H. S., and Siegel, M. L.: Electrocardiographic Changes During Attacks of Angina Pectoris, Am. J. M. Sc. **175**: 255 (Feb.) 1928.

Thirty-five minutes after the beginning of this induced attack the patient was given 3 ounces of orange juice and 3 teaspoonfuls of cane sugar by mouth, followed by an intravenous injection of 50 cc. of 50 per cent dextrose solution. Five minutes after the injection was completed, the pain had disappeared and the electrocardiogram showed a regular but rapid rate, a sinus tachycardia. The auricular fibrillation soon returned and lasted until the following morning, but no further pain was experienced. The similarity of effects during the acute and the therapeutic experiments on this patient is apparent.

### COMMENT AND SUMMARY

The results obtained in the acute experiments agree with those previously reported, as to the deleterious effects of insulin hypoglycemia on the heart. The risk incurred by insulin "shock" in older diabetic patients with cardiovascular disease need not be enlarged on.

Our long term therapeutic experiments show that insulin, in the usual therapeutic doses, presents a similar hazard to the hearts of such patients. The objective data obtained from our patients can be closely correlated to their subjective complaints and indicate a real basis for the latter. This accords very well with the previously mentioned clinical observation that such patients may grow worse as their diabetes improves and may explain why it is so difficult to frighten or cajole such a patient into following a regimen strict enough to maintain his blood sugar at a level ordinarily considered normal. It is possible that, for such patients, the higher blood sugar levels usually found do represent the "normal" or perhaps optimum value, as far as their cardiovascular state is concerned. Smith, Gibson and Ross,[16] among others, have shown the beneficial effects of carbohydrate administration in heart failure in the nondiabetic patient. The deleterious effects of the therapeutic use of insulin in our cases did not seem to depend so much on the absolute level of blood sugar attained as on the extent of the change from the accustomed to the new blood sugar level and on the length of time over which the insulin was administered.

The case described, in which the results obtained with insulin were reproduced by the use of a low carbohydrate diet alone, indicates that insulin is not the only factor to be considered if one is to avoid endangering the damaged heart. The blood sugar level and the carbohydrate available for the use of the diseased myocardium must be important and may be the essential factors involved. The diet is therefore of paramount importance whether the patient is given insulin or not.

The increasing incidence of heart disease as the cause of death in diabetic patients should serve as a warning that the needs of the impaired myocardium must not be forgotten in efforts to control the metabolic manifestations of diabetes.

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[16] Smith, F. M.; Gibson, R. B., and Ross, Nelda G.: The Diet in the Treatment of Cardiac Failure, J. A. M. A. **88**: 1943 (June 18) 1931.

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# ULCERATIVE COLITIS DUE TO CHRONIC INFECTION WITH FLEXNER-Y BACILLUS

## REPORT OF CASE WITH CURE BY AUTOGENOUS VACCINE

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The relative frequency and severity of chronic ulcerative colitis and the difficulties of its successful treatment warrant the report of instances that may throw light on the condition. Experience indicates that it is a disease without distinctive tissue changes, which may be associated with a variety of different organisms. Since the Great War several English observers have emphasized the apparent relationship to antecedent amebic or bacillary dysentery, especially when the acute phase has been improperly or insufficiently treated.[1] In certain instances the chronic condition is attributed to the presence of secondary invaders in the wall of the bowel;[2] in others to the persistence of the dysentery bacilli themselves.

The possibility that at times the latter organisms may play an important rôle meets four important objections. The onset of chronic ulcerative colitis is usually insidious and not apparently related in time or in fact to an antecedent acute intestinal disease. The appearance of cases is sporadic. The dysentery bacilli can rarely be recovered from these cases. And, finally, the disappearance of epidemic dysentery, except under the unusual lack of sanitation associated with war conditions, has led to the widespread belief that the disease has become a rare condition in the more settled and highly developed parts of the world.

Clinically, acute bacillary dysentery may be roughly divided into two groups, the Shiga infections, usually associated with a severe illness, and those due to Flexner-Y and other strains, which characteristically induce only a mild condition which may be so trivial as to escape particular notice. Zinsser[3] calls attention to the fallacy of considering the disease one that occurs only in epidemic forms. Certain of the dysentery bacilli may cause only mild intestinal inflammations and even simple diarrheas. It is probable, moreover, that many of these transitory diarrheas occurring sporadically and in small groups may depend on unrecognized infection by these organisms. During the war, 75 per cent of the mild cases were found to be due to the Flexner-Y bacilli. The Y bacillus particularly has been found in cases of infantile diarrhea. Furthermore, the persistent carrier of these organisms is generally in fairly good health and able to carry on his occupation until subjected to adverse conditions which may precipitate a further recurrence. Not only, therefore, may attacks of Flexner dysentery be so mild as to escape comment at the time, but, because of the lack of severity, little if any importance may be attached to them in the study of a later chronic disease.

Investigations carried out during the World War indicated that the Flexner group is universally dis-

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Read before the Section of Medicine, New York Academy of Medicine, Feb. 16, 1931.

From the Department of Medicine of the Presbyterian Hospital and the Columbia University College of Physicians and Surgeons.

[1] Dudgeon, L. S.: Ulcerative Colitis, Proc. Roy. Soc. Med. (Sect. Surg.) **16**: 104, 1923. Hurst, A. F.: Ulcerative Colitis, ibid., p. 106. Lockhart-Mummery, J. P.: Ulcerative Colitis, ibid., p. 97.

[2] Sellards, A. W.: Bacillary Dysentery, in Oxford Medicine, New York, Oxford University Press **4**: 767-781, 1921.

[3] Zinsser, Hans: A Textbook of Bacteriology, ed. 6. New York, D. Appleton & Co., 1930, pp. 594-610.

tributed, but that Shiga infections are usually acquired only in tropical or subtropical countries. In Belgium the epidemics in the armies were almost entirely due to the Flexner-Y group.[4] Recently the disease has been reported to be endemic in the southern part of the United States and to be increasing in frequency.[5]

The recovery of these organisms from cases of chronic ulcerative colitis is not usual, and this has led to the impression that although the disease may follow on acute bacillary dysentery, the relationship between them is indirect. The excretion of the bacilli, however, by the chronic carrier is apt to be intermittent, and, in fact, intermittence is described as one of the characteristics of long-standing infection. The organisms may be found in the stools for one or two days in succession, to be followed by an interval of four or five weeks when all bacteriologic examinations of the feces are negative.[6] Martin and William[7] found that only 15 per cent of the initial stool cultures from cases of chronic dysentery were positive. It has further been shown that the Flexner bacilli are almost twice as difficult to recover as are the Shiga organisms. The difficulty of demonstrating the dysentery bacilli in the excreta emphasizes the importance of swab cultures from the floor of the ulcerated areas in the colon and rectum. Positive cultures may be obtained by the latter method when the stools are persistently negative,[8] but a single negative culture cannot be accepted as evidence sufficient to exclude a dysenteric infection. While the factor of intermittence may therefore play a large part in the difficulty of demonstrating the bacilli, certain of their biologic characteristics are of importance as well. Their viability in stale stools is much limited, and in scanty infections, unless a selective medium is used, they are easily overgrown by other organisms.

Agglutination tests, when stock cultures are used, cannot be depended on as a means of diagnosis or as an accurate method of eliminating the possibility of infection. Fildes[9] found that only 60 per cent of the patients with chronic, convalescent or cured Shiga dysentery who were still excreting the bacilli possessed agglutinins in significant amounts for these organisms, and similarly among the Flexner cases only 20 per cent gave significant agglutination reactions.

While the relationship between chronic dysentery and chronic ulcerative colitis is not direct or evident in many instances, neither is the distinction between them well defined. The differentiation has necessarily been based on the results of culture and agglutination reactions which cannot be accepted as definite unless consistently and repeatedly negative. Hurst[10] has emphasized the fact that the two conditions are indistinguishable in appearance both at autopsy and in life through the sigmoidoscope. Menon[11] in India found that 60 per cent of fatal cases of chronic colitis or chronic diarrhea of indefinite origin present lesions with a strong morphologic resemblance to those of chronic dysentery. Lockhart-Mummery[12] also states that the chronic conditions following on acute amebic or bacillary dysentery do not differ in any way from the ordinary cases of ulcerative colitis endemic in England and the United States. Bastedo[13] has suggested the probability that many of them, if properly studied, would fall within the group of bacillary infections.

The lesions of chronic dysentery are restricted to the lower half of the colon and characteristically consist of serpiginous ulcers. They are distributed transversely to the long axis of the intestine on the free edge of the transverse folds of the mucosa. The edges are usually undermined and ragged, and the base is formed by granulation tissue. Often they are intercommunicating. The intervening mucosa is usually hyperemic and bleeds easily on contact. Healing is accompanied by scarring and frequently by pigmentation.

There is a widespread impression that the acute phase terminates the disease and that chronic dysentery due to the persistence of the bacilli is a rarity. The infection may persist, however, with remissions of varying length for from one to several years, as commonly happens with amebic disease. It is variously estimated that from 2 to 5 per cent of the acute cases become chronic.[14] Fletcher and Mackinnon[6] found 52 chronic carriers of Flexner and 13 of Shiga bacilli among 935 soldiers convalescent from bacillary dysentery. More than 20 per cent of the convalescents from whom Flexner organisms were recovered, and all the Shiga cases carrying bacilli, became persistent carriers. Most of the chronic cases in this group had presented recurrent attacks over long periods of time, and relapses were frequent in these long established infections. In a study of chronic dysentery in Peiping, Smyly[8] recovered B. dysenteriae from fifty-six patients. Mannite fermenting bacilli were found in 54 per cent, Shiga bacilli in 32 per cent, and the remaining 14 per cent had double infections. Castellani,[15] Hudson,[16] Maggi[17] and Bastedo[13] have all reported chronic cases due to continued infection by members of the mannite fermenting group, usually the Flexner bacilli, and recently in New York Winkelstein[18] recovered Flexner or Shiga organisms from four cases of chronic ulcerative colitis.

Vaccines, both stock and autogenous, have been used from time to time in the past, but often with contradictory or equivocal results. Manson-Bahr and Gregg[19] summarize the failures by stating that the ineffectiveness of this form of treatment depends on the minor rôle which the dysentery bacilli play in the later stages of the disease. Some observers hold that vaccinotherapy may be definitely harmful, and others do not recommend it. Van Nitsen[20] found a higher mortality among a group of cases treated by a mixed vaccine of Shiga and Flexner bacilli than in a similar series treated by medical measures alone. At times, vaccines are said to cause dangerous focal reactions,[21] and Rogers[22] has reported massive gangrene of the bowel and exacerbation of the existing condition. This he attributes to the endotoxin of the Shiga bacilli and to the possible development of a negative phase. On the other hand, autogenous vaccines are said to have little effect.[23]

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[4] Nolf, P.: Vaccinotherapy in Acute and Chronic Bacillary Dysentery, J. A. M. A. **73**: 1177-1179 (Oct. 18) 1919.

[5] Silverman, D. N., and Feemster, Roy: Types of Bacterial Dysentery in the South: A Clinical and Bacteriological Study, South. M. J. **24**: 504-507 (June) 1931.

[6] Fletcher, W., and Mackinnon, D. L.: A Contribution to the Study of Chronicity in Dysentery Carriers, Medical Research Committee, Special Report Series No. 29, 1919. Douglas, S. R.; Colebrook, L., and Morgan, W. P.: Report on a Series of Cases of Dysentery Received from the Mediterranean Expeditionary Force, ibid., No. 6, 1917.

[7] Martin, C. J., and William, F. E.: The Chances of Recovering Dysentery Bacilli from Stools According to Time Elapsed Since Onset of Disease, Brit. M. J. **1**: 447 (April 20) 1918.

[8] Smyly, H. J.: The Diagnosis and Treatment of Chronic Dysentery, Tr. Roy. Soc. Trop. Med. & Hyg. **24**: 39-66 (June) 1930.

[9] Fildes, P.: Reports on Investigations in the United Kingdom of Dysentery Cases Received from the Eastern Mediterranean: III. Report on Recovered Cases of Intestinal Disease in the Royal Naval Hospital, Haslar, 1915-1916, Medical Research Committee Special Report Series No. 6, 1917.

[10] Hurst, A. F.: Ulcerative Colitis, Lancet **1**: 1007 (May 19) 1923.

[11] Menon, T. B.: The Pathology of Chronic Colitis in the Tropics, Indian J. M. Res. **18**: 137-141 (July) 1930.

[12] Lockhart-Mummery, J. P.: Ulcerative Colitis, Proc. Roy. Soc. Med. (Sect. Surg.) **16**: 104, 1923.

[13] Bastedo, W. A.: Our Northern Chronic Dysenteries, M. J. & Rec. **120**: 201-205 (Sept. 3) 1924.

[14] Rajchman, L., and Western, G. T.: Reports on Investigations in the United Kingdom of Dysentery Cases Received from the Eastern Mediterranean: II. Report on 878 Cases of Bacillary Enteritis, Medical Research Committee, Special Report Series No. 5, 1917. Fildes (footnote 9). Davison, W. C.: A Bacteriological and Clinical Consideration of Bacillary Dysentery in Adults and Children, Medicine **1**: 389-510 (Nov.) 1922.

[15] Castellani, Aldo: Cases of Pseudo-Sprue Probably Due to a Flexner-Like Bacillus, J. Trop. Med. & Hyg. **15**: 337-338 (Nov.) 1912.

[16] Hudson, N. P.: A Case of Persistent Infection with B. Dysenteriae (Flexner), J. A. M. A. **79**: 1676-1677 (Nov. 11) 1922.

[17] Maggi, A.: Un cas de dysentérie par bacille para-dysentérique, Bol. sez. ital. Soc. internaz di microbiologia **1**: 106 (May) 1929.

[18] Winkelstein, Asher: The Nature and Treatment of Nonspecific Ulcerative Colitis, New York State J. Med. **31**: 1400 (Nov. 15) 1931.

[19] Manson-Bahr, P., and Gregg, A. L.: The Pathology and Treatment of Chronic Bacillary Dysentery, J. State Med. **32**: 356-366 (Aug.) 1924.

However, there are numerous reports of the successful use of this form of treatment.[24] Nolf found that intravenous injections in increasing doses from 1 to 10 millions gave the best results in chronic Flexner infections. Others using this method, but in doses up to 60 millions, report that rigors, pyrexia and marked clinical improvement resulted. The subcutaneous route is said to be less effective, but recently a stock vaccine which is agglutinated by the patient's serum has given excellent results.

It would appear, therefore, that the conflict of opinion depends on the selection of cases, the type of vaccine used, the dosage, and the duration of treatment. Success is to be expected only in the individuals having a continued infection by the dysentery bacilli and not in the cases of remote secondary infection. In many instances in which the results have been unfavorable or inconclusive the dosage was small, the intervals long, and the treatment not long continued. Autogenous vaccines have not been fully tested, but the weight of evidence indicates that this form of therapy has a definite place and usefulness, that the vaccine probably should be autogenous, and that it should be continued in adequate dosage over a considerable period of time.

## REPORT OF CASE

A clergyman, aged 64, first seen in 1927 because of attacks of syncope and dyspnea on exertion, was slightly overweight, plethoric in appearance, and presented a moderate cardiac enlargement. The blood pressure was 150 systolic and 90 diastolic. The electrocardiogram showed a moderate left-sided preponderance. The blood count at this time showed: hemoglobin, 100 per cent; red blood cells, 4,800,000; white blood cells, 14,800; polymorphonuclears, 68 per cent; lymphocytes, 30 per cent; eosinophils, 2 per cent. He progressed satisfactorily on small doses of digitalis and restriction of activity.

In June, 1928, he was admitted to St. Luke's Hospital complaining of a slight purulent discharge from the rectum and the occasional presence of small amounts of blood in the stools. A fistula in ano was found extending upward for an inch and a half from the sphincter, just deep to the mucous membrane. The tract was excised and recovery was uneventful.

He was not seen again until May, 1929, when he returned stating that for the past two months he had had "colitis." This was characterized by profuse watery diarrhea containing flocculent material but no gross blood or mucus. On the rare occasions when the stools were formed, small amounts of mucus were present but never blood. He had been afebrile but suffered more or less from lower abdominal pain and especially from exhaustion and prostration. At this time a history was obtained which had not been elicited on the previous contacts with him.

In 1923, while on a trip around the world, he had a severe attack of diarrhea in Shanghai. He was ill for ten days but did not have fever. Shortly afterward on reaching India, he had a recurrence which kept him in bed for two weeks and necessitated alteration of his itinerary. Again the attack was afebrile. The stools were very loose, yellow and numerous. During the next two years in New York attacks of diarrhea recurred at frequent intervals, and he stated that he seldom had an entirely normal stool. He was able to carry on his parish work, however. In 1925, while on a trip through the Mediterranean, he had another severe attack in Jerusalem, lasting a week, and subsequently another recurrence of the same duration in Athens. The stools again were watery and the attacks afebrile but accompanied by much prostration.

During the next four years, periods of diarrhea recurred at frequent intervals but never of sufficient severity to cause him to seek medical advice. The longest free interval was of only a few months' duration, and during this period he became progressively lacking in energy and strength.

In May, 1929, he was given camphorated tincture of opium, bismuth subcarbonate, and a bland low residue diet. These measures were only partially successful, since omission of the medication was immediately followed by recurrence of the diarrhea. He showed some loss of weight, appeared a little pale and was obviously worn out. The cardiac diameters were slightly increased and the blood pressure had fallen to 124 systolic and 80 diastolic. Definite tenderness was present over the course of the descending colon and the sigmoid. Rectal examination was negative. Roentgen examination of the colon showed the barium sulphate to flow freely through to the cecum. No evidence of a malignant condition was found, but the sigmoid and the lower portion of the descending colon were quite smooth, showed few haustrations, and were definitely spastic. The hemoglobin was 83 per cent and the red cell count 3,480,000. The white count was 8,900 and the differential formula: polymorphonuclears, 73 per cent; lymphocytes, 23 per cent; eosinophils, 3 per cent, and monocytes, 1 per cent. The stained film showed anisocytosis and poikilocytosis with occasional polychromatophilic cells. The platelets appeared to be reduced in number.

The patient was readmitted to St. Luke's Hospital under the care of Dr. Lewis F. Frissell. A week after the previous examination the hemoglobin was 92 per cent and the red blood count 3,200,000. Gastric analysis after the test meal showed free hydrochloric acid to be absent and total acid 4. A roentgen examination of the gastro-intestinal tract showed no evidence of a malignant condition. Stool examination for monilias was negative by smear and culture. No amebas were present and the test for occult blood was negative. Culture of the stool for Flexner and Shiga bacilli was negative. The patient was immediately placed on a liver diet and a week later on Eli Lilly Liver Extract and hydrochloric acid. Daily colon irrigations were given, at first of sodium bicarbonate and later of saline solution. The return was usually clear except for the occasional presence of mucus in small amounts. He was allowed to return to his home after two weeks, but although the diarrhea had stopped the stools continued loose and unformed.

In September, 1929, he reported that his condition seemed satisfactory and that he had been well except for occasional upsets associated with return of the diarrhea following omission of hydrochloric acid.

In November, 1929, however, the diarrhea returned acutely and persisted. The stools were watery and foamy, with considerable amounts of mucus but no blood. Physical examination at this time showed definite atrophy of the papillae of the tongue but no aphthae. There was tenderness high up in the rectum on digital examination but otherwise there were no new manifestations. The hemoglobin was 99 per cent, the red cell count 4,180,000, and the white blood count 8,200 with 73 per cent polymorphonuclears. The stained smear showed anisocytosis, poikilocytosis, and occasional polychromatophilic macrocytes. There was no subjective or objective evidence of subacute combined sclerosis. Because of the primary anemia, the frothy diarrhea, and the absence of signs of involvement of the spinal cord, he was admitted to the Presbyterian Hospital for treatment of sprue. A second gastric analysis following the administration of histamine showed free hydrochloric acid absent and total acidity none. Reexamination of the colon by x-rays presented essentially the same picture as on the former occasion. Stool examinations were consistently negative for amebas and other parasites. At sigmoidoscopy the upper part of the rectum contained some mucopurulent exudate; the mucosa was markedly hyperemic and showed numerous ulcers, the largest 0.5 cm. in diameter. The patient was placed on the diet then in use for the treatment of sprue: the quantitative elimination of wheat, rice, sugar and potatoes with the substitution of banana flour for the carbohydrates. During the period of observation the temperature was normal and he was discharged to continue the diet, liver extract and hydrochloric acid at home.

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[20] van Nitsen, R.: Traitement de la dysentérie bacillaire par vaccinothérapie, Bull. méd. du Katanga **1:** 252 (Dec.) 1924.

[21] Smyly, H. J.: Bacillary Dysentery, in Cecil, R. L.: Textbook of Medicine, Philadelphia, W. B. Saunders Company, 1928, pp. 159-166.

[22] Rogers, L.: Sensitized Shiga and Flexner Vaccines in the Treatment of Chronic Bacillary Dysentery, Brit. M. J. **1:** 7-8 (Jan. 1) 1916.

[23] Lichtenstein, A.: Chronic Bacillary Dysentery, Medec. Burgelyk, Geneesk. Dienst in Nederl.-Indie, 1922, pp. 268-269.

[24] Silverman and Feemster (footnote 5). Douglas, Colebrook and Morgan (footnote 6). Bastedo (footnote 13). Castellani (footnote 15). Maggi (footnote 17). Rogers (footnote 22).

These measures did not alter the character or the intensity of the diarrhea, and a month later he was readmitted because of the increasing severity of this symptom and the development of tenesmus with the passage of large amounts of pus and mucus. A second sigmoidoscopic examination showed multiple superficial ulcerations with slightly hemorrhagic borders, covered with a foamy yellowish-white cap. They were most numerous in the lower part of the rectum. The mucous membrane between the ulcers was not hyperemic, and there was no evidence of undermining of the edges. Smears taken through the sigmoidoscope failed to reveal amebas, but cultures similarly made grew out a practically pure culture of Flexner-Y bacilli.

An autogenous vaccine was made at once and given in increasing doses three times a week until the patient was receiving a billion bacilli at each injection. This was continued for several months. There was an immediate improvement in all the bowel symptoms, and within two weeks of the initiation of this treatment the diarrhea ceased and the stools became normal.

In November, 1930, he returned, complaining of constipation and the occasional appearance of a slight mucopurulent discharge from the rectum when this symptom was especially marked. A stool culture for the Flexner bacilli was negative, but another course of six injections of the autogenous vaccine was given.

He was seen again in November, 1931. There had been no recurrence of diarrhea since the initial vaccine treatment twenty-two months previously. The rectal discharge had not returned, the bowel function was normal, and the stools were free from any abnormality. Reexamination of the colon by x-rays showed a smooth outline of the sigmoid with approximately normal haustrations proximal to it. No indication of irritability was noted. Sigmoidoscopic examination revealed a normal appearing mucous membrane; ulceration and hyperemia were not present. Cultures taken through the sigmoidoscope from the mucosa of the sigmoid region and the rectum were negative for B. dysenteriae. The hemoglobin was 98 per cent, the red cell count was 4,360,000, and examination of the stained smear showed a few macrocytes and microcytes and a moderate degree of anisocytosis. The average cell diameter, as measured by the Eve halometer, was 7.8 microns.

## COMMENT

This case is presented because of the rapid and complete response to treatment by an autogenous Flexner-Y vaccine, and because of the cure proved by symptoms, sigmoidoscopy and cultures twenty-two months after the beginning of specific treatment. It illustrates some of the difficulties that may occur in the identification of an etiologic factor in a case of chronic ulcerative colitis. Stool cultures were negative, yet subsequently B. dysenteriae was recovered on direct culture from the floor of the ulcer through the sigmoidoscope. The history given by the patient again points to the important rôle a mild attack of bacillary dysentery may play in the individual's later health. Despite the apparent continuity of intestinal symptoms during the years from the initial attack in 1923 to the time the diagnosis was established in 1930, the patient attached little importance to them and considered merely that he had an easily disturbed gastro-intestinal tract. The facts that have been presented in this connection were not obtained as part of a connected story but for the most part as the result of direct and leading questioning.

At the time the bowel symptoms became prominent, the patient was found to have an achlorhydria and a primary anemia associated with the diarrhea. The latter symptom was attributed to the primary anemia and was expected to yield to the treatment of this condition. When it continued in spite of hydrochloric acid and liver extract in adequate and continued dosage, and when the stools presented the appearance so characteristic of sprue, together with the lack of evidence of subacute combined sclerosis, the diagnosis of sprue was seriously entertained.

Strauss[25] and Schroeder[26] have shown that altered functions of the gastric mucosa and of the hematopoietic system may occur in association with chronic dysentery. These cases have been classified in three clinical groups.[27] Of the chronic carriers, 60 per cent showed hypochlorhydria, some abnormality of the stools, and a reduction of hemoglobin values. Others showed hypo-acidity, a definite chronic colitis sometimes with ulceration, and changes in the blood picture. The third group presented a frank recurrent dysentery and colitis, intestinal ulceration, and cachexia. In 1912, Castellani[15] reported three cases of chronic Flexner dysentery in which there was an associated clinical picture indistinguishable from sprue although occurring in a locality in which sprue was not considered endemic. Recently a detailed study of the anemias associated with chronic dysentery has been made at Peiping.[28] In the group as a whole, all the features said to be characteristic of pernicious anemia have been observed. The conclusion is reached that the cause of the anemia is not always the same, but the most important factors in its development seem to be the nutritional disturbances resulting from a faulty diet and a process that interferes with normal nutrition. Gastric anacidity, loss of blood, and infection are considered to be important contributory factors. In the case here reported it has not been possible to demonstrate a dietary deficiency, although the primary anemia seemed to develop during the period of observation. The other factors of anacidity and infection were both present. Elimination of the infection, however, has not altered the condition of the blood.

## SUMMARY

1. The Flexner-Y group of dysentery bacilli may cause sporadic cases of mild diarrhea and dysentery. The occurrence of these cases does not require the presence of epidemic conditions.

2. A significant number of these individuals may become persistent carriers and develop ulcerative lesions of the lower part of the bowel, even though the initial acute attack may have been very mild.

3. The lesions of chronic bacillary dysentery differ in no respect from those encountered in many of the cases of so-called chronic ulcerative colitis.

4. Intermittence of the excretion of the bacilli is one of the characteristics of chronic Flexner bacillus infection, and repeated cultures over a period of weeks may be necessary to demonstrate them.

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[25] Strauss, H.: Zur Behandlung von Folgezustanden der Ruhr, Therap. d. Gegenw. **58**: 409-414 (Dec.) 1917.

[26] Schroeder, A.: Ueber Folgezustande der Ruhr, Deutsche med. Wchnschr. **43**: 1162-1164 (Sept. 13) 1917.

[27] Walko, K.: Ueber der Spatfolgen der Ruhr, Med. klinik **19**: 1319 (Oct. 7) 1923.

[28] Keefer, C. S.; Yang, C. S., and Huang, K. K.: Anemia Associated with Chronic Dysentery, Arch. Int. Med. **47**: 436-466 (March) 1931.

5. Cultures taken direct from the floor of the ulcers through the sigmoidoscope materially increase the probability of recovering the organisms.

6. Autogenous vaccine in adequate dosage sufficiently prolonged is an efficient therapeutic procedure.

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# BACILLURIA UNDER KETOGENIC TREATMENT

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In a discussion on the persistence with which attempts to dislodge the colon bacillus from the urinary tract are defeated, Barborka reminded me that the urine of patients who are receiving a diet high in fat and low in carbohydrate is considerably acidified. Shohl and Janney,[1] a number of years ago, demonstrated that growth of colon bacilli was inhibited in urine of which the acidity was as great as $p_H$ 4.6 or 5.0, or alkalinity as much as $p_H$ 9.2 or 9.6.

In October, I [2] reported the results in two cases of bacilluria of Escherichia coli type, in which the ketogenic diet was given. Since that time, the treatment has been applied in several additional cases of persistent bacilluria, and the patients have been under observation long enough to allow the results to be evaluated.

In the accompanying table is a summary. Several notable features emerged from observation of these cases:

1. The general condition of the patient must be such that he can endure the alteration in his diet. A patient who is able to take a moderate amount of exercise is a far more satisfactory subject for this type of treatment than one who is necessarily confined to bed.

2. Cooperation of the patient is absolutely necessary. In cases 2 and 6 in the table the patients were not cooperative, and the results obtained, as judged by the $p_H$ of the urine, were correspondingly disappointing.

3. The patient must be able to digest and assimilate fats. This was clearly demonstrated in case 15; the patient apparently was unable to prepare the ingested fats for assimilation. He had undergone resection of the stomach, but whether this fact is relevant to his inability to rid himself of bacilluria cannot be stated.

4. The normal intake of fluid should be maintained. Increase in the intake of fluids may cause undesirable dilution of ketogenic products.

5. If the infection is in the upper part of the urinary tract, treatment must be continued for a longer time than if the infection is in the bladder.

6. The ketogenic diet tends to entail constipation and gastro-intestinal upsets, but a dietitian can forestall these effects.

7. Escherichia coli responds to this type of treatment more readily than organisms of the genus Pseudomonas or than Aerobacter aerogenes. These organisms apparently continue to grow at an acidity which entirely inhibits the growth of Escherichia coli. However, in cases in which the organisms present were gram-negative bacilli other than Escherichia coli, with the exception of case 15, the symptoms were greatly improved, the haziness of the urine disappeared, and only on culture of the urine was it possible to find organisms.

8. When patients are given the ketogenic diet, the appearance of acetone bodies in the urine and increase in the acidity of the urine would be expected. Nevertheless, in some cases such bodies are not found and acidity is not increased. Case 15 is in point. The patient was given the ketogenic diet without success and then was given large doses of ammonium nitrate and ammonium chloride, which also would tend to lower the $p_H$ of the urine. However, the reduction in $p_H$ actually accomplished was only 0.3.

9. The effect of the ketogenic regimen does not seem to be solely the result of reduction of the $p_H$ of the

*Treatment of Cases*

| Case (All Male) | Age | Duration of Illness Before Ketogenic Treatment | Initial Condition of Upper Part of Urinary Tract | Organisms in Culture of Urine | Days of Diet Until No Growth on Culture | $p_H$ of Urine at Start of Ketogenic Treatment | Lowest $p_H$ of Urine (Under Treatment) | Culture of Urine, Last Examination* |
|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 3 years | Not known | Escherichia coli and Aerobacter aerogenes | 11 | 6.8 | 5.0 | No growth |
| 2 | 56 | 2 months | Negative | Escherichia coli | 7 | 6.9 | 5.7 | No growth |
| 3 | 54 | 18 months | Pyelonephritis | Escherichia coli | 12 | 6.3 | 4.6 | No growth |
| 4 | 60 | 6 years | Bilateral pyelonephritis | Genus Pseudomonas | 18† | 6.8 | 4.4 | Pseudomonas |
| 5 | 65 | 2 months | Negative | Aerobacter aerogenes | 14† | 6.8 | 5.3 | No symptoms; few Aerobacter aerogenes organisms; urine clear |
| 6 | 66 | 3 years | Negative | Aerobacter aerogenes | 11† | 6.8 | 5.7 | Few symptoms; bacilli present; glass 1 clear, with shreds; glass 2, clear |
| 7 | 63 | 7 months | Negative | Escherichia coli | 8 | 7.0 | 5.0 | No growth |
| 8 | 28 | 1 year | Pyelitis | Escherichia coli | 16 | 6.5 | 5.3 | No growth |
| 9 | 56 | 18 months | Negative | Escherichia coli | 8 | 6.6 | 5.2 | No growth |
| 10 | 40 | 2 years | Bilateral pyelitis | Escherichia coli | 8 | 7.1 | 5.0 | No growth |
| 11 | 59 | 3 years | Pyelitis | Escherichia coli | 9 | 5.7 | 5.0 | No growth |
| 12 | 52 | 3 weeks | Negative | Escherichia coli | 22 | 6.7 | 5.0 | No growth |
| 13 | 28 | 3 weeks | Negative | Escherichia coli | 35 | 7.1 | 5.3 | No growth |
| 14 | 63 | 5 months | Bilateral pyelonephritis | Escherichia coli; Proteus ammoniae | 27 | 7.0 | 5.3 | No growth |
| 15 | 50 | 18 months | Pyelitis | Aerobacter aerogenes | 6‡ | 6.7 | 6.5 | Aerobacter aerogenes |

* In cases 5 and 6, for reasons obvious in the other footnotes, features other than the results of urinary culture are listed.
† On the days indicated, organisms still grew on culture but the patients could not remain for further treatment.
‡ Patient's condition unsuitable for further treatment, as explained in the text.

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[1] Shohl, A. T., and Janney, J. H.: The Growth of Bacillus Coli in Urine at Varying Hydrogen Ion Concentrations, J. Urol. **1:** 211-229 (April) 1917.

[2] Clark, A. L.: Escherichia Coli Bacilluria Under Ketogenic Treatment, Proc. Staff Meet., Mayo Clin. **6:** 605-608 (Oct. 14) 1931.

urine. There is apparently some bactericidal substance in the urine of patients who are under the ketogenic treatment, for growth of the bacilli may be inhibited even though the $p_H$ of the urine is more than 4.6 or 5.0.

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# SUICIDE

## POSSIBILITIES OF PREVENTION BY EARLY RECOGNITION OF SOME DANGER SIGNALS

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The cunning of the suicidal impulse is so baffling and the result such a deplorable frustration of medical effort that the dangers cannot be too often emphasized nor the importance of a continued search for a better understanding of the underlying factors overstressed. At the suggestion of Dr. Adolf Meyer, a careful study of 100 cases of suicidal attempts was made for the medical and nursing staff of the Henry Phipps Psychiatric Clinic, of which some of the deductions may be of wider interest.

Historically, it has been found that the attitude of the individual and of the public toward suicide has undergone many changes throughout the past centuries. Among the Greeks and Romans[1] it was an outgrowth of individualism and was not associated with shame but was rather considered a matter of honor, a custom present today in Japan, where hara-kiri, or honorable suicide, still exists. During the middle ages suicide became infrequent, but with the reformation and the recognition of individual freedom it increased. The reaction to this exacerbation brought about efforts at control by refusal of funeral rites or by legal punishment of the unsuccessful. Many of these laws have been repealed in this country,[2] and attempts at self-destruction are treated with some commiseration. What is more important, a study of the cases and more interest in help and prevention by attempts to understand and to determine better ways of dealing with the individual and with the group attitude has slowly been developing among the medical profession.

A large amount of literature has gradually accumulated on the question of suicide, written more from the standpoint of sociology,[3] pathology[4] and psychoanalysis,[5] with relatively few articles of practical help concerning the prevention.[6] The intentional termination of life is by no means always due to mental disorder;[7] if one considers the patients seen in an accident dispensary,[8] one has the general impression that a number of attempts come as impulsive or ruminative despair and spite reactions and are not the result of a mental illness so much as a maladaptation to the situations of life, reacted to in a rather childish, impulsive way.

The present study of forty-seven women and fifty-three men is principally concerned with attempts in which the physician, the nurses and the friends of the "suicide" have reason to feel that with better knowledge and greater care and attention it might have been possible to prevent what is usually a serious trauma to the unsuccessful and a deplorable event to everybody. While practical help may perhaps be obtained from the unheeded warnings and from the failures in judgment that seem to stare one in the face in retrospect, a brief analysis will first be presented of the facts given by the case histories concerning the types of mental reactions in which this urge occurs, the apparent motives, what the patients talked about, the personality, the heredity and the variety of suicidal methods of which one should be aware.

### MENTAL REACTIONS

As reported over a period of many years by various writers, suicide has occurred in almost every type of mental illness, but it is most frequently associated with depression.[9] In 100 cases studied, 73 presented outspoken depressions and 17 of the 24 paranoid and schizophrenic cases showed at least depressive waves; there were, moreover, 5 patients with psychopathic personalities, 2 cases of dementia paralytica and 1 case each of epilepsy, chronic invalidism and recurrent manic excitement. The depressions included agitated, hypochondriacal, paranoid, unreality, obsessive and manic-depressive types.

### MOTIVES

In a study of 500 cases by Mühl,[10] there was always a feeling of failure or frustration. In analyzing the life situations of our group, this is often apparent: it may be a failure at self-control, or grieving over a loss, or any of the variety of frustrated ambitions which one finds in the study of a personality. While certain writers give incest, onanism, wishing for the death of another individual and escape in order to return to the prenatal state as analytic interpretations, these motives have not been apparent in our material. We see rather the wish to escape from mental suffering, from fears or difficult family situations and disappointments, and whether this can be interpreted as the freudian death-wish depends on the trend of one's analytic interest. "Hopelessness" and "despair" were spoken of in about half of the case histories in which motives were stated. It is interesting to note the relative frequency of the statement of a fear or sometimes the conviction that a patient has of "losing his mind" or "going crazy." This topic of a fear of insanity was found to occur more frequently in depression, but it also occurred in the schizophrenic, the constitutional psychopathic and the paranoid reactions. The fear of insanity seemed in a few cases to be related to a fear of the inheritance of

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[1] Rost, Hans: Bibliographie des Selbstmords, Augsburg, Haas & Grabherr, 1927.

[2] Hoffman, F. L.: Suicide Problems, Spectator, 1893-1928. East, W. N.: Suicide from the Medicolegal Aspect, Brit. M. J. **2:** 241 (Aug. 8) 1931.

[3] Morselli, H.: Der Selbstmord: Ein Kapital aus der Moralstatistik autorisierte Ausgabe von Scheel, Leipzig, F. A. Brockhaus, 1881. Durkheim, E.: Le suicide; étude de sociologie 2, Paris, Félix Alcan, 1912. Miner, J. R.: Suicide and Its Relation to Climatic and Other Factors, Am. J. Hyg., Monographic Series 2, 1922. Weichbrodt, R.: Der Selbstmord, Berlin, S. Karger, 1923. Halbwachs, M.: Les causes du suicide, Paris, Librarie Félix Alcan, 1930. Bond, Hubert: Suicide from the Sociological Aspect, Brit. M. J. **2:** 234 (Aug. 8) 1931.

[4] Pfeiffer, H.: Ueber den Selbstmord, ed. 5, Jena, Gustav Fischer, 1912.

[5] Clark, L. P.: A Study of the Unconscious Motivations in Suicide, New York M. J. **116:** 254 (Sept. 6) 1922. Roalfe, W. R.: The Psychology of Suicide, J. Abnorm. Psychol. **23:** 59 (April-June) 1928. Crichton-Miller, H.: The Psychology of Suicide, Brit. M. J. **2:** 239 (Aug. 8) 1931.

[6] Benham, H. A.: Some Remarks on Suicides in Public Asylums, J. Ment. Sc. **49:** 447 (July) 1903. Dewey, R.: On the Care of Suicidal Patients and the Responsibility Involved, Wisconsin M. J. **7:** 475 (Jan.) 1909. Placzek: Nervenartz in Berlin: Selbstmordverdacht und Selbstmordverhütung, Leipzig, Georg Thieme, 1915. Salmon, T. W.: A Psychiatric Study of Suicide, J. Nerv. & Ment. Dis. **55:** 105 (Feb.) 1922. Serin, S.: Une enquête medico-sociale sur le suicide à Paris, Ann. méd. psychol. **12:** 356, 1926.

[7] Falret, P.: De l'hypochondrie et du suicide, Paris, Crouillebois, 1822. Esquirol, J.: Sur la monomanie suicide, Paris, Baillière, 1827. Lowrey, L. G.: An Analysis of Suicidal Attempts, J. Nerv. & Ment. Dis. **52:** 475 (Dec.) 1920.

[8] For example, the young woman who runs for help immediately after she has impulsively swallowed a mercuric chloride tablet when her "boy friend" loses interest in her, or the wife who picks up a bottle of iodine and starts to drink it when her husband comes home intoxicated.

[9] Meyer, A.: Thymergastic Reactions, unpublished manuscript.

[10] Mühl, A. M.: America's Greatest Suicide Problem, Psychoanalyt. Rev. **14:** 317 (July) 1927.

mental illness and only infrequently was it associated with conflict over masturbation. In the depressions it no doubt is associated with the difficulty in thinking, which is a frequent complaint in this reaction and taken by the patient as a sign of deterioration and degeneracy. Spite seemed to be a possible motive in a few cases. Other patients apparently chose death as an escape from delusional persecutions such as a fear of being castrated or of being poisoned, killed or tortured. Two patients commited suicide to avoid actual situations which they found it difficult to face, while another, who almost succeeded in decapitating herself, gave as her reason for the desperate attempt the feeling she had of emptiness and inability to discuss her problems with us, a procedure she thought we would insist on, and the conviction that this was evidence of a fundamental lack in her. One man who is still miraculously alive tried for months to mutilate himself because he felt that the physicians wanted him to atone for feelings of guilt over infidelity, and in a later depression he tried to kill himself by jumping from a moving train "for the sake of his family," showing the false sacrificial basis of some suicidal motives.

The main value in a discussion of the actual content lies in the hope that such phrases as "I am an empty shell," "I'm guilty," "I am afraid of going crazy," "there is no hope for me" and "it's no use going on" may become danger signals and give warning that special watchfulness is indicated.

### PERSONALITY

The only outstanding characteristic in common found in a study of the personality traits in this group is the so-called "rigid"[11] or "stubborn" personality, which was noted in about one third of the cases. Probably rigidity or the lack of plasticity in the make-up could be considered as one of the factors of determination, apart from mere impulsive panic, which influence a patient to suicide.

### HEREDITY

A family history of suicide was found in only a few cases, but a history of depression, of psychotic relatives or of alcoholism was more frequent. Whether the tendency to self-destruction is inherited or not, the knowledge of suicides in the family undoubtedly has a suggestive influence.

### METHODS

The methods of self-destruction are of interest as to group habits, to personal tendencies and to preoccupations, and they give information regarding the variety of things from which it is necessary to protect the potential suicide. This varies with the opportunities at hand in the hospital and the somewhat wider possibilities on the outside. Regarding protection, a restriction of the sale of firearms and of poisons such as mercuric chloride, carbolic acid, iodine and potassium cyanide, as well as such sedatives as veronal (barbital), which can be obtained without prescription in Maryland, might help to reduce the number of suicides somewhat where law observance can be generally expected; but there are always other possibilities such as hanging, drowning, inhaling gas, jumping from heights, impulsively plunging down stairs or against a wall, jumping from a moving train, cutting the throat or wrists with a razor blade or a piece of broken glass and jabbing a sharp instrument into the heart. The type of method chosen is also determined by the prevailing social custom or "style," as indicated in the frequent newspaper reports of gunshot wounds and gas poisoning at present, or the cup of hemlock in ancient times. We did not find any specific relation between the type of mental reaction and the method chosen, although in the schizophrenic and paranoid cases the more bizarre means were apt to be chosen.

### WARNINGS

The topic of warnings may perhaps raise the hope that here is something on which dependence may be placed as a help in the prevention of suicide. It will take a further study of control groups to make any "warning" in any way specific of this danger. However, our records show that more than one third of the patients gave a very definite indication of danger by having made a previous attempt at self-destruction. An individual who has once taken this step seems rather more determined to "get away with it," and one finds such statements as "I'll make a better job of it next time." Besides these cases, approximately another third suggested their intentions by talking about it. It has sometimes been said that one need not fear suicide if a patient talks of it, as he "takes it out in talking," but this has not been our experience. This does not mean that in every case record one finds repeated expressions of wanting to die, of threatening suicide or of asking and looking for means with which to do it, for in some records one finds only isolated statements of this sort in the nurses' notes. In many cases, on the other hand, practically the entire talk and activity seem to be concerned with suicidal thoughts or threats. There were fourteen patients who gave no indication of their preoccupation or intention other than the fact that they were depressed or very tense. In contrast to these were six cases in which the suicidal impulse came out of a clear sky, and there were four cases in which we learned only after the disaster that something could have been done had the relatives or friends been more prompt in confiding to us their suspicions. Other symptoms that might be considered as possible danger signs because they immediately preceded the suicidal impulse are such behavior as pacing the floor when the patient has shown no previous agitation, attempting to pull away from nurses or attendants while being accompanied to another part of the building, or an overeagerness to join in some activity outside the ward in an agitated patient who has shown no previous interest. Also the period of convalescence is precarious, as the improvement in symptoms may bring a false optimism and relatively often an unanticipated suicidal attempt.

It is instructive to note that one sometimes finds that patients more or less consciously make an effort to protect themselves against their own morbid impulses. For instance, one of the patients, while in a general hospital, asked the nurse to hide his razor as he "couldn't see it without wanting to cut his throat," which he actually succeeded in doing later when he saw a knife in the office of a physician whom he consulted. Another patient, obsessed with the idea of suicide, refused to go to the carpenter shop "because he couldn't trust himself with anything sharp." Another came to the clinic begging to be taken in because he was afraid he would kill himself. The fact that so many of our patients talked of suicide suggests a half-conscious reaching out for protection.

On the other hand, we often deal with the sly, secretive patient who hides pieces of glass or conceals razor blades in his clothing. Recently a patient was found to have a revolver with him which he said he always carried to protect himself when driving in the country, but he later confessed that he had bought it with the intention of killing himself if we did not find anything wrong with him and did not take him into the clinic, which we fortunately did. A patient entered the hospital with veronal sewed in the lining of her coat which was not discovered until after she had taken enough to produce a stupor for several hours; she later killed herself elsewhere by thrusting scissors into her heart while the nurse prepared her bath. Another woman concealed veronal in the lining of her hat; other patients have procured razors, veronal or revolvers while out on parole and secreted them in their clothes. The duty of searching diligently for such objects is not a pleasant one, but it is very necessary with suicidal patients.

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[11] Muncie, Wendell: The Rigid Personality as a Factor in Psychoses, Arch. Neurol. & Psychiat. 26: 359 (Aug.) 1931.

### SPECIAL PROBLEMS

This brings us to the topic which is perhaps the most difficult but the most instructive if we are to profit by experience, that of the consideration of medical and nursing responsibility and the situations in which judgment plays a rôle. We perhaps need not be as concerned over the patients who were discharged to other hospitals or taken home against our urgent advice, as with the patients who were apparently discharged with our consent, several of whom killed themselves within a period ranging from a few days to five months after leaving the hospital. This is suggestive of a premature discharge rather than of a recurrence of symptoms. No doubt many patients have been allowed to leave the hospital with some misgivings on our part who have made an uneventful recovery, and others have been taken against our advice and have done equally well, but it is important to emphasize the need of a recorded discussion of the risks involved with some responsible member of the family in every discharged case in which suicide has been a problem or even a possibility.

One of the questions that frequently come up for discussion in the hospital is whether or not a patient should be placed on "suicidal observation" and when such orders can safely be discontinued. This order may be either not given in time or prematurely canceled in order to spare the feelings of the patient or to give m[illegible] by permitting greater freedom. [illegible]icide should be such an inherent part of the atmosphere that it should be unnecessary to make special orders for it; nevertheless it seems almost impossible to have a ward free from such potentialities without making the patients in general suffer from a deprivation of interests. Hence there is a need of special technical "suicidal observation," even if it has disadvantages. That this order may have a suggestive influence is also true. Many patients have complained that they had never thought of the various possibilities until their attention was called to doors being locked, windows being guarded, bureau scarfs being removed, nail files and hair pins and scissors being collected; other patients who are somewhat paranoid misinterpret the constant watching. Nevertheless, experience shows that almost all suicidal attempts occur when the patient is left alone, and we should be able to offer protection by obviating this situation. Orders that doors should be allowed to be closed on the latch or for patients who have been depressed to be given parole should be matters of concern, as is the order for an agitated patient to be given permission to be taken for special therapy to other parts of the building. However, the desire to help the patient sleep who is oversensitive to noises, and the effort to encourage the individual apparently recovering from depression to try himself out, or to keep the agitated patient from chafing unnecessarily against restrictions are all understandable exceptions to the usual routine of suicidal protection and not without therapeutic justification. Experience would nevertheless warn us not to take these risks unless there is good rapport with the patient or an understanding with the family regarding the sharing of responsibility.

This question of responsibility in cases of suicide becomes at times an unwelcome burden, when legal advantage is sought by survivors of the unhappy patient. To allow the idea to prevail that hospitals, nurses or physicians should be liable for damage, unless neglect is obvious, may do a great deal of harm. Responsibility is hardly ever absolute or one-sided. The cunning and persistence of some of the attempts would baffle almost any measure one might think of. There must be a definite latitude for judgment and not every lapse should be judged indiscriminately. The scope of therapeutic activity prescribed in these cases must depend to a large extent on the rapport with the patient and the willingness of the family to share the responsibility when risks are involved. Measures of protection, however relative, will nevertheless be all the more important.

The following cases are given in brief summary to illustrate some of the special hazards and the somewhat unusual means of succeeding, which are not easily anticipated.

Case 1 shows the power of suggestion and the harmful influence newspaper reports of suicide can have, as well as the danger of having firearms available at home:

Case 1.—A married man, aged 27, came to the general hospital because of hypochondriacal fears of some months' duration and of more recent depression and "lack of concentration" after hearing of the suicide of a friend who had cut his throat with a razor. He worried over thoughts of taking his own life and, when left alone by his nurse, impulsively dived out of the second story window, causing a hemothorax which gradually cleared up. He was transferred to the Phipps Psychiatric Clinic immediately following this impulsive attempt. During the next few months he expressed many vague worries and fears: "I'll be punished for what I have done" (showing guilt over masturbation), or "I think my mind must be affected" (the fear of insanity). With these fears he also had waves of depression but was beginning to show an interest in activities again when he read in the newspaper that a patient who had been discharged home shortly before and with whom he had talked a good deal about farming had shot himself. This came on top of a little flurry of discouragement over having heard an orderly talk of taking a patient to the city hospital "as he was incurable." After reading of the suicide, the patient could not seem to throw off the fear that he would kill himself. He spoke of "not being willing to trust himself with a gun" and did not go to a carpenter shop lest he "cut his throat"—an effort to protect himself. He was obviously filled with a fear of suicide that amounted almost to fascination. He brooded over his symptoms and said "my mind is not functioning," "I'm hopeless of ever getting it right," and spoke of the family history of insanity. The patient was allowed to go to the pool room one evening and managed to avoid the nurses and escape and get home without attracting immediate attention and had shot himself before the physicians who followed him home could reach him. Naturally, this patient was unusually suggestible, but had the incident of the newspaper notice occurred when he was not in a depressed wave, he might not have acted on the suggestion.

Case 2 illustrates the dangers of stairs and walls. This case is also chosen to show that a depressed patient who develops delusions of persecution can be very desperately driven to suicide.

Case 2.—A single man, aged 49, complained of worry over past sex affairs and responded to efforts to discuss this topic with him by a fear that what he had said would be used against him. He regretted having told so much of his personal affairs, became suspicious that the patients were at the clinic to get data on him and that the government had set traps for him and would punish him. The next step was a belief that his food had been "doped" in order to make him talk and that a dictaphone had been used to record what he had said. He was recognized as suicidal and the extra watching required by suicidal observation only made him suspicious that he was being watched to detect masturbation, and he then developed a fear that he would be castrated. He said that he was "crazy" and that there was "no hope" for him now, and he felt he had in some way disgraced the whole institution. It was impossible to reassure him.

In a state of such widespread misinterpretation it would no doubt have been wiser to restrict the patient's activities to the ward, but in an effort to stimulate his interest in work he was taken to the occupation rooms and while there talked constantly to himself, which showed his preoccupation. On the way back to the ward he broke away from the nurse and attendant who were accompanying him and plunged head first down the marble stairs, fracturing his neck.

One cannot easily hope to prevent a strong patient from suddenly pulling away from those accompanying him. While in such a panic, occupation should be brought to the ward and the risk of impulsiveness thereby somewhat reduced. Unfortunately, even within the ward one patient has been successful in breaking his neck by butting his head against the wall.

The dangers of the transportation of a depressed patient need to be emphasized. Case 3 is presented to show the type of precaution needed in cooperation with the railroads:

Case 3.—A single woman, aged 57, who became suicidal and self-accusatory following the death of her mother and the breaking up of her home, was on the train being transferred from the clinic to another institution when she managed to escape from her nurse and a relative long enough to lock herself in the toilet room, and she was able to get the window up and jump from the moving train before the porter could be reached and the door opened.

Another patient, mentioned previously in the discussion of "motives," got out of the window of his berth while left alone a minute, but escaped death almost miraculously, sustaining only a few bruises.

This gives a few of the situations of which one needs to be aware in caring for the potential suicide.

## SUMMARY

The only possible cure of suicide is prevention. What are some of the guide-posts one can use?

1. Most suicides occur in patients who are depressed, but suicide is also relatively frequent in schizophrenic and paranoid patients, especially those whose conversation reveals depression.
2. Disappointment over some situation which seems unmodifiable to the rigid individual is perhaps the most common motive in suicide. A common feature in our cases is the talk of hopelessness, of wanting to die, of a fear of "going crazy"; such expressions as "a feeling of emptiness," of "guilt," or the special preoccupation with various delusions of persecution and with autistic fantasy.
3. The "rigid personality" is present in about one third of the cases and shows the need of careful watching.
4. A family history of suicide is apt to reduce the resistance.
5. Methods show the things from which patients need to be protected. In the hospital the impulsive plungers are especially difficult to take care of. On the outside, suicides from gas, gun-shot wounds and drowning are frequent.
6. Warnings are to be found in previous attempts and the frequent talk of suicide. Some patients, however, give no warning; others apparently try to protect themselves, while a third group conceal the means of suicide.
7. Special problems involve such questions as when to put a patient on suicidal observation and when to take him off, and how much risk to take in order to encourage an interest in occupation or to avoid unnecessary chafing against restrictions. The methods to be adopted must in the end rest with the personnel in charge, depending to a large extent on the rapport with the patient and the willingness of the family to share the responsibility which such a risk involves.
8. Finally, regarding prevention, I would suggest the restriction of the loose handling of firearms, poisons and sedatives, if possible, and would urge the cultivation of a sensitiveness to the aforementioned symptoms, warnings and mistakes. It is necessary to realize that a suicidal patient must never be left alone.

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# POLYCYTHEMIA VERA

## REPORT OF CASE TREATED WITH PHENYLHYDRAZINE HYDROCHLORIDE OVER PERIOD OF SEVEN AND ONE-HALF YEARS

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In April, 1928, I[1] reported a case of polycythemia vera which had been under observation and treatment with phenylhydrazine hydrochloride for three and one-half years and drew the following tentative conclusions from my experience with this case:

1. The erythrocyte count may be kept near normal limits by the periodic administration of 2.1 Gm. of phenylhydrazine hydrochloride divided into daily doses of 0.1 Gm. each. The drug may then be safely discontinued for intervals of one and one-half months.
2. No apparent tolerance to the drug was acquired.
3. The increase in leukocytes may possibly be used as an index to the administration of the drug.
4. No apparent deleterious effect on the liver was observed.

Treatment of this patient for the first six months consisted of the removal of three infected teeth, the administration of splenic extract and benzene by mouth, and roentgen therapy to the long bones. Under this treatment the patient noted some subjective improvement and there was some diminution in the size of the spleen, but there was very little change in the red blood cell count. Medication was then changed to phenylhydrazine hydrochloride by mouth and for the past seven and one half years the patient has been under constant observation and treatment with this drug. I feel that sufficient time has now elapsed to allow me to draw some more or less definite conclusions in regard to these four points under consideration and to suggest some possible explanations for the apparent discrepan-

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From the Rees-Stealy Clinic.

[1] Stealy, C. L.: Polycythemia Vera, J. A. M. A. 90: 1287 (April 21) 1928.

cies brought out by other workers in the results obtained in the treatment of polycythemia with phenylhydrazine.

The observations of the physical examination at this time are not essentially different from those of seven and one-half years ago. The patient states that subjectively she is feeling very well and recently she has been doing rather heavy work connected with fitting up an apartment house. The skin is of a moderately dusky color and the mucous membranes are normal in color when the red cell count is down. The chest and heart manifestations are normal. The liver edge is slightly palpable on deep breathing and the spleen extends to the midline and almost to the crest of the ileum. The spleen is now smooth, however, and no tenderness can be elicited, whereas at the time of my first examination it had a sharp edge and notch and was exquisitely tender. Pelvic examination revealed a normal condition.

1. *Dosage.*—Based on the constant results observed in the treatment of this case, on my experience with two other cases and on the observations of others, especially Giffin [2] and Altnow and Carey,[3] it is my belief that the necessary dosage will vary with the individual case but that, once it has been established, the patient will respond consistently within normal variations to the same dosage. The dosage may vary with different individuals.

2. *Tolerance.*—My experience with this case [1] has disclosed no evidence to show that a patient will develop a tolerance to the drug and require a constantly increasing dosage. It would appear that the patient at times acquired a temporary tolerance to the drug, but in subsequent periods her reaction to the original dosage was the same as during the first periods of medication. This indicates, I believe, that some unknown factor may produce a temporary tolerance, and it may be that instances of increased tolerance to the drug reported in the literature [4] were obtained during such temporary periods of increased tolerance and that, had further observation of the case been possible, the previous reaction to the drug would have been obtained.

3. *Leukocytosis as an Index to Treatment.*—The rise in the leukocyte count precedes the fall of the red cell count in most periods of medication, and the rise of the white cell count varies in different periods of medication, but I do not feel that the white cell count can be used as an index to treatment. At the time of the highest rise of the white cell count, during the period from Nov. 20 to 28, 1930, its use as an indicator for the discontinuance of the drug would have been quite correct, for there was a decided drop in the red cell count. During the period of medication between June 13 and July 1, 1929, however, when the white cell count reached its second highest point, the red cell count varied but little. During this period, therefore, a discontinuance of the drug although seemingly indicated by the extreme leukocytosis was in reality not justified since there had been but little decrease in the red cell count. An explanation of this variability may be found in Allen's [5] experimental work. He reports that the phenylhydrazine seems at times to act directly on the hematopoietic system and at other times directly on the red blood cells—hemolysis; the increase in the white cell count may be due partly to the breaking down of the red cells and partly to the stimulation of the hematopoietic system. This variability leads me to conclude that the rise in the leukocyte count cannot be used as an indicator for the discontinuance of the drug.

4. *Development of Cirrhosis of the Liver.*—After seven and one-half years of treatment there is no physical evidence of a cirrhosis of the liver in the case under discussion. Nov. 18, 1930, six years after treatment with phenylhydrazine was started, the liver function test in which bromosulphalein was used showed no retention of the dye. It seems probable that any damage to the liver resulting from the use of the drug would have begun to make itself apparent over this period.

Table 1.—*Basal Metabolic Readings*

| Date | | Reading |
|---|---|---|
| 6/10/29 | Before starting phenylhydrazine........... | Plus 19 |
| 6/17/29 | While taking phenylhydrazine............. | Plus 31 |
| 6/24/29 | While taking phenylhydrazine............. | Plus 18 |
| 7/ 1/29 | After stopping phenylhydrazine........... | Plus 25 |

The differential leukocyte counts have revealed a uniformly high neutrophil and low lymphocyte percentage. This is in accord with the observations of Altnow and Carey [3] and also of Allen and Giffin.[5]

That the basal metabolic rate is increased in polycythemia has already been noted, especially by Bliss [6] and by Minot and Buckman.[7] My readings varied, from plus 19 to plus 31. A reading of plus 19 was obtained, June 10, 1929, before a period of medication was started; readings of plus 31 and plus 18 on June 17 and 24, respectively, while the drug was being administered, and plus 25 on July 1 after medication was discontinued. From these variations it would seem that, although the readings are above normal, such readings are a result of the disease and not an effect of the phenylhydrazine therapy.

The urea, nitrogen and creatinine determinations apparently do not vary from normal. It is also to be noted that there is no variation either at the height of destruction of red cells or during the rest periods.

Table 2.—*Blood Chemistry Determinations*

| Date | | Urea Nitrogen, Mg. per 100 Cc. | Creatinine, 100 Mg. per 100 Cc. |
|---|---|---|---|
| 11/14/24 | While taking phenylhydrazine.. | 14.5 | 2.04 |
| 12/27/27 | While taking phenylhydrazine.. | 16.2 | 2.25 |
| 9/24/28 | Not taking phenylhydrazine.... | 17.0 | 2.2 |
| 11/17/30 | Not taking phenylhydrazine.... | 13.3 | 1.8 |

The carbon dioxide combining power is apparently within normal limits, and there is no variation either during treatment or during rest periods.

During the resting stage the icterus index reading is normal or slightly above normal, but during the period of treatment it increases markedly and the patient develops a clinical jaundice. The serum bilirubin during the resting periods is apparently slightly higher than normal, in my case 1.65 mg. per hundred cubic centimeters (normal, from 0.1 to 0.3 mg.) but during the height of treatment the icterus index rose to 35 (normal, from 4 to 6) and the serum bilirubin to 4.5 mg. per hundred cubic centimeters. An immediate direct van den Bergh reaction was not obtained at any examination. In each instance the reaction was delayed, indicating a hemolytic jaundice.

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[2] Giffin, H. Z.: Treatment in a Case of Polycythemia Vera, M. Clin. North America **12**: 1497-1500 (May) 1929.

[3] Altnow, H. O., and Carey, E. B.: Case of Polycythemia Vera Treated with Phenylhydrazine Hydrochloride with Special Reference to Changes in Blood Morphology, J. Lab. & Clin. Med. **12**: 597-606 (March) 1927.

[4] Leopold, S. S.: Treatment of Polycythemia Vera with Phenylhydrazine, M. Clin. North America **10**: 229-239 (July) 1926.

[5] Giffin, H. Z., and Allen, E. V.: Experiments with Phenylhydrazine: I. Studies on the Blood, Ann. Int. Med. **1**: 655-656 (March) 1928.

[6] Bliss, T. L.: Basal Metabolism in Polycythemia Vera, Ann. Int. Med. **2**: 1155-1161 (May) 1929.

[7] Minot, G. R., and Buckman, T. E.: Erythremia (Polycythemia Rubra Vera); Development of Anemia; Relation to Leukemia; Consideration of Basal Metabolism; Blood Formation and Destruction and Fragility of Red Cells, Am. J. M. Sc. **166**: 469-489 (Oct.) 1923.

Kidney tests have disclosed no apparent indication of kidney damage. The intravenous phenolsulphonphthalein test, Sept. 11, 1928, showed the appearance of 66 per cent of the dye in the first hour and 22 per cent in the second hour, a total of 88 per cent; June 22, 1929, the test showed 77 per cent of the dye in the first hour and 16 per cent in the second, a total of 93 per cent; in November, 1930, 35 per cent of the dye appeared in the first thirty minutes, 20 per cent in the second thirty minutes and 7.5 per cent in the second hour, making a total of 62.4 per cent. This last reading is somewhat lower than the previous determinations but is still within normal limits.

Table 3.—*Icterus Index Readings*

| Date | Icterus Index, Mg. per 100 Cc. (Normal, 4-6) | Serum Bilirubin, Mg. per 100 Cc. (Normal, 0.1-0.3) | Reaction |
|---|---|---|---|
| 11/20/30...... | 12.5 | 1 65 | Delayed direct reaction |
| 11/21/30...... | 15 3 | .. . | Delayed direct reaction |
| 11/22/30...... | 19.0 | . . . | Delayed direct reaction |
| 11/24/30...... | 20.6 | .... | Delayed direct reaction |
| 11/25/30...... | 25.0 | 2.9 | Delayed direct reaction |
| 11/26/30...... | 25 0 | .. . | Delayed direct reaction |
| 11/28/30...... | 33.0 | 4.5 | Delayed direct reaction |

My observation of this patient over a period of years has suggested to me that some of the discrepancies as to results of treatment with phenylhydrazine hydrochloride found in the literature may be explained by the fact that single determinations were made on patients observed for short periods. Observations in the same patient vary at different times and I believe that some unexplained physiologic condition of the patient at the time may account for the variation in reaction to the drug. It is my belief that, in all cases of polycythemia vera treated with phenylhydrazine, the patient must be individualized and treated as indicated by his individual reaction to the therapy.

Table 4.—*Phenolsulphonphthalein Kidney Function Test*

| Date | | 1st Hour, Per Cent | 2nd Hour, Per Cent | Total, Per Cent |
|---|---|---|---|---|
| 9/11/28 | Not taking phenylhydrazine.. | 66 | 22 | 88 |
| 6/26/29 | While taking phenylhydrazine | 77 | 16 | 93 |
| 11/10/30 | While taking phenylhydrazine | 55 | 7.5 | 62.5 |

## CONCLUSIONS

My experience with the use of phenylhydrazine hydrochloride in the treatment of a case of polycythemia vera over a period of seven and one-half years has seemed to me to show that:

1. Once the necessary dosage has been established for the individual patient, the patient will respond to that dosage consistently.
2. The patient does not acquire a tolerance to the drug necessitating increasing dosage.
3. The leukocyte count cannot be used as an index to treatment.
4. The drug does not produce any apparent deleterious effect on the liver or kidneys.

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# HEMORRHAGE INTO THE STROMA OF BOTH OVARIES

## A SEQUEL OF MITRAL STENOSIS

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CHICAGO

Hemorrhage into the ovarian stroma is an infrequent occurrence according to most authorities. Kaufmann[1] describes the lesion and states that the ovary may reach the size of a child's head and look like a blood-soaked sponge. Karsner[2] speaks of rupture of vessels in the margin of the corpus luteum producing diffuse hemorrhage throughout the ovary but adds that diffuse is much more unusual than focal hemorrhage. Aschoff[3] and Stengel and Fox[4] mention chronic heart disease and poisonings as etiologic factors in interstitial ovarian hemorrhage. "Hemorrhage into the ovary has been found at autopsy" constitutes the sole reference to this lesion *in the discussion of ovarian hemorrhage* in typhoid in one reference system.[5] Classifications of ovarian hemorrhage are numerous. That suggested by Novak[6] is theoretically sound and practical. His division into follicular hematomas which may be of either the graafian or the atretic follicle, corpus luteum and stromal hematomas represents a compromise between previous arrangements, some of which were simpler but not as specific, and others which were obviously too complex. He lists the causal agents in the various types of hemorrhage as local or general; includes under the former menstrual hyperemia and nonmenstrual factors as the active hyperemia of pelvic inflammations, the passive hyperemia caused by thrombosis, varix or torsion of the ovarian pedicle, and the vascular disturbances occasioned by primary or secondary neoplasms. Under the general causes are included blood dyscrasias, disorders of nutrition, hemophilia, infections such as typhoid, phosphorus poisoning, burns, and hyperemia of the abdominal organs.

This arrangement is adopted by Blair,[7] who adds, as a source of hemorrhage, endometrial ovarian implants as described by Sampson.[8] Forssner[9] was able to find evidence of ovarian pregnancy in two cases of ovarian hematoma and was of the opinion that serial section of all such hemorrhagic ovaries was necessary to rule out pregnancy. As a matter of fact, he was convinced of the existence of pregnancy even when there was no sign of its presence in serial sections. He emphasized that parts of ova may be shed with blood, become embedded in the clot and degenerate, or become infected, rendering identification difficult.

In the overwhelming majority of reported ovarian hemorrhages the bleeding is traceable to the follicular structures, including under this head the corpus luteum.

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From the Norman Bridge Pathological Laboratory, University of Chicago, Rush Medical College.

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[5] McCrae, Thomas: Osler's Modern Medicine, New York, Lea & Febiger **1:** 133, 1925.

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[7] Blair, E. M.: Ovarian Hematomata, Surg., Gynec. & Obst. **37:** 379 (Sept.) 1923.

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Novak [6] found that this prevailed in a study of eighty-five ovaries removed at operation. The hematomas were usually under 2 cm. in diameter, although he found one 6 cm. in diameter. In correlating the ovarian lesions with the stages of the menstrual cycle, he found follicular hemorrhages of the ovary and the perifollicular hyperemia which preceded them, occurring usually at or near the time of ovulation. Thus, such hemorrhages were seen between the seventh and sixteenth days of the cycle, while corpus luteum hemorrhages occurred later, from the sixteenth to the twenty-fifth day. Runge [10] was also impressed with the importance of menstrual cyclic changes in the 120 ovaries that he studied. He cut them in sections 5 mm. thick; he never found hemorrhages in the sclerotic small ovaries of women past the menopause, but in those of women in the childbearing period they were invariably present. There was no hemorrhage in fourteen ovaries from women past the menopause; hemorrhage emanating from follicular structures occurred 100 times and diffuse interstitial hemorrhage was noted 6 times. The sclerotic small ovaries had a poor vascular supply and no formation of follicles or corpora lutea. The localized hemorrhages were pinhead to almond sized, flat or irregular, and commonly surrounded by a small yellow band. At times the blood accumulations had a sickle form representing extravasation from the capillaries of the torn theca interna, which bulged the granulosa but did not break through into the follicle cavity. At times the blood was seen outside the shredded theca externa in the stroma, an extrafollicular hematoma.

*Diagnosis in Women from Whom Ovaries Were Removed*

| Diagnosis | Number of Cases |
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| Chronic pelvic inflammatory disease | 62 |
| Myoma of the uterus | 20 |
| Carcinoma of the uterus | 14 |
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| Pyovarium | 5 |
| Metropathia hemorrhagica | 4 |
| Tubal pregnancy | 3 |
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| Torsion of cyst pedicle | 1 |

The diagnoses in the women from whom these ovaries were removed are enlightening as shown in the accompanying table. Diffuse ovarian hemorrhage occurred in only the pyovaria and torsion of the cyst pedicle where it really is to be expected.

The occurrence of bleeding from a ruptured corpus luteum has also been traced to hyperemia induced by coitus.[11] Indulgence in such sports as rowing, tennis, and horseback riding may also lead to follicular rupture. It was also seen to follow straining at stool [12] and vomiting, as in an attack of appendicitis.[13] Hemorrhage from a corpus luteum with normal pregnancy is also recorded.[14]

Most observers seem to find no difficulty in locating the site of hemorrhage, but a few apparently have been unable to locate the source. So difficult did it appear to Cantoni [15] that he advocated special methods for preserving the blood in blocks and sections. Runge [10] encountered twenty-two ovarian hemorrhages in 1,000 laparotomies and was unable to classify twelve of them. Schumann [16] also admits inability to establish the origin of bleeding in some patients. Heidler [11] found numerous references to various etiologic factors in the production of interstitial ovarian hemorrhage but a woful lack of illustrative material. He reported interstitial hemorrhage in both ovaries of a woman, aged 22, who died of a recurrent verrucose aortic endocarditis. Streptococcus septicemia caused universal blood vessel injury in the form of metrorrhagia, bleeding gums, petechia of the skin and hemorrhages into the pleura, endocardium and stomach mucosa. The only reports he found at all similar to his were those of Olshausen,[17] whose patients had scurvy. Hemorrhages of a lesser extent have been observed in osteomalacia and even in newly born infants. Heidler [11] is skeptical concerning the occurrence of such hemorrhages as a result of anemia.

The ovaries that I had an opportunity to study were obtained after death from the body of a single woman, aged 38, who died of cardiac decompensation:

Following scarlet fever at the age of 12 years she had been an invalid because of marked dyspnea and edema of the lower extremities and on numerous occasions had such severe decompensation that death seemed inevitable. When admitted to the service of Dr. Joseph Jaros in the Frances E. Willard Hospital, she was suffering from labored, shallow respirations about 40 per minute; a pulse only occasionally perceptible, and a systolic murmur audible 6 inches away from the chest. For six months she had suffered from constant pain over the precordium, cough, general weakness, and an exaggeration of her dyspnea. A bluish tinge of the finger-tips and eyelids noted for two years also became more pronounced. For the last four weeks of this period she vomited at irregular periods but had no fever. In the hospital she was kept in a semi-Fowler position with knees elevated, received one-sixth grain (4 mg.) of morphine sulphate and two ampules of a digitalis preparation by injection and vomited eight times in fifty-seven hours. Her temperature was 97.2 F. rectally until six hours before death, when it rose to 99 F. The body was examined two hours after death.

The essential items of the anatomic diagnosis were: chronic indurative, deforming and acute thrombo-ulcerative mitral endocarditis; marked mitral stenosis; marked eccentric cardiac hypertrophy; petechiae of the skin; ecchymoses of the pleura and extensive interstitial hemorrhage of the ovaries; ascites; hydrothorax; anasarca; chronic passive hyperemia of the lungs, liver, spleen and kidneys; marked generalized arteriosclerosis.

At the postmortem examination the face and lips were cyanotic; there were five petechial hemorrhages of the skin of the front of the neck, moderate anasarca, and an ascites of about 1,000 cc. of clear straw-colored fluid. There were five subpleural ecchymoses of the left lung near the hilus, each about 1 cm. in diameter. There were about 200 cc. of clear yellow fluid in each pleural cavity, and this, with the space occupied by the huge heart, gave the impression that the lungs occupied about two thirds of their normal space.

The heart weighed 560 Gm. and measured 13.5 cm. vertically and 18.5 cm. transversely. The mitral orifice, viewed from the auricle, was from 15 to 17 mm. in diameter. The edges of the opening were hard, irregular, pitted, and coated with a thin layer of fibrin. The chordae tendineae were thick and so short that the front papillary muscle was attached almost the height of treatment the icterus index rose to 35 (normal, from 4 to 6) and the serum bilirubin to 4.5 mg. per hundred cubic centimeters. An immediate direct van den Bergh reaction was not obtained at any examination. In each instance the reaction was delayed, indicating a hemolytic jaundice.

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[11] Geinitz, Rudolf: Zur Ätiologie d. intraabdominellen Ovarialblutungen, Zentralbl. f. Chir. **55:** 2444 (Sept. 29) 1928. Heidler, H.: Hematoma ovarieinterstitiale, Monatschr. f. Geburtsh. u. Gynak. **63:** 25 (May) 1923.

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[16] Schumann, E. A.: Observations on Hemorrhages of Ovarian and Tubal Origin Not Associated with Ectopic Pregnancy, J. A. M. A. **77:** 692 (Aug. 27) 1921.

[17] Olshausen, Robert: Die Krankheiten der Ovarien, Stuttgart, F. Enke, 1877, p. 18.

Kidney tests have disclosed no apparent indication of kidney damage. The intravenous phenolsulphonphthalein test, Sept. 11, 1928, showed the appearance of 66 per cent of the dye in the first hour and 22 per cent in the second hour, a total of 88 per cent; June 22, 1929, the test showed 77 per cent of the dye in the first hour and 16 per cent in the second, a total of 93 per cent; in November, 1930, 35 per cent of the dye appeared in the first thirty minutes, 20 per cent in the second thirty minutes and 7.5 per cent in the second hour, making a total of 62.4 per cent. This last reading is somewhat lower than the previous determinations but is still within normal limits.

Table 3.—*Icterus Index Readings*

| Date | Icterus Index, Mg. per 100 Cc. (Normal, 4-6) | Serum Bilirubin, Mg. per 100 Cc. (Normal, 0.1-0.3) | Reaction |
|---|---|---|---|
| 11/20/30...... | 12.5 | 1.65 | Delayed direct reaction |
| 11/21/30...... | 15.3 | .... | Delayed direct reaction |
| 11/22/30...... | 19.0 | .... | Delayed direct reaction |
| 11/24/30...... | 20.6 | .... | Delayed direct reaction |
| 11/25/30...... | 25.0 | 2.9 | Delayed direct reaction |
| 11/26/30...... | 25.0 | .... | Delayed direct reaction |
| 11/28/30...... | 33.0 | 4.5 | Delayed direct reaction |

My observation of this patient over a period of years has suggested to me that some of the discrepancies as to results of treatment with phenylhydrazine hydrochloride found in the literature may be explained by the fact that single determinations were made on patients observed for short periods. Observations in the same patient vary at different times and I believe that some unexplained physiologic condition of the patient at the time may account for the variation in reaction to the drug. It is my belief that, in all cases of polycythemia vera treated with phenylhydrazine, the patient must be individualized and treated as indicated by his individual reaction to the therapy.

Table 4.—*Phenolsulphonphthalein Kidney Function Test*

| Date | | 1st Hour, Per Cent | 2nd Hour, Per Cent | Total, Per Cent |
|---|---|---|---|---|
| 9/11/28 | Not taking phenylhydrazine.. | 66 | 22 | 88 |
| 6/26/29 | While taking phenylhydrazine | 77 | 16 | 93 |
| 11/10/30 | While taking phenylhydrazine | 55 | 7.5 | 62.5 |

## CONCLUSIONS

My experience with the use of phenylhydrazine hydrochloride in the treatment of a case of polycythemia vera over a period of seven and one-half years has seemed to me to show that:

1. Once the necessary dosage has been established for the individual patient, the patient will respond to that dosage consistently.
2. The patient does not acquire a tolerance to the drug necessitating increasing dosage.
3. The leukocyte count cannot be used as an index to treatment.
4. The drug does not produce any apparent deleterious effect on the liver or kidneys.

2001 Fourth Avenue.

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# HEMORRHAGE INTO THE STROMA OF BOTH OVARIES

### A SEQUEL OF MITRAL STENOSIS

GEORGE J. RUKSTINAT, M.D.
CHICAGO

Hemorrhage into the ovarian stroma is an infrequent occurrence according to most authorities. Kaufmann[1] describes the lesion and states that the ovary may reach the size of a child's head and look like a blood-soaked sponge. Karsner[2] speaks of rupture of vessels in the margin of the corpus luteum producing diffuse hemorrhage throughout the ovary but adds that diffuse is much more unusual than focal hemorrhage. Aschoff[3] and Stengel and Fox[4] mention chronic heart disease and poisonings as etiologic factors in interstitial ovarian hemorrhage. "Hemorrhage into the ovary has been found at autopsy" constitutes the sole reference to this lesion in the discussion of ovarian hemorrhage in typhoid in one reference system.[5] Classifications of ovarian hemorrhage are numerous. That suggested by Novak[6] is theoretically sound and practical. His division into follicular hematomas which may be of either the graafian or the atretic follicle, corpus luteum and stromal hematomas represents a compromise between previous arrangements, some of which were simpler but not as specific, and others which were obviously too complex. He lists the causal agents in the various types of hemorrhage as local or general; includes under the former menstrual hyperemia and nonmenstrual factors as the active hyperemia of pelvic inflammations, the passive hyperemia caused by thrombosis, varix or torsion of the ovarian pedicle, and the vascular disturbances occasioned by primary or secondary neoplasms. Under the general causes are included blood dyscrasias, disorders of nutrition, hemophilia, infections such as typhoid, phosphorus poisoning, burns, and hyperemia of the abdominal organs.

This arrangement is adopted by Blair,[7] who adds, as a source of hemorrhage, endometrial ovarian implants as described by Sampson.[8] Forssner[9] was able to find evidence of ovarian pregnancy in two cases of ovarian hematoma and was of the opinion that serial section of all such hemorrhagic ovaries was necessary to rule out pregnancy. As a matter of fact, he was convinced of the existence of pregnancy even when there was no sign of its presence in serial sections. He emphasized that parts of ova may be shed with blood, become embedded in the clot and degenerate, or become infected, rendering identification difficult.

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directly to the valve leaflet. Cultures of the heart's blood failed to produce a growth on blood agar.

The right lung weighed 650 Gm.; the left, 540 Gm. Both were boggy from edema and passive hyperemia and had an acute bullous emphysema along the ventral edge. The blood in all the pulmonary vessels examined was fluid, and, although a careful search was made for clots in both pulmonary artery and vein in the region of the ecchymoses in the left lung, none were found. There were calcified nodules of arrested tuberculosis in each upper lobe and in a tracheobronchial lymph gland.

The liver weighed 1,200 Gm. and grossly, as well as microscopically, bore the alterations of marked cyanotic atrophy. The other abdominal organs were the seat of a marked chronic passive hyperemia. Fatty and fibrous plaques typical of senile arteriosclerosis involved the lining of the arteries to the following extent: the coronary, renal, splenic, superior mesenteric, and pulmonary, 15 per cent; the thoracic part of the aorta, 50 per cent; and the abdominal part of the aorta, 75 per cent.

The ovaries were twice normal size, blotchy outside from subserous hemorrhages up to 5 mm. in diameter; alternating with tense gray-yellow cortex, and dripping with blood when cut across. The two ovaries were altered to the same extent and in a similar manner and, on many surfaces made by cutting, had a cortex from 1.5 mm. thick to the thickness of the serosa in the regions of great hemorrhage. The medulla resembled a bloody sponge with scattered fibrous septums.

The peritoneum of the pelvis and of the pelvic organs was dark red, with the finest radicles of the blood vessels visible. This was especially true of the fallopian tubes, which, near their fimbriated ends, were purple. The lining of the uterus was red with a slight pale yellow cast. The renal veins, common iliac and ovarian veins and inferior vena cava were hugely distended with fluid blood. Their lining was smooth and glistening. The fat about the kidneys and abdominal aorta was edematous.

In sections of both ovaries stained with hematoxylin and eosin and phosphotungstic acid hematoxylin, the prominent feature was the vast fresh hemorrhage. The red blood corpuscles were well preserved and all vessels, arteries, veins and capillaries were hugely distended. The media of the arteries was hyalinized as in the senile changes described by Sohma.[18] In all sections the walls of the arteries were intact, although frequently they were entirely surrounded by blood that saturated the stroma. Follicles in any stage of development were few but *corpora albicantia* were in evidence, often with multiple peripheral bloody impregnations continuous with the interstitial extravasations. In many regions nothing but blood was discernible in the central portions of the ovary, but toward the germinal regions columns of blood cells, one cell wide, alternated with a single layer of spindle-shaped cells from the shredded stroma. In the left ovary were two cysts, one in an old corpus luteum, the other in an atretic follicle, but there was no blood in the lumen of either, probably because their fluid contents withstood the pressure from without. The source of bleeding in both ovaries was the capillaries and smaller veins, in many of which actual rupture of the vessel was demonstrable. These vessels were usually some distance from follicles, and, indeed, were best seen when associated with small extravasations in an otherwise unchanged stroma. It was quite plain that bleeding from many places in the medullary part of each ovary had converted them into roughly oval masses with bloody projections, in shape somewhat like mulberries. These excrescences were easily seen grossly through the serosa. With this deep bleeding and its profound distention of the ovaries there were also numerous more or less discrete subserous capillary hemorrhages.

On the basis of the lack of evidences of disease of an inflammatory nature, coupled with the profound pelvic hyperemia, it was concluded that the ovarian hemorrhages occurred from stasis. This stasis in the pelvis was favored by the semi-Fowler position with the knees elevated and by the increased intra-abdominal pressure brought on by vomiting.

Clinically, the complications of mitral stenosis are legion and not infrequently perplexing. The prematurity and intensity of the pulmonary and hepatic disorders, the frequency of arrhythmic and embolic manifestations and the secondary production of insufficiency of the pulmonary valve serve as a starting point for the most varied disease pictures.[19] Dilatation of the left auricle may result in pressure on the recurrent laryngeal nerve and inequality of the pulse. The marked pulmonary surcharge is the basis for pulmonary hemorrhage of such frequency and volume that mitral stenosis is surpassed only by chronic bronchiectasis and phthisis as a cause of hemoptysis.[20] Functional incompetence of the pulmonary artery and its attendant murmur were described by Graham Steell, and Hall[21] asserts that it occurs in 4 per cent of all patients with mitral stenosis. Temporary regurgitation of the pulmonary valve may be produced in some people with healthy hearts simply by holding the breath.[22] The production of such an insufficiency with its protean manifestations of venous stasis seems inevitable in the final stages of mitral stenosis.

The hemorrhages into the ovaries that I examined resulted from stasis unaccompanied by infection or thrombosis. Such hemorrhages are unusual, as it is the stroma rather than the follicular apparatus that is involved.

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# THE OPHTHALMIC TEST FOR SENSITIVITY TO HORSE SERUM

LOUIE N. CLAIBORN, M.D.
NEW HAVEN, CONN.

Since diphtheria antitoxin came into general use in 1894, serum therapy and prophylaxis for this and many other bacterial diseases have been employed widely. Following this type of treatment, serum reactions of greater or less severity have been frequent. In many clinics today the intradermal test for sensitivity to horse serum is employed before serum is administered. The test, however, has never been completely satisfactory because of the inconstancy of the relationship of serum reaction to sensitivity, as determined by this method. There is a definite need for a simple test which will give a more reliable index of the degree of susceptibility of an individual to serum.

In 1928, Spicer[1] reported a series of 353 patients in whom the intradermal and ophthalmic tests for sensitivity to horse serum were contrasted. The results obtained by her suggested that the ophthalmic test is of considerably more value than the intradermal. It seemed of importance to us to compare these two tests in a series of patients and determine their relative value in relation to serum reactions.

In our series the patients tested were instances in which a prophylactic injection of tetanus antitoxin was indicated. They were for the most part ambulatory patients with minor injuries. Those receiving tetanus antitoxin were given 1,500 units intramuscularly. Two well known brands of tetanus antitoxin were used. The study extended over a considerable period of time, so that several different "lots" of serum were necessarily used.

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From the Department of Surgery, Yale University School of Medicine.

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The usual intradermal test was employed. Approximately 0.05 cc. of tetanus antitoxin (horse serum) diluted 1:10 was injected into the skin on the anterior surface of the forearm. The opposite arm was used as a control, physiologic solution of sodium chloride being injected instead of serum. The tests were read after twenty minutes. The intradermal reaction usually appeared in from fifteen to twenty minutes and subsided in from twelve to twenty-four hours. The degree of positiveness was determined by the size of the wheal, presence or absence of pseudopods, and the redness surrounding the site of injection. For the ophthalmic test, one drop of tetanus antitoxin was instilled into the conjunctival sac of one eye. The test was read after fifteen minutes, the remaining eye serving as a control. The positive reactions varied from a slight injection of the conjunctival vessels to a marked conjunctival reddening. When the test was markedly positive, the patient usually complained of some burning and itching of the eye. The positive ophthalmic reactions usually appeared in from ten to fifteen minutes and subsided entirely in from one-half to two hours. No untoward ophthalmic reactions occurred.

When desensitization was necessary, the following procedure was carried out: Of antitoxin diluted 1:10 with physiologic solution of sodium chloride, 0.1 cc. was injected subcutaneously; at half hour intervals the following amounts were injected: 0.2 cc., 0.5 cc., 1 cc. and 2 cc. From this point, undiluted antitoxin was used. Two and one-half hours after the original injection 0.5 cc. was given, and one-half hour later 1.2 cc. This completed the total amount of serum, 2 cc. comprising 1,500 units of tetanus antitoxin. For slight reactions occurring during desensitization, the injection that caused the reaction was repeated after a thirty minute interval and the remaining injections were given according to schedule. For severe reactions epinephrine hydrochloride (0.3 cc. of 1:1,000 solution) was given intramuscularly.

In 465 patients both the intradermal and the ophthalmic tests were employed. The patients varied considerably in age, the youngest being 6 months and the oldest 72 years of age; 321 (69 per cent) were males and 144 (31 per cent) were females. In fifty-seven patients the antitoxin was diluted 1:1 for the ophthalmic tests. Since no untoward reactions occurred, undiluted antitoxin was used for the remaining 408 patients. The positive tests both intradermal and ophthalmic were recorded from + to +++, depending on the severity of the reactions. For the sake of simplicity, however, the results have been grouped into one series and positive tests recorded merely as positive without qualification.

Serum reactions were divided into three groups: immediate reactions, those occurring in less than twenty-four hours; accelerated reactions occurring after twenty-four hours but before the fifth day; and delayed, or ordinary serum reactions, those occurring from the fifth day on. In some instances patients developed more than one type of reaction. These were classified, however, under the group in which they first appeared.

## RESULTS

In all, 465 patients were tested: 26 (5.6 per cent) were positive to both tests; 99 (21.3 per cent) were positive to the intradermal but negative to the ophthalmic test, and 340 (73.1 per cent) were negative to both tests. All patients who had positive ophthalmic tests had also positive intradermal tests. Table 1 illustrates this.

TABLE 1.—*Results of Intradermal and Ophthalmic Tests in Four Hundred and Sixty-Five Patients*

| | Skin + Eye + | Skin + Eye — | Skin — Eye + | Skin — Eye — | Total |
|---|---|---|---|---|---|
| Number of patients........ | 26 | 99 | 0 | 340 | 465 |
| Per cent.................... | 5.6 | 21.3 | 0 | 73.1 | 100 |

There were 426 patients who received tetanus antitoxin: 4 (0.9 per cent) of these had immediate serum reactions. Of 204 patients observed for a period of ten days or more, 12 (5.9 per cent) had accelerated serum reactions and 33 (16.1 per cent) had delayed or ordinary serum reactions. These results grouped according to tests are shown in table 2.

TABLE 2.—*Relation of Tests for Sensitivity to Serum Reactions in Patients Receiving Tetanus Antitoxin*

| | Skin + Eye + | | Skin + Eye — | | Skin — Eye — | | Total | |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % |
| Patients receiving tetanus antitoxin | 17 | 4 | 79 | 18.5 | 330 | 77.4 | 426 | .... |
| Patients observed for ten days or more .............................. | 11 | 5.4 | 43 | 21 | 150 | 73.5 | 204 | 47.8 |
| Cases showing an immediate reaction (occurring in less than twenty-four hours) ........................ | 2 | 11.8 | 0 | 0 | 2 | 0.6 | 4 | 0.93 |
| Cases showing an accelerated reaction (occurring after twenty-four hours but before the fifth day)... | 3 | 27.2 | 3 | 7 | 6 | 4 | 12 | 5.9 |
| Cases showing delayed or ordinary serum reaction (occurring from the fifth day on).................. | 2 | 18.2 | 6 | 14 | 25 | 16.7 | 33 | 16.1 |
| Cases showing no reaction.......... | 4 | 36.4 | 34 | 79 | 117 | 78 | 155 | 76 |

Desensitization was done on twenty patients: two of these (10 per cent) had immediate serum reactions so severe that complete desensitization was not attempted. Twelve patients were observed for at least ten days; of these, three (25 per cent) had accelerated serum reactions, and two (16.6 per cent) had delayed serum reactions (table 3).

TABLE 3.—*Serum Reactions Following Desensitization Patients Grouped According to Tests*

| | Skin + Eye + | | Skin + Eye — | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Patients desensitized .............. | 13 | 65 | 7 | 35 | 20 | .... |
| Desensitized patients observed for ten days or more.................. | 9 | 75 | 3 | 25 | 12 | 60 |
| Cases showing an immediate reaction ................................ | 2 | 15.4 | 0 | 0 | 2 | 10 |
| Patients showing an accelerated reaction ........................... | 2 | 22.2 | 1 | 33.3 | 3 | 25 |
| Cases showing delayed or ordinary serum reaction .................. | 2 | 22.2 | 0 | 0 | 2 | 16.6 |
| Cases showing no reaction......... | 3 | 33.3 | 2 | 66.6 | 5 | 41.6 |

Eighty-one patients with positive tests, four positive to both and seventy-seven positive to intradermal but negative to ophthalmic tests, were given antitoxin without desensitization. The positive ophthalmic tests in this group were not strongly positive. No immediate reactions occurred. Forty-two patients were observed for at least ten days. Of these, three (7.1 per cent) had accelerated serum reactions, and six (14.3 per cent) had delayed serum reactions (table 4).

In a group of sixty-four patients who were known to have had horse serum previously, there was one (1.6 per cent) immediate serum reaction. Forty-four patients were observed for at least ten days; of these, seven (15.9 per cent) had accelerated serum reactions and eight (18.2 per cent) delayed serum reactions (table 5).

Table 4.—*Serum Reactions in Cases with Positive Tests Not Desensitized*

| | Skin + Eye + | | Skin + Eye − | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Patients with positive tests not desensitized | 4* | 5 | 77 | 95 | 81 | .... |
| Cases observed for ten days | 2 | 4.7 | 40 | 95.3 | 42 | 51.8 |
| Cases showing an immediate reaction | 0 | 0 | 0 | 0 | 0 | 0 |
| Cases showing an accelerated reaction | 1 | 50 | 2 | 5 | 3 | 7.1 |
| Cases showing delayed or ordinary serum reaction | 0 | 0 | 6 | 15 | 6 | 14.3 |
| Cases showing no reaction | 1 | 50 | 32 | 80 | 33 | 78.5 |

* All eye tests were weakly positive.

Of the 204 patients observed for a period of at least ten days there were in all 49 cases (24 per cent) of serum reaction. The severity of the reactions varied considerably. Twenty-four were mild, characterized by urticaria, fever and general malaise; twenty-three were moderately severe, presenting urticaria, fever, general malaise, vomiting and joint symptoms; two were severe (immediate) with urticaria, sneezing, coughing, respiratory difficulty, fever and vomiting.

Table 5.—*Relation of Sensitivity Tests to Serum Reactions in Patients Previously Injected with Horse Serum*

| | Skin + Eye + | | Skin + Eye − | | Skin − Eye − | | Total | |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % |
| Patients with history of having had serum previously | 9 | 14 | 21 | 32.8 | 34 | 53.1 | 64 | ... |
| Cases observed for ten days | 9 | 13.6 | 15 | 31 | 23 | 52.3 | 44 | 68.8 |
| Cases showing an immediate reaction | 1 | 11.1 | 0 | 0 | 0 | 0 | 1 | 1.6 |
| Cases showing an accelerated reaction | 2 | 33.3 | 2 | 13.3 | 3 | 13 | 7 | 15.9 |
| Cases showing delayed or ordinary serum reaction | 2 | 33.3 | 2 | 13.3 | 4 | 17.4 | 8 | 18.2 |
| Cases showing no reaction | 1 | 16.6 | 11 | 73.3 | 16 | 69.6 | 28 | 63.6 |

Spicer[1] summarized the results of her series as follows:

> Of the 353 patients tested, 293 received antitoxin: 251 intramuscularly and 42 intravenously. There were eighty-two positive test reactions: thirteen ophthalmic and sixty-nine intradermal. All those who gave a positive ophthalmic test were also positive intradermally. Of the thirteen patients giving a positive ophthalmic test, seven were given antitoxin and each had serum reaction. Of the sixty-nine who were positive intradermally, fifty-four received antitoxin and of these twenty-four had serum reaction. Of the 271 negative patients, 232 received antitoxin. Of these, twenty-eight had serum reaction. In all there were fifty-nine cases of serum reaction. Fifty-three were mild, consisting of urticarial rash with pruritus and elevation of temperature from 1 to 3 degrees F., lasting from twenty-four to forty-eight hours. Six of the fifty-nine serum reactions were rather marked. . . .

## COMMENT

Four immediate reactions were observed. Two (18.8 per cent) severe reactions, occurring within a few minutes after the injection of a small amount of dilute serum, were seen in patients in whom both the ophthalmic and the intradermal tests were positive. The remaining two (0.6 per cent) were observed in patients in whom both tests were negative; the reactions, however, were mild and occurred several hours after all the serum had been given.

Accelerated reactions occurred in 27.2 per cent of the patients with both tests positive but in only 7 per cent of the patients with negative ophthalmic and positive intradermal tests, whereas they occurred in 4 per cent of those with both tests negative.

Delayed or ordinary serum reactions occurred about equally in the three groups: 18.2 per cent of the patients with both tests positive, 14 per cent of those with positive intradermal and negative ophthalmic tests, and 16.7 per cent of the cases with both tests negative had delayed serum reactions.

Desensitization in our small series of cases did not appreciably alter the percentage of serum reactions but, because of the slow administration, probably prevented more serious reactions.

In patients who had previously received horse serum the percentage of accelerated reactions was slightly higher than in those who gave no such history; the percentages of immediate and delayed reactions, however, were not noticeably changed.

All patients with positive ophthalmic tests also had positive intradermal tests. In general, the cases having positive ophthalmic tests had the most strongly positive intradermal tests. The results indicate that the intradermal test, although much more sensitive than the ophthalmic, is of less value for clinical use, whereas the ophthalmic test, although far from ideal, is of definitely greater value as a clinical index of susceptibility to serum reactions. The ophthalmic test is much simpler to do, since it involves no diluted serum or saline solution and obviates the need of two intradermal injections, which are bothersome and not a little painful to the patient.

## SUMMARY AND CONCLUSIONS

1. In 465 patients, both the ophthalmic and the intradermal tests were employed; 5.6 per cent were positive to both tests, and 21.3 per cent were positive to the intradermal test only.

2. All those who had positive ophthalmic tests also had positive intradermal tests.

3. Undiluted tetanus antitoxin (horse serum) may be safely used for the ophthalmic test.

4. The ophthalmic test is less sensitive but of more value as a clinical index of susceptibility to serum reactions than the intradermal test.

5. Four hundred and twenty-six patients received tetanus antitoxin; 204 were observed for at least ten days; 24 per cent of the latter presented serum reactions.

6. Desensitization did not appreciably alter the percentage of serum reactions.

7. In patients who had previously received horse serum, a slightly higher percentage of accelerated serum reactions was observed.

8. Delayed or ordinary serum reaction occurred in approximately the same percentage (from 14 to 18) of patients with both tests positive, those with the ophthalmic test negative and the intradermal test positive, and those with both tests negative.

330 Cedar Street.

# "MYXEDEMA HEART" WITHOUT EVIDENCE OF CARDIAC INSUFFICIENCY

## REPORT OF TWO CASES

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In 1918, Zondek[1] reported that a specific cardiac abnormality was sometimes associated with myxedema, and he called it "myxedema heart." He observed four such cases in which the condition was characterized by enlargement of the heart, feeble cardiac action (observed with a fluoroscope), slow heart beat, low amplitude of the auricular (P) and final ventricular (T) waves in the electrocardiogram, and normal blood pressure. Furthermore, after the administration of thyroid the size of the heart diminished, its action became more vigorous, its rate increased, and the P and T waves of the electrocardiogram became more upright, while the blood pressure remained normal. He mentioned nothing about the presence of symptoms of cardiac insufficiency. Before Zondek, Eppinger,[2] in 1917, writing on the subject of edema, had described two cases of enlargement of the heart and cardiac insufficiency with marked edema, in which previous therapy with digitalis and diuretics had failed. The administration of thyroid produced a considerable decrease in size of the heart and caused the edema and cardiac symptoms to disappear. Eppinger believed that the effect of thyroid was purely that of a diuretic. Although no basal metabolic rates were reported and no mention was made of the presence of myxedema, it is possible that Eppinger's two cases were examples of "myxedema heart." Since Zondek's original description, others[3] have reported a total of twenty-two cases of "myxedema heart."

Table 1 summarizes the more significant features of the twenty-two reported cases. The average decrease in transverse diameter of the heart after thyroid administration was 3.3 cm., with a minimal decrease of 1.0 cm. and a maximal of 6.3 cm. Symptoms or signs of cardiac insufficiency were mentioned as present in fifteen of the twenty-two cases. Thus, thirteen patients complained of shortness of breath on exertion, seven patients had cyanosis, six had pitting edema, five had râles at one or both lung bases, and four had enlargement of the liver. These symptoms and signs of cardiac insufficiency disappeared after thyroid therapy. The most striking cases in the literature are those reported by Fahr[3] and Davis,[3] in which extreme cardiac enlargement and severe symptoms and signs of cardiac insufficiency were not relieved by digitalis and rest, were then relieved by thyroid, next recurred on the withdrawal of thyroid, and again disappeared on administration of thyroid.

Despite this evidence, some observers doubt the existence of the condition called "myxedema heart." Willius and Haines,[4] in a study of 162 case records of "high-grade myxedema," failed to find the cardiac changes described by Zondek in any instance, whereas Fahr found it in eight out of twelve cases of myxedema seen in his clinic.[5] Christian[6] reviewed thirty-two cases of well established myxedema and stated that he found no case showing the enormous cardiac enlargement described by Fahr.[3] Case,[7] in an analysis of fifty-eight cases of myxedema, found none corresponding to Zondek's description. Means, White and Krantz[3] found but one case of "myxedema heart" in forty-eight cases of myxedema. However, the observations of these authors indicating the rarity or nonexistence of the condition "myxedema heart" should be explained. Thus, only 32 per cent of the patients of Willius and Haines had electrocardiographic studies. Furthermore, Willius stated in a recent personal communication that although six-foot heart plates were made in the majority of their cases, only a few post-therapy studies were conducted. Finally, mention was not made by Christian, by Case or by Means, White and Krantz of the use of serial teleroentgenograms or electrocardiograms before or during treatment with thyroid.

We have observed two cases that illustrate the salient features of "myxedema heart." These cases are presented as further evidence that the condition occurs and that it may exist without cardiac insufficiency.

### REPORT OF CASES

Case 1.—A woman, aged 42, married, came to the medical clinic of the Boston Dispensary complaining chiefly of weakness. She said that her present illness had begun three years previously, following an attack of tonsillitis, laryngitis and influenza. Since then she had suffered from weakness, which had progressed to the point where the least exertion caused almost complete exhaustion. She had also noted marked sensitiveness to cold, coarse scanty hair, ribbed and brittle finger nails, coarse dry skin, puffiness of the eyelids, hands and ankles, poor memory, lessened acuity of hearing, drowsiness, marked constipation and irregular menorrhagia. She said that she had had three attacks of typhoid, at the ages of 5, 9 and 15 years, respectively. Spontaneous abortions had occurred four times. She had three living children. At no time had she noticed shortness of breath.

Physical examination disclosed that the patient was moderately obese and of medium height. She appeared drowsy, and she moved and talked slowly. Her skin was extremely dry and was of a yellowish pallor, especially on the face. Her fingers were cold. There was no cyanosis. There was no moisture in the axillae. The hair was very coarse; it was scanty in the axillae, and the lateral third of each eyebrow

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Laubry, C.; Mussio-Fournier, J. C., and Walser, J.: Syndrome angineux et insuffisance thyroïdienne, Bull. et mém. Soc. méd. hôp. de Paris **48**: 1592 (Nov. 21) 1924.
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Zins, Berthold; and Rösler, Hugo: Kasuistischer Beitrag zur Beeinflussung des Myxödemherzens durch Thyreoidin, Wien. Klin. Wchnschr. **39**: 1360 (Nov. 18) 1926.
Schittenhelm, A., and Eisler, B.: Ueber die Wirksamkeit des Thyroxins bei Endokrin bedingten Störungen, Klin. Wchnschr. **6**: 1935 (Oct. 8) 1927.
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Holzman, J. E.: Myxedema Heart, Am. Heart J. **4**: 351 (Feb.) 1929.
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Davis, J. C.: Myxedema Heart, Ann. Int. Med. **4**: 733 (Jan.) 1931.
Tung, C. L.: The Status of the Heart in Myxedema, Am. Heart J. **6**: 734 (Aug.) 1931.

[4] Willius, F. A., and Haines, S. F.: The Status of the Heart in Myxedema, Am. Heart J. **1**: 67 (Oct.) 1925.

[5] Davis (footnote 3).

[6] Christian, H. A.: The Heart and its Management in Myxedema, Rhode Island M. J. **8**: 109 (July) 1925.

[7] Case, C. E.: An Analysis of Fifty-Eight Cases of Myxedema, Clifton M. Bull. **11**: 112, 1925.

was absent. There was slight puffiness of the lower eyelids. The tongue was clean and smooth, and its papillae were normal in number and size. The mucous membranes were of normal color. The thyroid gland was not palpable. The lungs had normal resonance; there were no râles. The heart was not enlarged to percussion. The sounds were distant, the rate was 60 a minute, and the rhythm was regular. Murmurs were not heard. The blood pressure was 120 systolic and 80 diastolic. The radial arteries felt soft. The edge of the liver was just palpable on inspiration and not tender. The spleen was not felt. A mass, which was not tender, was felt above the symphysis pubis just to the left of the median line. On vaginal examination this mass was found to be a symmetrically enlarged, freely movable, hard uterus about twice the normal size. The knee jerks were equal and active. There was no pitting edema of the extremities. The rest of the physical examination was negative.

Table 1.—*Analysis of Twenty-Two Cases of "Myxedema Heart" Previously Reported in the Literature**

| Author | Sex | Age, Years | Basal Metabolic Rate, per Cent | Transverse Diameter of Heart, Cm. | | Blood Pressure, Mm. Mercury | | Symptoms and Signs of Cardiac Insufficiency | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Before Treatment | After Treatment | Before Treatment | After Treatment | Shortness of Breath | Cyanosis | Pitting Edema | Enlarged Liver | Râles at Lung Bases |
| Zondek [1] | ♂ | "45 to 55" | .... | 13.4 | .... | "Varied from 100 to 125 in all cases" | | .. | .. | .. | .. | .. |
| | ♂ | | .... | 16.0 | .... | | | .. | .. | .. | .. | .. |
| | ♂ | | .... | 19.7 | 14.0 | | | .. | .. | .. | .. | .. |
| | ♂ | | .... | .... | .... | | | .. | .. | .. | .. | .. |
| | ♂ | 42 | .... | .... | .... | ...... | ...... | + | .. | .. | .. | .. |
| Assmann [3] | ♂ | 20 | .... | 16.7 | 12.7 | 95: | 125: | .. | + | .. | .. | .. |
| Meissner [3] | ♀ | 56 | .... | 20.0 | 15.5 | ...... | ...... | + | .. | .. | .. | .. |
| Laubry, Mussio-Fournier and Walser [3] | ♂ | 47 | .... | .... | .... | 120:80 | 130:70 | + | .. | .. | .. | .. |
| Fahr [3] | ♀ | 46 | —25 | 19.0 | 12.7 | 110:70 | 120:80 | + | + | + | + | + |
| | ♀ | 68 | —21 | 16.0 | 12.3 | ...... | ...... | + | .. | .. | .. | .. |
| | ♀ | 55 | —35 | 15.2 | 11.7 | ...... | ...... | + | + | + | + | + |
| | ♀ | .. | —39 | 14.4 | 13.0 | 100:65 | ...... | + | + | + | .. | + |
| | ♀ | 40 | —36 | 13.0 | 11.9 | 110:65 | ...... | + | + | + | .. | .. |
| | ♂ | 49 | —31 | 18.2 | 15.9 | "Normal" | | + | .. | .. | .. | .. |
| Means, White and Krantz [3] | ♀ | 44 | —34 | 14.0 | 11.7 | 148:90 | ...... | + | .. | .. | + | .. |
| Zins and Rösler [3] | ♀ | 47 | —15 | 14.9 | 11.6 | 115: | ...... | + | + | .. | .. | .. |
| Schittenhelm and Eisler [3] | ♀ | 49 | —24 | 18.0 | 14.7 | 150:96 | 150:90 | .. | .. | .. | .. | .. |
| Duden [3] | ♀ | 58 | .... | 22.0 | 18.5 | 180:120 | 130:85 | + | .. | + | + | ... |
| Holzman [3] | ♂ | 58 | —20 | 19.7 | 18.0 | 110:68 | 108:64 | .. | .. | .. | .. | + |
| Ziskin [3] | ♀ | 43 | —28 | 14.0 | 13.0 | 120:80 | ...... | .. | .. | .. | .. | .. |
| Davis [3] | ♀ | 48 | —27 | 19.0 | 12.8 | 115:60 | ...... | + | + | + | .. | + |
| Tung [3] | ♀ | 51 | —31 | 15.0 | 12.8 | ...... | ...... | .. | .. | .. | .. | .. |

* In the table, ♂ indicates male; ♀, female. When data are not given, it is because they were not mentioned.

Table 2.—*Analysis of Authors' Two Cases of "Myxedema Heart" Before, During and After Thyroid Administration*

| Case | Day of Observation | Treatment by Thyroid, Gm. per Day* | Basal Metabolic Rate, per Cent | Weight, Kg. | Heart Measurements, Cm.† | | | | | | | Electrocardiographic Data | | | | | | Blood Pressure, Mm. Mercury | Hemoglobin, per Cent (Sahli) | Erythrocytes, Millions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Thorax | MR | ML | TR | L | B | G.V. | $P_1$, Mm. | $T_1$, Mm. | $P_2$, Mm. | $T_2$, Mm. | P-R, Sec. | Q-S, Sec. | | | |
| 1 | 1 | 0.030 | —53 | 76.7 | 25.7 | 4.4 | 8.7 | 13.1 | 13.3 | 9.6 | 7.3 | 0.3 | 0.5 | 0.0 | 0.0 | 0.24 | 0.06 | 120:80 | 72 | 3.8 |
| | 4 | 0.1 | .... | 75.0 | .... | ... | ... | .... | .... | .... | ... | 0.5 | 1.0 | 0.2 | 0.7 | 0.22 | 0.06 | | | |
| | 9 | 0.12 | .... | 74.7 | 26.0 | 4.0 | 9.0 | 13.0 | 13.0 | 9.8 | 5.3 | ... | ... | ... | ... | .... | .... | 120:80 | | |
| | 18 | 0.20 | .... | .... | 26.6 | 4.2 | 8.3 | 12.5 | 12.5 | 9.4 | 5.8 | 0.5 | 1.8 | 0.5 | 1.0 | 0.21 | 0.08 | | | |
| | 22 | 0.26 | .... | 72.7 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | ...... | 72 | 3.7 |
| | 28 | 0.39 | | | | | | | | | | | | | | | | | | |
| | 34 | 0.39 | .... | .... | .... | ... | ... | .... | .... | .... | ... | 0.8 | 2.0 | 0.8 | 1.2 | 0.20 | 0.06 | 120:80 | | |
| | 39 | 0.30 | + 6 | | | | | | | | | | | | | | | | | |
| | 46 | 0.26 | .... | 68.1 | 26.0 | 3.7 | 8.3 | 12.0 | 12.3 | 7.9 | 5.2 | 0.8 | 3.0 | 1.0 | 2.2 | 0.18 | 0.06 | 105:70 | 64 | 3.7 |
| | 54 | 0.23 | | | | | | | | | | | | | | | | | | |
| | 63 | 0.23 | ± 0 | 66.1 | | | | | | | | | | | | | | | | |
| | 85 | 0.23 | .... | 64.7 | 25.9 | 3.8 | 8.3 | 12.1 | 11.3 | 8.2 | 4.6 | 1.0 | 4.0 | 1.0 | 2.5 | 0.18 | 0.03 | ...... | 72 | |
| | 102 | 0.23 | .... | 64.1 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | ...... | 78 | 3.7 |
| 2 | 1 | 0.20 | —44 | 69.5 | 21.7 | 5.2 | 8.8 | 14.0 | 14.0 | 10.8 | 4.3 | 1.0 | 1.5 | 1.0 | 1.5 | 0.15 | 0.06 | 110:80 | 62 | 3.9 |
| | 10 | 0.20 | —12 | 66.0 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | ...... | 62 | 3.9 |
| | 17 | 0.20 | —12 | 66.3 | | | | | | | | | | | | | | | | |
| | 22 | 0.26 | —16 | 66.0 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | ...... | 63 | 3.6 |
| | 28 | 0.33 | — 8 | 66.3 | 24.7 | 5.0 | 8.1 | 13.1 | 13.8 | 10.6 | 4.0 | 1.5 | 3.0 | 1.5 | 3.0 | 0.14 | 0.06 | 100:70 | | |
| | 35 | 0.33 | —13 | 66.0 | 24.9 | 4.3 | 8.9 | 13.2 | 13.8 | 11.1 | 5.0 | 1.5 | 4.0 | 1.5 | 4.0 | 0.14 | 0.06 | 80:50 | | |
| | 42 | 0.33 | — 1 | 66.0 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | 85:50 | 62 | 3.5 |
| | 49 | 0.39 | — 1 | 66.3 | 24.9 | 4.3 | 8.5 | 12.8 | 13.5 | 10.5 | 4.0 | 1.5 | 4.5 | 2.0 | 4.0 | 0.14 | 0.06 | | | |
| | 57 | 0.48 | — 5 | 65.5 | .... | ... | ... | .... | .... | .... | ... | ... | ... | ... | ... | .... | .... | 95.50 | 60 | 4.2 |
| | 64 | 0.42 | + 5 | .... | 24.9 | 3.6 | 7.7 | 11.3 | 12.8 | 9.9 | 4.4 | ... | ... | ... | ... | .... | .... | 75.50 | | |
| | 71 | 0.39 | .... | 65.2 | .... | ... | ... | .... | .... | .... | ... | 1.5 | 5.0 | 2.0 | 4.0 | 0.14 | 0.04 | 100:55 | | |

* In cases 1 and 2, no thyroid had been given up to the first day of observation. The initial metabolism determinations were made before any medication was given. In case 2, 4 Gm. of iron and ammonium citrate in capsules was given daily from the first to the twenty-second day; 4 Gm. of the same medicine in 25 per cent solution from the twenty-third to the thirty-fifth day; 6 Gm. of the same solution from the thirty-sixth to the forty-ninth day, and 3 Gm. of reduced iron in capsules from the fiftieth to the seventy-first day.

† In case 1 measurements were made by orthodiagram and in case 2 by teleroentgenogram.

Further examination showed the following: The height was 160 cm. (63 inches) and the weight 76.7 Kg. (168 pounds). The Hinton, Wassermann and modified Kahn tests were negative. A specimen of urine showed a specific gravity of 1.023, no albumin, no sugar, and nothing abnormal in the sediment. The hemoglobin (Sahli) was 72 per cent, the erythrocytes numbered 3,700,000 and the leukocytes 6,525 per cubic millimeter. An examination of a blood smear showed slight achromia, slight variation in size and shape of the erythrocytes, and a normal differential count. The blood sedimentation rate was 3 mm. in one hour. The guaiac test for occult blood in the stool was negative. Gastric analysis on three occasions did not disclose any free hydrochloric acid either in the fasting contents or after an Ewald test meal; the total acidity on several occasions was 17 or less; gastric analysis after injection of 0.5 mg. of histamine intramuscularly disclosed free acidity of 5 (Ewald's scale) and a total acidity of 6. Roentgen studies of the gastro-intestinal tract were negative. An orthodiagram of the heart showed slight generalized enlargement producing a pear-shaped outline (table 2 and fig. 1 *A*). The measurements were: MR,[8] 4.4 cm.; ML, 8.7 cm.; TR, 13.1 cm.; internal diameter of the thorax, 25.7 cm. $\left(\frac{13.1}{25.7} = 51 \text{ per cent}\right)$; L, 13.8 cm.; B, 9.6 cm., and G. V., 7.3 cm. An electrocardiogram showed a heart rate of 50, the rhythm regular, minute P and T waves in lead 1 (0.3 and

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[8] MR indicates distance from middle of thorax to outermost right border of heart; ML, distance from middle of thorax to outermost left border of heart; TR, MR + ML; L, length; B, breadth, and G.V., great vessels.

0.5 mm., respectively) and P and T waves absent in leads 2 and 3 (fig. 2). The P-R interval was 0.24 second. The basal metabolic rate was −53 per cent (by the Aub-Du Bois standard).

Diagnoses of myxedema, secondary anemia, and uterine fibromyoma were made. Following treatment with desiccated thyroid (table 2), the patient's basal metabolic rate became normal, and all the symptoms disappeared. Her anemia remained unimproved. Twenty-eight pounds (12.7 Kg.) in weight was lost during treatment. The heart decreased in size, and the electrocardiogram became normal. At the time of the last determination of the basal metabolic rate, following thyroid administration over a period of sixty-three days, the rate had risen to ±0 per cent. Thyroid medication was continued in appropriate amounts. An orthodiagraphic tracing made on the eighty-fifth day of treatment now showed the following measurements (fig. 1 *B*): MR, 3.8 cm.; ML, 8.3 cm.; TR, 12.1 cm.; internal diameter of the thorax, 25.9 cm. ($\frac{12.1}{25.9}$ = 46 per cent); L, 11.3 cm.; B, 8.2 cm., and G. V., 4.6 cm. An electrocardiogram made on the same day revealed P and T waves of normal height (1.0 mm. and 4.0 mm., respectively, in lead 1, and 1.0 mm. and 2.5 mm., respectively, in lead 2). The P-R interval was reduced to 0.18 second. In all, five orthodiagraphic tracings, two teleroentgenograms of the heart, and seven electrocardiograms were made before and during treatment.

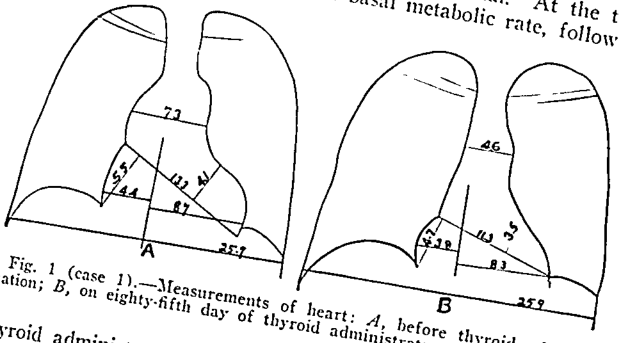

Fig. 1 (case 1).—Measurements of heart: *A*, before thyroid administration; *B*, on eighty-fifth day of thyroid administration.

CASE 2.—A woman, aged 30, single, came to the Out-Patient Medical Clinic of the Beth Israel Hospital complaining chiefly of "feeling cold all of the time." Two and a half years previously she had undergone an operation involving curettage of the uterus, resection of the right ovary, and ventral suspension of the uterus. Since the operation she had felt weak continuously and had tired easily. She had gained 20 pounds (9 Kg.) since the onset of the symptoms and had had continual bilateral tinnitus. About six months prior to admission she had begun to notice a heavy feeling in her head. Several weeks before entrance her friends had remarked that her face was very puffy. She had never had palpitation but during the present illness she had had slight dyspnea on walking rapidly.

The only point of significance in the past history was that she had had recurrent attacks of bronchial asthma during the preceding sixteen years; these attacks had been particularly marked in the winter.

Physical examination disclosed that the patient was moderately obese. The skin was pale, and the face and eyelids were puffy. The skin of the arms and legs was dry, thick and coarse. The hair was sparse and somewhat coarse. The tongue was slightly thickened and broad. There was no cyanosis. The thyroid gland was not palpable. The lungs showed normal resonance, vesicular breath sounds and no râles. The heart was not enlarged to percussion. The heart sounds were distant, the rhythm was regular, and murmurs were absent. The heart rate was 60. There was slight general hyperesthesia of the abdomen, but no masses or organs were palpable. The liver was not felt. The extremities were thickened, and the legs showed slight pitting edema. The blood pressure was 110 systolic and 80 diastolic.

The basal metabolic rate was −44 per cent (Aub-Du Bois standard). The hemoglobin was 62 per cent (Sahli) and the erythrocytes numbered 3,900,000 per cubic millimeter. Examination of the stained blood showed that the erythrocytes were moderately achromic and exhibited moderate variation in size and shape. The differential count was normal. The urine revealed no abnormality. A teleroentgenogram of the heart exhibited a transverse enlargement with blunting of the apex (fig. 3 *A*). The measurements were: MR, 5.2 cm.; ML, 8.8 cm.; TR, 14.0 cm.; internal diameter of the thorax, 24.7 cm. ($\frac{14.1}{24.7}$ = 57 per cent; L, 14.0 cm.; B, 10.8 cm., and G. V., 4.3 cm. An electrocardiogram taken on the same day showed P and T waves of the following heights: $P_1$, 1.0 mm.; $T_1$, 1.5 mm.; $P_2$, 1.0 mm.; $T_2$, 1.5 mm. Gastric analysis disclosed no free hydrochloric acid after the intramuscular injection of 0.5 mg. of histamine. Fractional analysis was done according to the technic of Polland and Bloomfield.[9]

A diagnosis of myxedema and secondary anemia was made. Treatment consisted of the administration of 0.20 Gm. (3 grains) of desiccated thyroid daily and 1 Gm. of iron and ammonium citrate in capsules four times daily.

The patient improved rapidly and the basal metabolic rate became normal. On the sixty-fourth day of observation and of thyroid medication, the basal metabolic rate was +5 per cent. A teleroentgenogram of the heart now showed the following measurements (fig. 3 *B*): MR, 3.6 cm.; ML, 7.7 cm.: TR, 11.3 cm.; internal diameter of the thorax, 24.9 cm. ($\frac{11.3}{24.9}$ = 45 per cent); L, 12.8 cm.; B, 9.9 cm., and G. V., 4.4 cm. The heart sounds improved in quality, appearing much less distant than before treatment. At times a few musical râles were heard in the lungs. The blood pressure varied between 110 systolic, 80 diastolic and 75 systolic, 50 diastolic. The P and T waves in the electrocardiogram became progressively more upright, so that on the seventy-first day of treatment the following measurements were obtained: $P_1$, 1.5 mm.; $T_1$, 5.0 mm.; $P_2$, 2.0 mm.; $T_2$, 4.0 mm. About 3.5 Kg. (8 pounds) of weight was lost during the first ten days of treatment, but after that there was practically no loss of weight. The anemia did not respond to treatment. The skin became smoother and warmer, and the puffiness of the face and lids disappeared. The variations in weight, basal metabolic rate, number of erythrocytes, percentage of hemoglobin, size of the heart, and observations by electrocardiogram are shown in table 2. Symptomatically the patient showed marked improvement. The bowels became regular, whereas previously laxatives had been required daily. The patient felt mentally alert and did not tire so easily as before treatment. Although the attacks of asthma were not lessened, sensitiveness to cold disappeared, and dyspnea on exertion also decreased definitely.

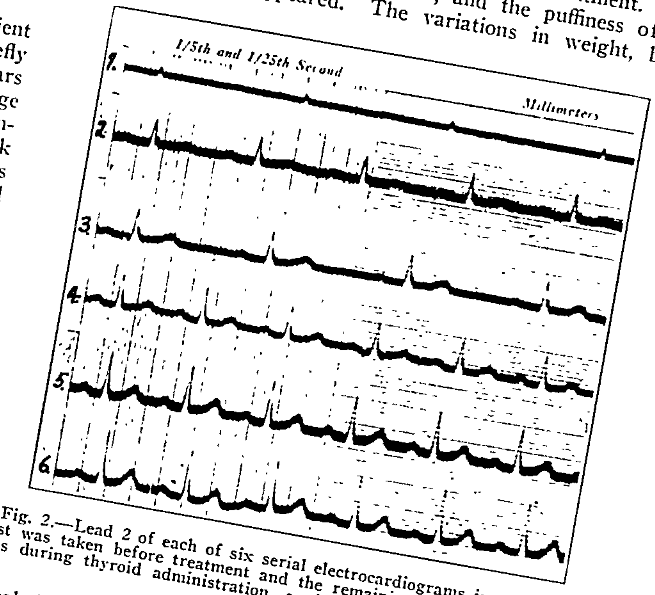

Fig. 2.—Lead 2 of each of six serial electrocardiograms in case 1. The first was taken before treatment and the remaining five at various intervals during thyroid administration, as indicated in table 2.

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9. Polland, W. S., and Bloomfield, A. L.: Normal Standards of Gastric Function, J. Clin. Investigation **9:** 651 (Feb.) 1931.

### COMMENT

The two cases conform to Zondek's original description of "myxedema heart," since the patients exhibited cardiac enlargement, feeble cardiac action under the fluoroscope, slow heart rate, normal blood pressure, and low amplitude of the P and T waves in the electrocardiogram. All were restored to normal with thyroid medication. The one diagnostic feature in both cases was roentgenographic enlargement of the heart, which disappeared when thyroid was administered. The other criteria stressed by Zondek were no more prominent in these cases than in any case of myxedema.

### EXCLUSION OF CERTAIN FACTORS AS POSSIBLE CAUSES OF DECREASE OF CARDIAC ENLARGEMENT

The explanation of the cardiac enlargement and its subsequent disappearance with thyroid medication is complicated by several factors, chief among which are secondary anemia and obesity, both of which are almost invariably associated with myxedema.

1. *Secondary Anemia.*—Decrease in size of the heart has been reported by Ball[10] following improvement of severe secondary anemia. However, as there was no significant improvement of the anemia in our two cases (table 2), this factor may be excluded as an explanation of the decrease in size of the heart. In addition, the anemia was mild in both cases.

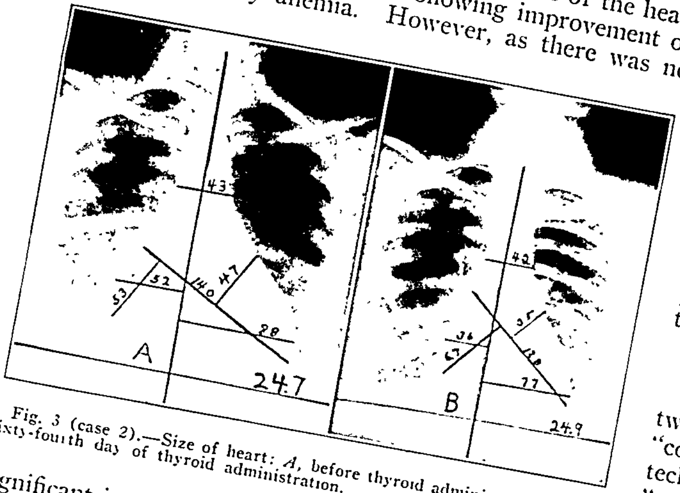

Fig. 3 (case 2).—Size of heart: *A*, before thyroid administration; *B*, on sixty-fourth day of thyroid administration.

2. *Obesity.*—In case 1 the large amount of weight that was lost during treatment (28 pounds, 12.6 Kg.) demands a consideration of the effect which loss of weight by itself may have on the size of the heart. Master and Oppenheimer[11] reported an increase in the size of the heart in 51 per cent of ninety-seven obese patients. Sixty-five of the patients had arterial hypertension. These writers showed roentgenograms of one case to exemplify reduction in size of the heart, which took place with loss of weight. Master and Oppenheimer stated: "This enlargement is probably more apparent than real, in that it is due to the elevation of the diaphragm by the abdominal fat." On the other hand, Scharpff[12] found a distinctly measurable reduction in the true size of the heart following loss of weight of 7 Kg. (15 pounds) or more in obese persons with or without arterial hypertension. He emphasized that the decrease is real and probably due to the disappearance of "compensatory cardiac dilatation" present in his series of obese persons. He was careful to exclude errors due to changes in diaphragmatic and thoracic position in his roentgenograms of the heart. Two thirds of Scharpff's older obese patients exhibited the "compensatory dilatation" of the heart. Scharpff also found that the administration of as much as 0.3 Gm. daily of thyroid had no effect on the size of the heart in both young and old obese persons without myxedema.

It is impossible to say how much of the loss of 28 pounds (12.7 Kg.) in weight in case 1 was due to loss of fluid and how much to loss of body fat, for "the increase in body weight of hypothyroidism is not due entirely to myxedema but in part to increased fat deposit."[13] In case 2, on the contrary, the loss of weight during treatment was slight (10 pounds, 4.3 Kg.) and, according to Scharpff, too small to affect the size of the heart.

3. *Radiographic Technic.*—Aside from organic factors mentioned, the errors inherent in the roentgenographic technic of measuring the heart might give apparent increase or decrease in size. Apparent decrease in size of the heart due to changes in the position of the diaphragm may be excluded in case 1, since variation in diaphragm level was not observed in the five serial orthodiagrams. Furthermore, the width of the thorax in four of the orthodiagrams was constant within a range of 3 mm. (table 2). In case 2, also, the serial teleroentgenograms showed the diaphragmatic position unchanged, and the transverse diameter of the thorax varied only within 2 mm.

### PROBABLE CAUSES OF "MYXEDEMA HEART"

It has been shown that the cardiac enlargement in the two cases reported was not due to secondary anemia, "compensatory cardiac dilatation" of the obese or technical radiographic error. The possible causes of "myxedema heart" in these patients were (1) cardiac dilatation secondary to a flabby heart muscle,[1] (2) a myxedematous condition of the heart itself or of the tissues about the heart, as described by Horsley,[14] and (3) existence of pericardial fluid.[15]

### CHANGES IN THE SIZE OF THE GREAT VESSELS

In case 1 the total width of the great vessels decreased from 7.3 cm. before treatment to 4.6 cm. under thyroid administration. In case 2 there was little or no change in the width of the great vessels. Zondek[1] originally mentioned the occurrence of widening of the great vessels, but he stated that it did not always return to normal under thyroid treatment. Meissner[2] and Fahr[3] also noted the increase in width of the great vessels. Zins and Rösler[3] found that the great vessels decreased in size in proportion to the decrease in size of the heart.

### ELECTROCARDIOGRAPHIC CHANGES

The observed electrocardiographic changes were such as might occur in any case of myxedema, as Means[16] and White[17] have pointed out. In cretinism, likewise, Thacher[18] has reported lowering, flattening, or even inversion of the T wave, which can be brought up to normal by the administration of thyroid. These electrocardiographic changes have not been found in conditions associated with lowered metabolism other than myxedema.[19] The origin of the low amplitude of the auricular (P) and final ventricular (T) waves, was investigated by Nobel, Rosenblüth and Samet,[20] who demonstrated, by the use of needle electrodes placed over the anterior thoracic wall in patients with childhood myxedema, the presence of P and T waves not recorded by the conventional leads from the extremities. They felt that the increased resistance of the skin in myxedema might account for the decreased voltage of the P and T waves of the electrocardiogram. The occurrence, however, of changed auriculoventricular conduction time as indicated by changes in the P-R interval (case 1) cannot be explained on the basis of changes in the skin but rather predicates an actual disturbance within the heart. Case 2 showed no abnormality in conduction time.

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[10] Ball, David: Change in the Size of the Heart in Severe Anemia, Am. Heart J. **6:** 517 (April) 1931.

[11] Master, A. M., and Oppenheimer, E. T.: A Study of Obesity, J. A. M. A. **92:** 1652 (May 18) 1929.

[12] Scharpff, W.: Ueber Veranderung der Herzgrösse nach Enfettungskuren, Deutsches Arch. f. klin. Med. **165:** 1 (Sept.) 1929.

[13] Howard, C. P., and Mills, E. S.: Obesity, in Oxford Medicine, New York, Oxford University Press **4:** 197, 1929.

[14] Horsley, V.: The Thyroid Gland: Its Relation to the Pathology of Myxedema. Brit. M. J. **1:** 211 (Jan. 31) 1885.

[15] Gordon, A. H.: Some Clinical Aspects of Hypothyroidism, Canad. M. A. J. **20:** 7 (Jan.) 1929.

[16] Means, J. H.: Oxford Monographs on Diagnosis and Treatment, New York, Oxford University Press **4:** 304, 1928.

[17] White, P. D.: Heart Disease, New York, Macmillan Company, 1931, pp. 387-388.

### ABSENCE OF CARDIAC INSUFFICIENCY

There was no evidence of heart failure in case 1, either from the history or from the physical examination. In case 2 there was slight dyspnea on exertion before treatment and some improvement of dyspnea after the size of the heart became normal. This dyspnea may have been due to the associated bronchial asthma. The diagnosis of "myxedema heart" in these two patients, therefore, was made without much evidence of heart failure.

This brings up the question Does "myxedema heart" exist without symptoms or signs of cardiac insufficiency? In an analysis of the literature of "myxedema heart" we have noted (table 1) that thirteen (60 per cent) of the twenty-two patients complained of shortness of breath. The symptom of shortness of breath, however, was found by Means[16] to be present in 90 per cent of forty-five patients with myxedema in whom "myxedema heart" was reported as absent. Likewise, Fahr[3] quoted Hirschfelder as writing that myxedema patients, in general, became short of breath on slight exertion. Therefore, either shortness of breath is not a diagnostic symptom of "myxedema heart" or else "myxedema heart" is an extremely common manifestation in myxedema. The literature further indicates (table 1) that less than 30 per cent of the reported cases of "myxedema heart" showed objective evidence of cardiac insufficiency, such as cyanosis, râles at the lung bases, enlarged liver, and pitting edema of the ankles. It seems evident, therefore, that the diagnosis of "myxedema heart" does not require the presence of signs or symptoms of cardiac insufficiency. Indeed, the low level of bodily and circulatory activity in myxedema[21] may prevent the development of severe cardiac symptoms and thereby conceal the presence of "myxedema heart."

### SUMMARY

In two cases of "myxedema heart," both patients had clinical, roentgenographic and electrocardiographic manifestations which were characteristic of the condition as described by previous workers and which became normal after adequate treatment with thyroid. Enlargement of the heart and its return to normal with adequate thyroid treatment is stressed as the one diagnostic feature of "myxedema heart," since the other abnormalities are usually found in all cases of myxedema. Factors other than thyroid medication may decrease the size of the heart during treatment for myxedema. Little, if any, evidence of heart failure was found in either of the cases reported, and hence it is believed that cardiac insufficiency, although sometimes found, is not characteristic of "myxedema heart." The suggestion is made that "myxedema heart" may be more common than is usually supposed, and therefore the need of securing serial teleroentgenograms of the heart and electrocardiograms before and during the treatment of every patient with myxedema is indispensable to exclude the possibility of the presence of "myxedema heart."

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[18] Thacher, Catharine: The Electrocardiogram in Cretinism and in Mongolian Idiocy, Am. J. Dis. Cl
[19] Reid, W. D., and Kenway, Associated with Low Basal Metal April) 1929.
[20] Nobel, E.; Rosenblüth, A., and Samet, B.: Das Elektrokardiogram des kindlichen Myxödems, Ztschr. f. d. ges. exper. Med. **43**: 332, 1924.
[21] White (footnote 17). Blumgart, H. L.; Gargill, S. L., and Gilligan, D. R.: Studies on the Velocity of Blood Flow in Myxedema and Thyrotoxicosis, J. Clin. Investigation **9**: 91 (Aug.) 1930.

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# ACUTE APLASTIC ANEMIA COMPLICATING ARSPHENAMINE THERAPY

## REPORT OF A CASE TREATED FOR SYPHILIS COINCIDENT WITH TUBERCULOSIS

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AND
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The first to give a clinical description of aplastic anemia was Ehrlich,[1] in 1888, whose patient developed this disease condition following a severe uterine hemorrhage. Many case reports followed with speculative discussions as to whether this form of anemia is a distinct disease entity or a symptom-complex of purpura hemorrhagica. Duke[2] emphasizes that the course and symptoms of this disease depend in the main on which of the three principal blood-forming elements of the bone marrow is mostly affected. The usual symptoms of progressive anemia will predominate when the erythropoietic tissue is chiefly affected; agranulocytosis with subsequent infection, notably angina, when there is failure of regeneration of leukocytes, and purpura with hemorrhage when there occurs a considerable diminution in the blood platelets. This valuable conception is important to bear in mind, since it helps to give a proper appraisal of some of the blood dyscrasias which occasionally follow the use of arsphenamines in the treatment of syphilis.

From a review of the literature on toxic effects from arsphenamines, one gains the impression that in not a few instances was difficulty experienced in making a differential diagnosis between aplastic anemia, agranulocytic angina and purpura hemorrhagica. Farley[3] classified his series of cases under the general heading of "depressed bone-marrow function from the use of arsphenamines," with emphasis on the phenomenon of agranulocytosis. Among his seven cases, one gave the classic blood picture and symptoms of aplastic anemia,

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[1] Ehrlich, Paul: Ueber einen Fall von Anämie mit Bemerkungen über regenerative Veränderungen des Knochenmarkes, Charité-Ann. **13**: 800, 1888.
[2] Duke, W. W.: Aplastic Anemia, J. A. M. A. **91**: 720-722 (Sept. 8) 1928.
[3] Farley, D. L.: Depressed Bone-Marrow Function from the Arsphenamines, Am. J. M. Sc. **179**: 214-227 (Feb.) 1930.

while the others showed varying degrees of aplasia, as determined by the blood examinations. Of Kastlin's[4] two cases of agranulocytic angina, one developed typical symptoms of purpura hemorrhagica with marked granulopenia after the sixth of a series of injections of neoarsphenamine. There was only a moderate decrease in the erythrocytes and hemoglobin. Moore[5] and his co-workers, who have shown that damage to the bone marrow, as determined by the blood picture, occurs in the majority of nonfatal cases reacting to arsenical drugs, are probably correct when they conclude that "these blood changes differ only in degree from the maximally severe reaction as seen in this case," referring to their report[6] on a fatal case of aplastic anemia following neoarsphenamine treatment.

The confusion that exists with regard to a proper classification of these blood dyscrasias is further shown by Dodd and Wilkinson,[7] who summarize twenty-four cases of "agranulocytic aplasia of the bone marrow" following arsenical medication, including one of their own. Of the total number, twenty-one patients had hemorrhage and twenty had anemia ranging from slight to severe. There was considerable variation in the blood picture. Leukopenia from as low as 136 white cells up to about 4,000 was present in eighteen, normal in two, and 29,000 and 76,000 in two cases, respectively. The polymorphonuclear count was 9 per cent in three cases, from 7 to 13 per cent in six cases, and from 30 to 88 per cent in eight cases. Of the eleven cases with necropsy reports, ten showed hemorrhage, nine aplastic bone marrow and in two the examination was incomplete. The authors very properly comment that there must have been cases other than those included in their table, reported as agranulocytosis, aplastic anemia, arsenic poisoning, purpura and the like, and concede that a specific name has not yet been given to this form of arsenic intoxication. While we have nothing to offer that might clarify this halo of confusion covering the various types of arsenical blood poisoning, we feel that a report of an undoubted case of acute aplastic anemia following arsphenamine medication is justifiable because of its relative rarity. Considering the fact that this complication is nearly always fatal, the prophylactic aspects have not been sufficiently stressed.

According to Stokes,[8] there is no known way of preventing or predicting an acute aplastic anemia, but it is recognized to be a rare complication. Cole[9] and his associates, reporting on 1,212 cases treated for syphilis with a total of 78,350 arsenical injections, had 214 patients presenting toxic manifestations resulting in 12 deaths. No case of aplastic anemia has been observed by them in this series and only two cases of purpura hemorrhagica, in both of which recovery occurred. Stephens[10] reports two cases observed during the past five years in a series of 1,200 patients who received a total of 14,000 injections. In one of the cases he noted evidence of the beginning of active marrow regeneration in the presence of numerous islands of erythroblastic and myeloblastic tissue, but at no time during the month that this patient was under observation was there noted any evidence of such regenerative activity in the peripheral blood. Yet, the author holds out the opinion that there might be some hope for recovery if these patients could be successfully protected from infection. Semenza[11] stresses the gravity of this complication and urges systematic examinations of the blood during arsphenamine treatment in subjects with symptoms of functional deficiency of the blood-making organs. In one of his two cases reported, the administration of arsphenamine had an aggravating effect on the blood dyscrasia previously diagnosed as aplastic anemia. The latter, therefore, cannot be attributed solely to arsphenamine. As a last resort measure, splenectomy was performed in this case without any beneficial results.

The onset of the process may begin within from twelve to forty-eight hours after the injection. It may follow the initial dose or any subsequent dose. Slowly progressive weakness and pallor may precede the hemorrhagic manifestations or the development of stomatitis by one or two weeks. Sometimes there appear a few purpuric spots on the lower extremities or abdomen a day or two after the injection preceding the fatal one. These prodromal phenomena are of great importance and should always be watched for in an individual undergoing active treatment for syphilis. This is especially applicable to the definitely substandard type of patient or the one suffering from another coincident disease.

The distinguishing features of the blood picture in this disease are a moderate or marked decrease in hemoglobin and red cells, a low or normal color index, a progressive leukopenia with a rapid reduction in the granulocytes and a relative increase of lymphocytes, the disappearance of reticulated red cells, the absence of any abnormal cells seen in other types of anemias, and a marked reduction in blood platelets. The clinical course is usually rapid, nonremittent, and lasting rarely more than two or three weeks, although the average duration of the so-called primary or idiopathic types of aplastic anemia, according to Schneider,[12] have an average duration of six months. The tendency to early hemorrhagic manifestations is quite characteristic. Slight epistaxis, slight bleeding from the gums or an insignificant conjunctival hemorrhage may be the first symptom to alarm the patient sufficiently to bring it to the attention of the physician. As the disease progresses, there is manifest bleeding from nearly all mucous membranes. Fever may appear early or late; it sometimes dates its onset following a blood transfusion. Hyperpyrexia is the rule toward the end and is probably due to bronchopneumonia, which is a frequent terminal complication. Purpuric spots, most numerous over the skin of the anterior and posterior aspects of the chest, arms and forearm, may fade in one area and appear in another. In the mouth these purpuric spots often coalesce and undergo ulceration. When hematemesis is present and blood in the stools appears, abdominal pain may be marked, but there is no hepatic or splenic enlargement.

The treatment is chiefly prophylactic. A history of any previous reaction calls for painstaking vigilance during the entire course of treatment. The slightest

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4. Kastlin, G. J.: Agranulocytic Angina, Am. J. M. Sc. **173:** 799-813 (June) 1927

5 Moore, J. E., and Foley, F. E. B.: Serious Reactions from the Salvarsan and Diarsenol Brands of Arsphenamine, Arch. Dermat. & Syph. **1:** 25 (Jan.) 1920.

6. Moore, J. E., and Keidel, Albert: Stomatitis and Aplastic Anemia Due to Neoarsphenamine, Arch. Dermat. & Syph. **4:** 169-176 (Aug.) 1921.

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11. Semenza, Carlo: Aplastic Anemia and Arsphenamine Intoxication, Clin. med. ital. **62:** 527 (June) 1931; abstr. J. A. M. A. **97:** 1185 (Oct. 17) 1931.

12. Schneider, J. P.: Aplastic Anemia, Am. J. M. Sc. **156:** 799-807 (Dec.) 1918.

purpuric manifestation is an indication for at least a temporary discontinuance of the drug. Frequent blood counts may give early evidence of abnormal bone marrow function and constitute a warning for greater caution. The early administration of sodium thiosulphate is of doubtful therapeutic value but should be used as a routine. Blood transfusions are disappointing, as are likewise calcium and the various commercial coagulants, such as fibrinogen or thromboplastin. The results obtained by Stockton and Franklin[13] in a case of purpura hemorrhagica from the use of antivenin caused us to use this product in the amount of 10 cc. intramuscularly without any effect on the hemorrhagic symptoms.

The following report is illustrative of the salient points in the clinical picture described:

C. B., a man, aged 32, admitted to the National Jewish Hospital, Sept. 3, 1930, complained of weakness, impaired appetite, slight cough and expectoration. He had had pulmonary disease for two years, for which he received active treatment in institutions. An examination showed moderately advanced pulmonary tuberculosis involving both upper lobes with probable infraclavicular cavitation on the right. The sputum was positive; a Wassermann test of the blood was 4 plus; a blood count showed slight anemia.

The clinical course was progressive with malaise, increasing weakness, irregular fever, ranging from 99.2 to 101 F., and vague intestinal symptoms. Accordingly, pneumothorax was induced on the right side, Nov. 15, 1930. Despite a satisfactory compression of the diseased lung area, the case pursued an unfavorable course. In the belief that syphilis hindered recovery, antisyphilitic treatment was instituted. He had previously received two courses of treatment in other institutions with neoarsphenamine alternating with preparations of bismuth and mercury. The Wassermann reaction of the blood after the first course had become negative. The last injection of neoarsphenamine was given, July 1, 1930, and was followed by a pruritic, papular rash over the extremities which cleared in one week. Our treatment began, Jan. 4, 1931, and consisted of twelve injections of neoarsphenamine in doses of from 0.3 to 0.6 Gm. at intervals of from five to seven days, the total amount of the drug being 3.75 Gm. Improvement in the patient's condition occurred, the temperature reached normal, and the sputum diminished.

*Blood Examinations and Clinical Course*

| Date | Hemoglobin, per Cent | Red Blood Cells in Millions | White Blood Cells | Polymorphonuclears | Myelocytes | Metamyelocytes | Large Mononuclears | Lymphocytes | Platelets | Bleeding Time, Min. | Clotting Time, Min. | Color Index | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/ 6/30 | 82 | 4.390 | 11,000 | 67 | .. | .. | 3 | 28 | ....... | .. | .. | 0.95 | |
| 3/ 2/31 | Last treatment of neoarsphenamine, 0.3 Gm. | | | | | | | | | | | | |
| 3/ 7/31 | 58 | 2.900 | 5,000 | 28 | .. | .. | .. | 70 | ....... | 22 | 4 | 1.0 | Sodium thiosulphate; liver diet; purpura extremities and trunk; petechiae on mucosae; epistaxis |
| 3/ 9/31 a.m. | 38 | 1.770 | 3,900 | 23 | .. | .. | 3 | 73 | 200,000 | .. | .. | 1.1 | Transfusion, p. m., 500 cc.; temperature, 99.2 F. |
| 3/11/31 a.m. | 42 | 2.010 | 3,200 | 22 | .. | .. | 1 | 76 | ....... | .. | .. | ... | No nucleated red blood cells; more petechiae on extremities; transfusion, p. m., 500 cc.; temperature, 99.4 F. |
| 3/12/31 | 53 | 2.370 | 2,800 | 22 | .. | .. | 1 | 77 | ....... | .. | .. | ... | Temperature, 100 F. |
| 3/13/31 | 53 | 2.390 | 2,000 | 9 | 1 | 1 | .. | 88 | None | 18 | .. | ... | Temperature, 99.8 F.; petechiae on gums, tongue, lips; bleeding from gums; transfusion, p. m., 500 cc.; temperature, 104 F. |
| 3/16/31 | 63 | 3.390 | 4,000 | 7 | 3 | 3 | 7 | 77 | None | .. | .. | ... | Transfusion, 500 cc., 3/17/31 |
| 3/18/31 | 50 | 2.800 | 3,800 | 16 | .. | .. | 2 | 82 | 120,000 | .. | .. | ... | Temperature, 102.6 F.; angina hematemesis |
| 3/19/31 | 40 | 2.190 | 2,400 | 8 | .. | 3 | 8 | 88 | 150,000 | .. | .. | ... | Hemorrhagic areas in throat spreading; one reticulocytic cell on slide; antivenin, 10 cc., p. m. |
| 3/20/31 a.m. | 37 | 2.210 | 2,400 | 4 | 3 | 1 | 5 | 83 | 80,000 | .. | .. | ... | Temperature, 102 F.; transfusion, p. m., 500 cc.; reaction with temperature 107.8 F. |
| 3/22/31 | 40 | 2.520 | 3,800 | 6 | 2 | 2 | 2 | 88 | 90,000 | .. | .. | ... | Temperature, 105.6 F., frank epistaxis; bloody sputum; drowsy |
| 3/24/31 | 33 | 2.000 | 1,800 | 6 | .. | 3 | 9 | 82 | 60,000 | .. | .. | ... | Stupor; muscular twitchings; transfusion, p. m.; reaction with fever 108 F.; death |

The course was uneventful until, following the injection of 0.3 Gm., February 25, there appeared the next day a discrete nonpruritic erythematous papular eruption over the extremities and trunk. The patient thought the eruption was similar to that which occurred in July, 1930; it was, therefore, not seriously regarded. However, following the injection of March 2, the eruption assumed the character of purpura. Petechial hemorrhages appeared on the right conjunctiva, upper lip and buccal mucosa. Slight bleeding from the nose followed. Preceding and following the last treatment, the patient complained of dull headache, weakness, slight epistaxis and transient attacks of dizziness. The temperature was normal. There was marked pallor, although it was noted in retrospect that this had already been present for some time and had been gradually increasing during the preceding two weeks.

March 7, five days after the last injection of neoarsphenamine, hematologic studies, as shown in the accompanying table, revealed a severe anemia, a leukopenia with relative lymphocytosis, and prolonged bleeding time. These results were interpreted at first as evidence of severe arsenical intoxication; 0.5 Gm. of sodium thiosulphate was at once administered intravenously, followed by two similar doses at twelve hour intervals, and a generous liver diet instituted. Two days later, the blood changes were more pronounced. The erythrocytes were normal in size and shape. Achromia was absent. No nucleated red cells were seen. A definite diagnosis of aplastic anemia was made. A transfusion of 500 cc. of citrated blood, March 9, failed to produce any important change in the clinical picture. Despite a marked pallor, he felt well and was calm. Petechial hemorrhages appeared at this time in the skin over the trunk and extremities. These, in the course of a few days, would fade and then reappear in other areas. New crops of petechiae appeared in the mucous membrane of the gums, lips, tongue and cheek. Bleeding from the gums and nose occurred intermittently. Transfusions were given again, March 11 and 13. The one given on the latter date caused some improvement in the blood picture, although the percentage of neutrophils remained distinctly reduced, and blood platelets were absent. Purpuric manifestations continued. March 14, the patient complained of soreness in the mouth and throat. Hemorrhagic areas appeared on the right tonsil and gradually increased in extent on the sixteenth. A fetid odor to the breath was present. Up to this time his general condition was satisfactory. Except for a febrile reaction of 104 F. following the third transfusion, his temperature averaged 99.4 F., the pulse 96. There were few subjective complaints, except for a gradually increasing dyspnea.

However, from March 17 onward, his condition rapidly declined. The temperature fluctuated between 102 and 105 F., and the pulse between 120 and 140. Malaise and weakness increased. His color became chalk white. The hemorrhagic areas in the throat spread. They coalesced over the left tonsil, which became swollen and ulcerated. Several petechiae on the left border of the tongue coalesced and became ulcerated. Hemorrhage into the vitreous was noted on the nineteenth. In the evening of the same day he was given 10 cc. of antivenin intramuscularly. This resulted in a marked diminution of the bleeding time, but the hemorrhagic symptoms continued. Swallowing became extremely painful. Epistaxis continued freely. The vomitus was bloody and the stools were tarry. A transfusion, March 20, was followed by a febrile reaction of 108 F. A distressing cough developed and was productive of bloody sputum. Drowsiness, stupor and, finally, muscular twitching set in. The last transfusion was given, March 24, and death occurred two hours later.

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[13] Stockton, M. R., and Franklin, G. C. H.: Antivenin Therapeusis in Purpura, J. A. M. A. **96**: 677-678 (Feb. 28) 1931.

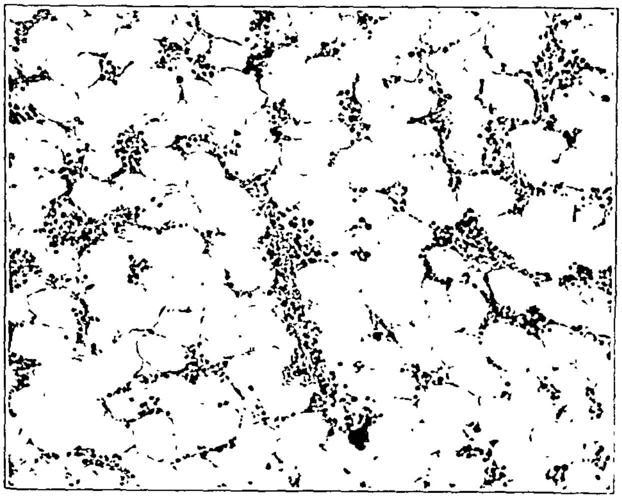

Fig. 1.—Section of bone marrow from the sternum, reduced from a photomicrograph with a magnification of 135 diameters. Hematoxylin and eosin stain. In this illustration and in figure 2, the marrow is largely fatty and shows no hyperplasia; myeloid cells and nucleated red cells are present in small numbers; lymphocytes and plasma cells are more numerous than in normal marrow; there is no edema or hemorrhage.

The observations at necropsy as reported by Drs. William C. Johnson and William Black of the University of Colorado School of Medicine were as follows:

1. Aplasia of bone marrow.
2. Anemia.
3. Purpuric hemorrhages in the skin of the face, neck and thorax.
4. Hemorrhage into the abdominal muscles.
5. Hemorrhage into the mucosa of the stomach, the pelvis of the left kidney and the bladder.
6. Chronic pulmonary tuberculosis, bilateral and nodular.
7. Partial atelectasis of the right lung with pneumothorax.

Sections from the anterior ends of the ribs near the costochondral junctions showed rarefaction of the cells lying in the interstices of the adipose tissue, of which there was a considerable amount. The erythropoietic elements, megakaryocytes and megaloblasts, were very few in number. Sections from the sternum were similar in appearance to those from the ribs. Owing to the haste necessary in performing this autopsy, bone marrow from other locations was not obtained.

### COMMENT

The etiology of primary aplastic anemia is not known. It is a disease of young adults. Since many subjects frequently give a history of preceding pallor, a congenital defect of the bone marrow has been suggested by some as a predisposing factor. Although our patient did show a moderate pallor, the condition of the blood was essentially normal on admission, except for a slight degree of secondary anemia. However, there was noted a gradually increasing pallor, especially during the two or three weeks preceding the fatal dose of neoarsphenamine. It is not unlikely that earlier blood studies would have revealed alterations in the normal ratio of the cellular elements to constitute a warning to modify the treatment.

According to Musser and Wintrobe,[14] chronic intoxication with chemical poisons is responsible for secondary aplastic anemia. Selling's[15] experimental and clinical studies of benzene poisoning led many observers to attribute the arsenical intoxications to the double benzene ring which the arsphenamines contain, but so far it has not been proved that these compounds liberate free benzene when injected into the circulation. Yet, Dodd and Wilkinson[7] could not find a case of such aplasia of the bone marrow following the administration of arsenic not containing the benzene ring. In comparison with the wide use of the arsphenamines, depressed bone marrow function, and especially aplastic anemia, is indeed very rare. There must therefore exist idiosyncrasies which, in many instances, give prodromal manifestations, such as pruritus, pallor, malaise and evanescent purpuric eruptions. In our case, the last three symptoms were present but their significance was not recognized.

To what extent the coincident tuberculosis was a factor is a matter of speculation. That the syphilitic infection was active was demonstrated by the positive Wassermann reaction of the spinal fluid obtained post mortem. As the clinical manifestations were out of proportion to the pulmonary lesion, antisyphilitic treatment was deemed indicated.

### SUMMARY AND CONCLUSIONS

In a case of acute arsenical aplastic anemia, terminating fatally in twenty-two days, treatment was primarily for pulmonary tuberculosis, but the syphilitic infection apparently retarded recovery. The history of a cutaneous rash during a previous course of arsphenamine treatments gave the patient and ourselves a sense of false security. The inescapable conclusion is that a patient under arsphenamine medication should have frequent blood examinations, even in the absence of any untoward manifesations, and the drug should be immediately discontinued as soon as such symptoms as malaise, pallor, itching of the skin and purpuric manifestations are noted.

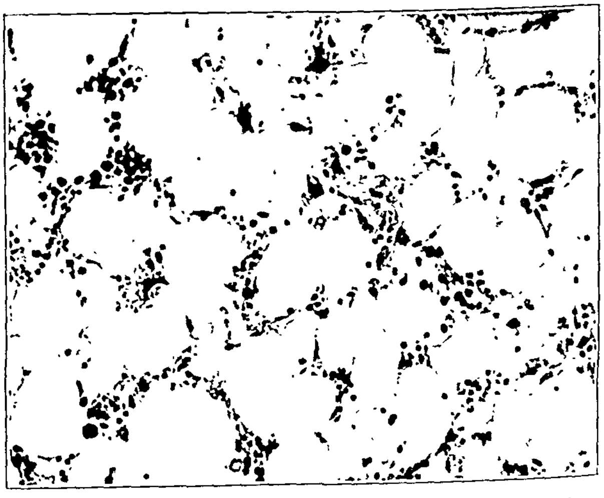

Fig. 2.—Section of bone marrow from the rib, reduced from a photomicrograph with a magnification of 250 diameters.

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[14] Tice's Practice of Medicine **6**: 823.

[15] Selling, L.: Benzol as a Leukotoxin, Johns Hopkins Hosp. Monographs, 1913

# RENAL CARBUNCLE IN INFANCY

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Renal carbuncle, so called because of its anatomic semblance to carbuncle elsewhere, is a localized massive suppuration within the kidney due to bacterial metastasis (usually staphylococcus), often produces marked toxemia, is rarely uncomplicated, is difficult to diagnose and, unrecognized or inadequately treated, entails a high mortality. Discussion of the lesion is found more often in surgical textbooks than in the literature; less than fifty cases have been reported. I have been unable to find a record of its occurrence in infancy. The two cases herewith reported, a boy and girl each admitted to the hospital at the age of 8 weeks with renal carbuncle and perirenal abscess and subsequently operated on, are unique because of the tender age of the patients. However, they are here described more especially because they forcibly demonstrate by specific example an insufficiently recognized principle of medical practice, namely, that infants and children are subject to practically every form of urologic disease which one is accustomed to associate with adult life, and, when clinical manifestations indicate a thorough urologic examination or radical urosurgical treatment, extreme youth is no contraindication. Nor does the clinical picture differ vastly in juveniles and adults.

## ETIOLOGY AND PATHOLOGY

Although renal carbuncle may occur at any age, its incidence is highest in the fourth and fifth decades. The incidence in males is twice that in females; the lesion is more often found on the right side. Renal injury, whether by external blow, stone or urinary stasis, predisposes to carbuncle. The direct cause is bacterial metastasis, predominantly staphylococcal, from a focus elsewhere, usually the skin (furunculosis, carbuncle, paronychiae, abrasion, wound), but may originate in an osteomyelitis, oral infection and the like. In my two cases furunculosis preceded. In case 1 this condition was a chief complaint on admission to the hospital.

The bacterial embolus arrives hematogenously and localizes in the parenchyma, usually toward a kidney pole; a metastatic abscess results with leukocytic infiltration, necrosis and, by the establishment of secondary circumferential foci, extension. The lesion may spread peripherally elevating the cortical contour and, with or without actual capsular perforation, commonly causes secondary perinephritis or perinephric abscess. While the site of the initial localization has been variously described, the character of the gross lesion suggests interlobular artery embolism with suppurative involvement, chiefly of the cortex peripheral thereto. Usually the remainder of the organ appears surprisingly normal; most rarely are two carbuncles found. Moreover, the lesion is characteristically unilateral; bilateral lesions have been described only twice. In one of my patients (case 2) a similar metastatic lesion involved the adjacent suprarenal medulla (fig. 5).

If the bacterial virulence is low or the local tissue resistance high, the abscess may become walled off and ultimately be replaced by scar or calcification; more likely, it will spread as previously described.

## SYMPTOMS

The symptoms are those of infection: toxemia, fever, often chills, sweats, gastro-intestinal upsets, anorexia, nausea or vomiting, loss of weight, and pain. The latter is usually most acute in the costovertebral angle. Rarely, localizing symptoms are absent. Sometimes the kidney is palpable, but more often the fixed mass of perinephritis or perinephric abscess will be found. Urinary disturbances are usually absent.

The preoperative diagnosis of renal carbuncle is exceedingly difficult; few times has it been correctly made. It is suggested by a history of cutaneous suppuration within the past few weeks, a loin mass, tenderness in the costovertebral angle, fever and, as a rule, repeated sweats. A marked leukocytosis with high polymorphonuclear count quite regularly exists. These manifestations are common to perinephric abscess also and thereby increase the differential diagnostic difficulties. In case 1 carbuncle and furunculosis coexisted; in case 2 furunculosis antedated carbuncle one month.

Urinalysis reveals little; a mild infection with pyuria may be found. As a rule, the urinary manifestations are disproportionate to the degree of renal involvement unless, perchance, the abscess has established drainage into the pelvis. An abundance of casts commonly means marked toxic nephritis of the better kidney. Ureteral catheterization usually discloses good renal function with or without infected urine. In a few instances pyelography has shown pelvis displacement, compression or distortion. Renal tumor was diagnosed preoperatively in case 2 (fig. 3). In case 1 the pelvis of the involved organ was greatly displaced (fig. 1). A plain roentgenogram may reveal an enlarged kidney or with perinephric abscess, obliteration of the isolateral psoas muscle outline and a lumbar spinal concavity.

Seldom can carbuncle be differentiated from acute suppurative pyelonephritis or acute multiple renal abscess. If the lesion directly underlies the peritoneum, intraperitoneal disease—appendicitis, cholecystitis, salpingitis or peritonitis—is commonly misdiagnosed. If signs of peritoneal irritation are lacking, the patient may be treated for grip, influenza, typhoid or, with subphrenic suppurative extension, diaphragmatic pleurisy or pneumonia. The diagnosis is most often made at the time of renal exploration for perinephric abscess. As a corollary, with a thorough inspection of the entire kidney surface when a perinephric abscess is being drained, a renal carbuncle will more often be recognized. On the other hand, as in both cases here reported, one may feel that the extreme condition of the patient does not warrant extensive exploration at the initial operation.

## TREATMENT

Frequently, the severity of the local disease, the general toxemic manifestations and an advanced toxic nephritis of the better organ demand nephrectomy. If the patient is a good surgical risk, renal decapsulation with incision and drainage or excavation of the carbuncle may be performed. In a few instances the "core" of the lesion has been found separated and is easily extracted. Emergency reoperation with nephrectomy is often demanded when the more conservative methods are employed; the surgical risk is then greatest. An associated perinephric abscess must be liberally drained and, if one is going to be conservative, coexistent urinary obstruction appropriately eliminated.

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From the Babies' Hospital (Departments of Pediatrics and Surgery, College of Physicians and Surgeons, Columbia University) and the Pediatric Service of New York Nursery and Child's Hospital, Dr. O. M. Schloss, director.

In a statistical summary of forty-seven cases, Moore[1] found that primary nephrectomy was performed in twenty-one cases, with two deaths; incision and secondary nephrectomy in seven, with no deaths, incision and drainage only in thirteen, with two deaths; incision and secondary excision of the carbuncle in two, with no deaths, and enucleation of the carbuncle in two instances with secondary nephrectomy in one, with one death. Therefore, when the general condition of the patient or of his better kidney permits, primary nephrectomy appears to be the safer procedure.

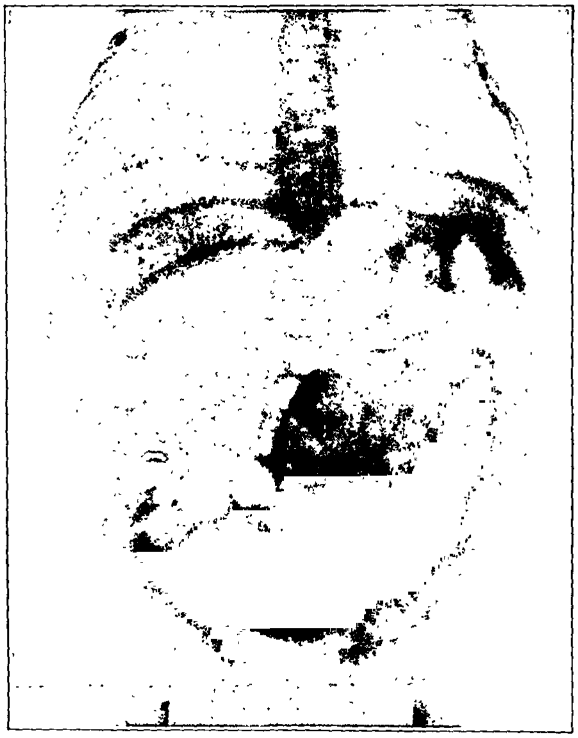

Fig. 1 (case 1).—Marked left renal displacement mesially by complicating perinephric abscess. The pelvic outlines are normal, affording no indication of existent carbuncle.

REPORT OF CASES

Case 1.—*History*.—I. T., a girl, aged 8 weeks, was admitted to New York Nursery and Child's Hospital, April 8, 1931, because of furunculosis, chronic constipation and a left loin mass of three weeks' duration. Moreover, she had failed to regain her birth weight of 8¼ pounds (3,742 Gm.).

Furunculosis of the chest and back had existed since the age of 3 weeks. Many of the lesions had been incised and drained. For three weeks previous to admission there had been no bowel movement without an enema. During this time the mother noted a left loin mass. Birth and family history were negative.

*Examination*.—The patient was markedly emaciated and anemic; she looked sick. The skin was thin and covered with dry furuncles over the chest and back. Both ear drums were reddened. The pharynx, heart and lungs were normal. The abdomen was distended. There was a bulging of the left side due to a large, oval, firm, fixed, smooth surfaced mass filling the entire loin. The remainder of the abdomen was tympanitic. Rectal examination revealed a fixed mass high in the left lower quadrant.

Urinalysis revealed: hazy and alkaline urine; specific gravity, 1.014; albumin, a trace; sugar, 0; acetone, a trace; white blood cells, 1 to 2 per high power field; culture, Staphylococcus albus. Blood count revealed: red blood cells, 3,460,000; hemoglobin, 60 per cent; white blood cells, 46,950; polymorphonuclears, 58 per cent; large lymphocytes, 19 per cent; small lymphocytes, 12 per cent; transitionals, 11 per cent.

April 20, a roentgen series of the gastro-intestinal tract showed medial displacement of the descending colon with marked spasticity. April 23, a barium enema showed a spastic descending colon.

April 28, a cystoscopy was done without an anesthetic. The bladder urine was hazy. There was mild cystitis and trigonitis. Both ureters catheterized easily. Indigo carmine, injected intravenously, appeared in deep concentration from each side in five minutes. A left pyelogram was made and revealed a normal pelvis with mesial displacement (fig. 1). A specimen from the left ureter showed an occasional leukocyte. Culture yielded Staphylococcus albus. A specimen from the right ureter was normal.

The diagnosis was perinephric abscess. During this period the temperature ranged between 100 and 103 F., with continued loss of weight. Two preoperative blood transfusions were given.

*Operation and Result*.—April 30, an operation for perinephric abscess was performed. The usual loin kidney incision was made and drainage was done. About 2 ounces of foul smelling pus was evacuated. The abscess was found to engulf the kidney. The organ was not explored because of the extreme condition of the patient. Two cigaret drains were inserted with closure. Culture of the perirenal pus yielded Staphylococcus albus and B coli.

Following the operation, the child was doing well for several days when the loin drainage became unsatisfactory. The wound was reopened, but a gradual downward course with slowly rising temperature and loss of weight led me to believe that renal suppuration probably existed. A preoperative transfusion was given and another operation performed, June 4. Loin exploration and nephrectomy was done. The child at this time weighed 6 pounds 3 ounces (3,107 Gm.). The kidney showed a typical carbuncle of the upper outer pole (fig. 2) with locally elevated cortical surface. The remainder of the organ was normal.

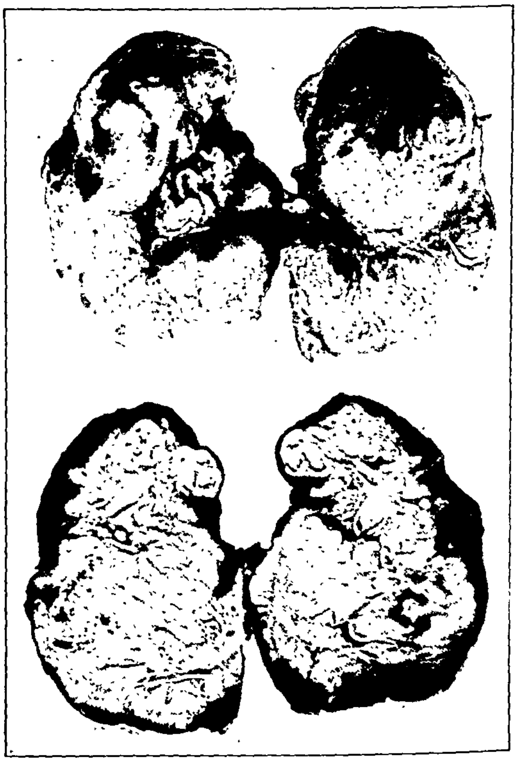

Fig. 2 (case 1).—External and section appearance of carbuncle. The cortical elevation is admirably shown, as is the intrarenal process. The remainder of the organ appears normal.

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[1] Moore, T. D.: Renal Carbuncle, J. A. M. A. **96**: 754 (March 7) 1931.

Postoperatively the child did poorly, suffering marked vasomotor collapse and abdominal distention. Death occurred on the sixth day with a temperature of 107 F. During the six-day interval two transfusions were given and, during the course of the surgical period, numerous hypodermoclyses. Blood taken shortly before death showed nonprotein nitrogen 400 mg. per hundred cubic centimeters. Autopsy was refused. Because I wished to preserve the kidney specimen in its entirety, histologic studies were not made.

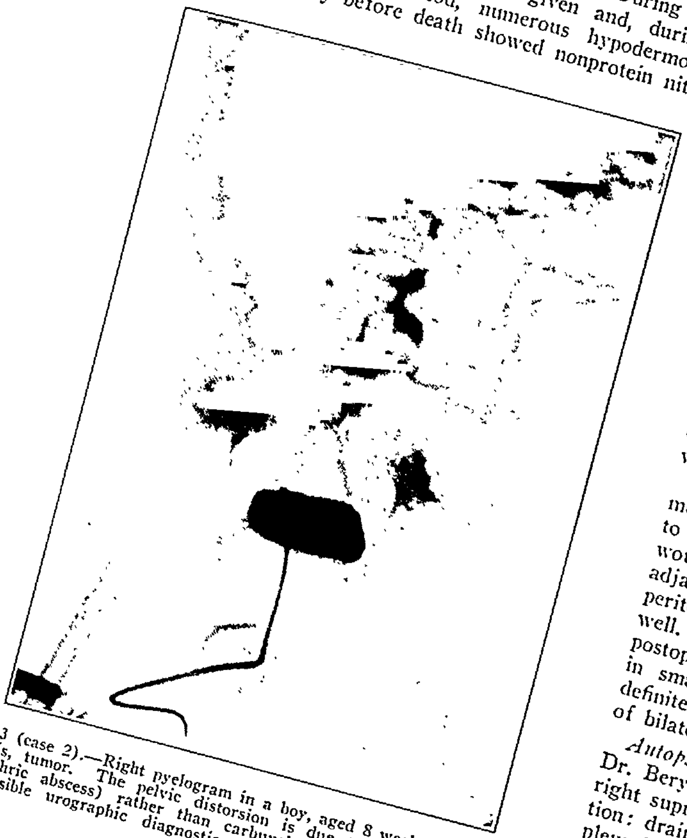


Fig. 3 (case 2).—Right pyelogram in a boy, aged 8 weeks. Urographic diagnosis, tumor. The pelvic distorsion is due to extrarenal pressure (perinephric abscess) rather than carbuncle (compare with figure 5). The possible urographic diagnostic difficulties in renal carbuncle are apparent.

Case 2.—*History.*—E. S., a boy, aged 8 weeks, was admitted to Babies' Hospital, Feb. 25, 1931, because, for the past two weeks, all feedings were vomited and the abdomen was enlarged and hard. Subsequently, it was learned that shortly before the present onset the child suffered furunculosis of the back. The child, born at term, had been delivered with forceps and was breast fed for one month.

*Examination.*—Physical examination revealed a protuberant abdomen with a well rounded, slightly nodular fixed mass felt in the right loin extending from the umbilicus laterally to the back and from the costal margin to the iliac crest. The temperature was 102.2 F. The remainder of the physical examination was negative.

The laboratory examination revealed a nasopharyngeal culture positive for thrush. Urinalysis revealed: acid urine; specific gravity, 1.018; albumin, a marked trace; sugar, 0; acetone, a marked trace; diacetic acid, 0; scattered leukocytes. Nonprotein nitrogen of the blood was, 27.8 mg. per hundred cubic centimeters. A phenolsulphonphthalein test showed first hour, 22.5 per cent; second hour, 12.5 per cent. Blood count revealed: red blood cells, 2,200,000; hemoglobin, 48 per cent; white blood cells, 13,950; polymorphonuclears, 68 per cent; lymphocytes, 24 per cent; eosinophils, 3 per cent; mononuclears, 1 per cent; myelocytes, 2 per cent; myeloblasts, 2 per cent.

February 26, intravenous urography was done. A film taken one and a half hours after the injection of iopax showed a normal left renal pelvis. The right pelvis was larger than normal; the calices were blunted. Cystoscopy was done, March 3. A sugar-ball anesthesia was given. Cystoscopically the bladder was normal. The catheter was passed 10 cm. up the right ureter without difficulty; a ureteral specimen was collected and a pyelogram made (fig. 3). Because the intravenous urogram indicated a normal appearing left organ and because of the delicate condition of the baby, left catheterization was not done. Indigo carmine intravenously did not appear from the right side in ten minutes' observation. The right ureter specimen showed pus + + and hemolytic Staphylococcus albus.

*Operation and Result.*—On the basis of the physical examination and the pyelogram, a renal tumor was diagnosed, a transfusion given and an operation performed, March 5. Expecting to perform a nephrectomy for a large renal tumor, I did a right transperitoneal exposure (T-shaped), rectus margin rib to iliac crest with median extension 6 cm. posteriorly toward the spine. In the loin, free pus was released and from 1 to 1½ ounces evacuated. Digital exploration revealed an extensive perinephric abscess with marked induration and friability of the fatty tissue. As I felt that the local pathologic changes and precarious condition of the patient did not justify extensive exploration, two cigaret drains were inserted and the wound was closed.

Postoperatively the wound drained freely and the child did moderately well for six days when, during a dressing, he began to cry. Massive evisceration through the infected abdominal wound resulted. Overlapping closure was done at once. The adjacent bowel in the right loin was densely adherent to the peritoneum overlying the abscess site and to the wound line as well. Scant reaction followed this closure operation; three days postoperatively, yellow feces appeared medially in the wound in small amounts. There was moderate distention but no definite signs of peritonitis. The child died eleven days later of bilateral bronchopneumonia.

*Autopsy.*—This was performed by Dr. Martha Wollstein and Dr. Beryl Page. The anatomic diagnosis was abscess of the right suprarenal and kidney; right perinephric abscess; operation: drainage of perinephric abscess; fibrosis, peritoneal and pleural adhesions; fecal fistula; bilateral bronchopneumonia; hemosiderosis of the liver and the spleen.

The stomach and intestine were enormously distended and there were numerous filmy adhesions everywhere between the coils of intestine. Dense adhesions were present beneath the surgical wound and the underlying coils of intestine and a probe could be passed through the opening in the wound into the lower ileum. The intestinal wall at this site was closely bound to the lateral abdominal wall by dense adhesions. Free exudate was not present. The umbilical vein was closed.

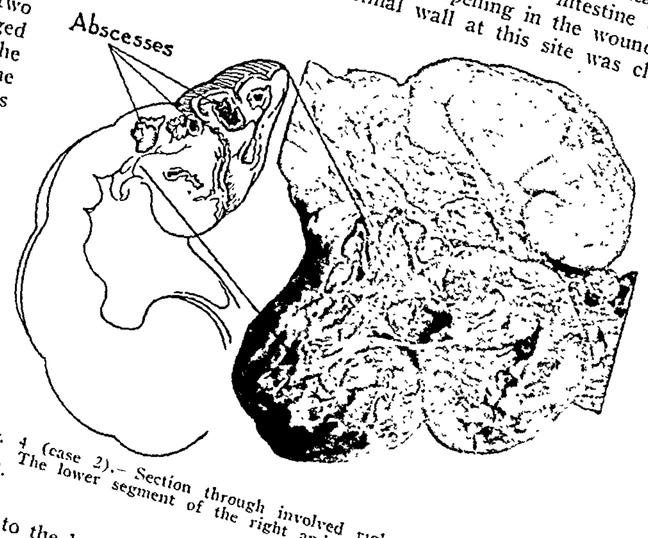


Fig. 4 (case 2).—Section through involved right kidney and suprarenal. The lower segment of the right and the entire left kidney are normal.

The base of the right lung was adherent to the diaphragm. Acute exudate was not present. The right lung showed incomplete separation of the upper and middle lobes both anteriorly and posteriorly. The anterior half of the lung was pale pink and well aerated, showing some lobules which were emphysematous along the anterior margin. The posterior half of both upper and lower lobes was purplish red, showing numerous subpleural hemorrhages. It was densely consolidated. This consolidation was most extreme in the upper lobe. The left lung showed complete separation of its two lobes. The upper lobe was pale pink and well aerated. The main portion of the lower lobe was similar to the upper lobe. The posterior part of the lower lobe was purplish red and slightly firm.

The liver was purplish red and of normal size. On the lower margin of the anterior surface were scattered small white plaques evidently of organized exudate. On section the liver appeared normal.

The intestine, which was distended, contained some fluid brownish fecal material. Numerous fibrous adhesions occurred on the serosal surface. In the ileum 15 cm. above the ileocecal valve there was a fistula opening into the surgical incision on the skin. The appendix, colon and rectum were normal.

In the tissues posterior to the right kidney was a heavy fibrinopurulent exudate and a little free pus, and the organ was densely adherent to the inferior surface of the liver. When the capsule was stripped away from the right kidney, a zone of fibrinopurulent exudate lay on the capsule extending outward from the pelvis of the kidney. There was also exudate on the posterior surface of the kidney. In other regions the capsule stripped readily from the kidney, leaving a surface on which the fetal lobulations were well marked. On section the kidney measured 4.5 cm. in length by 2.8 cm. in width. The upper pole appeared to be compressed beneath the right lobe of the liver. The cortex measured 2 mm. in width. In the lower half of the kidney near its medial surface was an abscess measuring about 4 mm. In the upper pole of the kidney in its medial portion were several abscesses, the largest measuring 3 mm. in diameter. These lay in both the cortex and the medulla. The pelvis was slightly dilated but was free from exudate. The right ureter appeared normal.

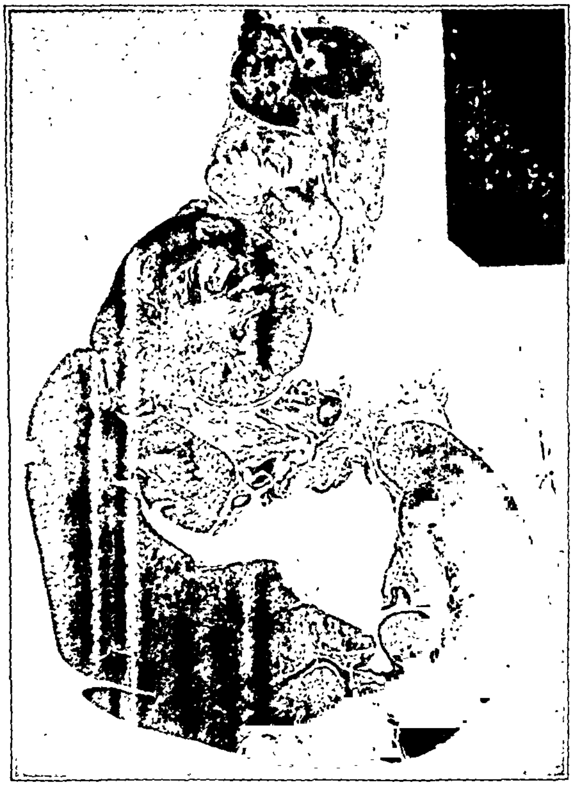


Fig 5 (case 2).—Section of entire right kidney and suprarenal. The character of the parenchymal lesion is well shown; freedom from involvement elsewhere in the organ is noteworthy.

The right suprarenal was adherent to the medial surface of the upper pole of the right kidney. The connective tissue over it showed tiny hemorrhages. The organ was firm and rounder than normal On section two abscesses, the largest 7 mm in its greatest width, lay in the central portion of the suprarenal. The suprarenal measured 2 cm. in width by 1 cm. in thickness. At one point the suprarenal and kidney seemed to be in direct contact. Elsewhere the suprarenal and kidney were joined by a zone of translucent, connective tissue and there was a thin layer of pus apparently lying between the main portion of the suprarenal and the kidney.

The left kidney measured 6 cm. in length and 3 cm. in width. The capsule stripped readily, leaving a pale surface on which the fetal lobulations were deep. On section the cortex and pyramids were of normal widths. The organ appeared slightly pale and was somewhat soft. The pelvis and ureter were normal. The left suprarenal was of average size. On section it showed a pale medulla and a central zone which measured about 1 mm. in width. It was brownish red. The bladder was normal. The bodies of the vertebrae adjacent to the perinephric abscess were normal.

Specimens from the left kidney were normal.

In the upper pole of the right kidney, in the portion of the organ adjacent to the suprarenal were several large abscesses made up of poorly preserved polymorphonuclears and surrounded by large numbers of vacuolated mononuclear cells. Large circumscribed masses of mononuclear cells extended far out into the neighborhood kidney substance, replacing both tubules and glomeruli. In the surrounding interstitial tissue were lymphocytes and plasma cells, and the surrounding tubules were filled with cytoplasmic and nuclear débris and contained a few polymorphonuclears. Clumps of yellowish brown pigment were numerous. Over the region containing the abscess the capsule of the kidney was not sharply demarcated but the tissue between the kidney and the suprarenal was densely infiltrated with large vacuolated mononuclears with fewer lymphocytes and plasma cells among them, and there was a large abscess in the perirenal connective tissue. In the neighboring part of the suprarenal several large abscesses occurred. These lay mainly in the central part of the gland. About them were zones of dense hyaline tissue, infiltrated with scattered lymphocytes and plasma cells. A well marked medulla was present in the remainder of the gland, and the intermediate zone was congested and contained small hemorrhages and necrotic cortical cells. Several extracortical fetal rests were present.

The pelvis of the kidney was wide, but in the section the entire pelvic lining was not present. That which was present appeared normal and a section of the ureter was normal.

The blood vessels in the section were normal.

A gram stain of the section showed masses of gram-positive staphylococci in the abscesses. Many of the leukocytes showed phagocytosis of the bacteria.

A smear from the kidney abscess yielded Staphylococcus aureus, nonhemolytic. A culture of the blood was made from the heart's blood. A smear from the culture yielded pneumococci and B. coli. A blood plate from the culture yielded B. coli.

## COMMENT

The usual course of staphylococcus metastasis to the kidney from a cutaneous infection and the development of carbuncle occurred in both of the cases reported. In case 2, the history of antecedent furunculosis was not obtained until after the operation. The subsequent clinical courses in both instances suggest that even though the patient is extremely ill and the surgical risk is great, a more extensive exploration at the initial operation is justifiable since extensive renal suppuration may exist. Certainly, continued fever and toxemia following liberal incision of a perirenal abscess indicates a thorough renal exploration.

In case 2 a most erroneous preoperative diagnosis was made. Perirenal suppuration was not seriously considered because the loin mass felt extremely hard, like a solid renal tumor. The temperature and the moderate leukocytosis were disregarded since, in children especially, they are commonly present with renal neoplasia The pyelogram (fig. 3) suggests a tumor and indicates a large kidney; in an adult with hypernephroma I have seen what is almost a urographic reduplication of the pelvic outlines in this infant. The pyelograms in neither case 1 nor 2 suggest renal carbuncle. The diagnostic difficulties are apparent.

While the extreme youth and the rarity of clinical recognition of renal carbuncle renders these patients and their lesions of unusual interest, the cases are recorded more particularly to emphasize that (1) infants and children are subject to grave urologic diseases; (2) the clinical picture is quite identical with that of similar lesions in adults; (3) when indications for urologic examination or radical urosurgical treatment exists, they should be liberally employed, and (4) to these procedures a tender age is no contraindication.

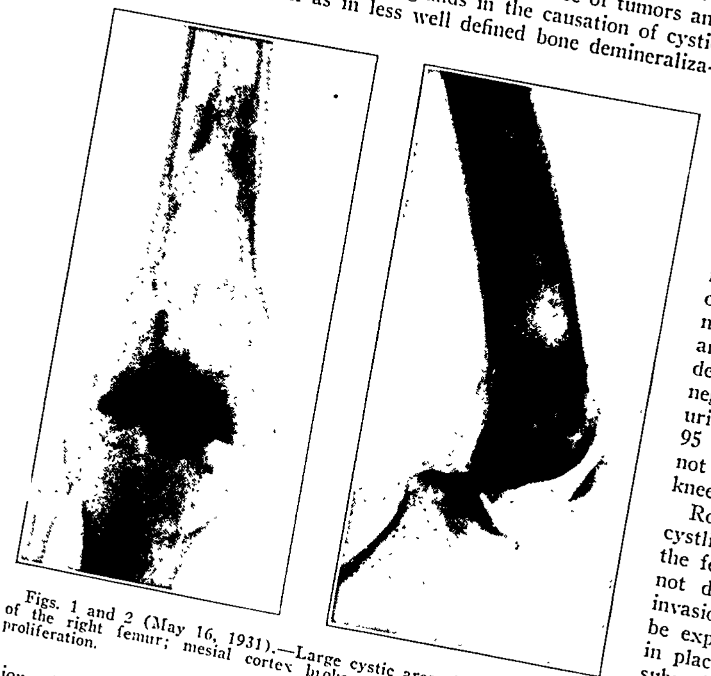
140 East Fifty-Fourth Street.

## *Clinical Notes, Suggestions and New Instruments*

### IRRADIATION OF THE PARATHYROIDS IN CYSTIC DISEASE OF THE BONES

Edwin A. Merritt, M.D., Washington, D. C.

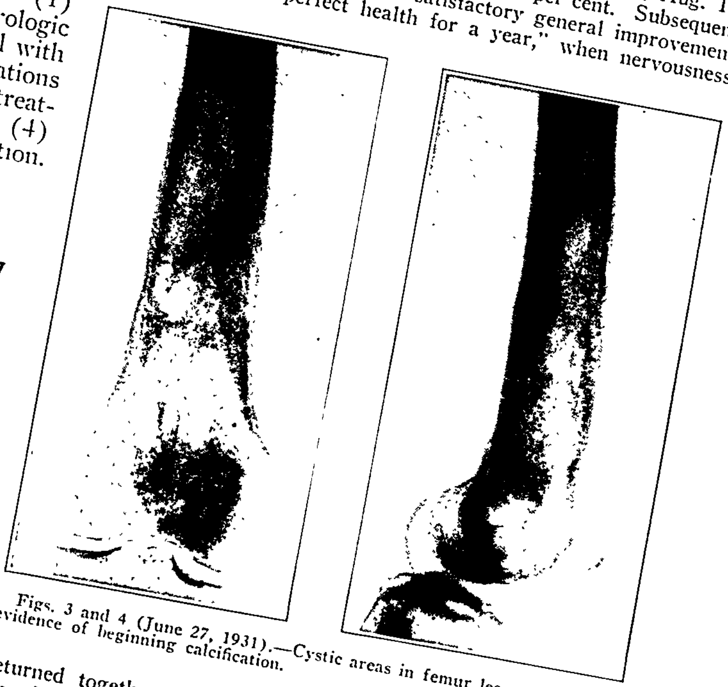
Endocrinologic study has demonstrated a definite relation between the parathyroid glands and the metabolism of calcium in the skeletal body, which seems to have been first noted by Erdheim in 1903. Since then other observers, including Verbitz, Langhams, Schlagenhaufer, Gunther and Mandl, have eported cases to substantiate the direct influence of tumors and hyperplasia of the parathyroid glands in the causation of cystic one disease as well as in less well defined bone demineralization.



Figs. 1 and 2 (May 16, 1931).—Large cystic areas in the distal third of the right femur; mesial cortex broken down with periosteal bone proliferation.

The case that we are reporting points to the possibility of cure of certain cystic diseases of bone by roentgen irradiation of the parathyroids, and no record of a similar case influenced by irradiation can be found in the literature.

A white woman, aged 34, unmarried, referred to the radiologic clinic by Dr. Bullock of Washington, D. C., was admitted to Garfield Hospital by ambulance, May 16, 1931. The family history was unessential. She had had the usual diseases of childhood. She had always been well up to January, 1928, when symptoms of hyperthyroidism developed. In addition to the cardinal signs there was a loss of weight of 40 pounds (18 Kg.), insomnia, nausea and vomiting, and marked weakness. Prior to the subtotal thyroidectomy, which was performed, Aug. 14, 1928, the basal metabolic rate was plus 23 per cent. Subsequent to the operation there was a satisfactory general improvement to the point of "perfect health for a year," when nervousness



Figs. 3 and 4 (June 27, 1931).—Cystic areas in femur less conspicuous; evidence of beginning calcification.

returned together with all the previous symptoms of hyperthyroidism, which were thought by the patient to be "more severe than before the operation." In addition, she complained of increasing stiffness and pain in the right knee, which finally, with symptoms of hyperthyroidism, produced complete disability.

The patient was emaciated, and was very nervous and apprehensive. The temperature was 98.6 F.; the pulse, 98; the respiration rate, 20. There was a pronounced tremor of the fingers, and slight bilateral exophthalmos. There was a scar of a previous thyroidectomy with a rather firm bilateral moderate enlargement of the thyroid above the scar. The heart and lungs were normal. The abdomen and viscera presented no demonstrable abnormality. The Wassermann reaction was negative. The basal metabolic rate was plus 35 per cent. Blood, urine and calcium determinations were not done. She weighed 95 pounds (43 Kg.). The right leg was semiflexed and could not be manipulated without producing excruciating pain in the knee joint. The knee was slightly swollen.

Roentgenograms of the right knee (figs. 1 and 2) showed cystlike areas of bone destruction involving the distal end of the femur with some periosteal proliferation. The cortex was not definitely expanded nor did it have the appearance of invasion by malignant process. The periosteal reaction might be explained by the fact that the cortex was broken through in places, resulting in egression of fluid material through the subperiosteal spaces, with resulting bone proliferation. Examination of the chest and skull showed no abnormality. Two areas of the neck, including the thyroid and parathyroid areas, were irradiated in the following dosage: 5 ma., 135 kilovolts, 10 inch distance, with 5 mm. of aluminum filter. June 6, 1931, three weeks after the first treatment, there was rather noticeable improvement in the patient's condition. There was some gain in weight, less nervousness, and a decrease in pulse rate (90). The pain in the right knee had disappeared almost entirely. Further roentgen treatment was given to the same areas with the same dosage. June 27, symptoms of hyperthyroidism showed marked improvement. Pain in the right knee had entirely disappeared. The patient was able to walk comfortably and felt very well. Roentgenograms of the right knee showed marked regeneration of bone in the cystic areas previously noted

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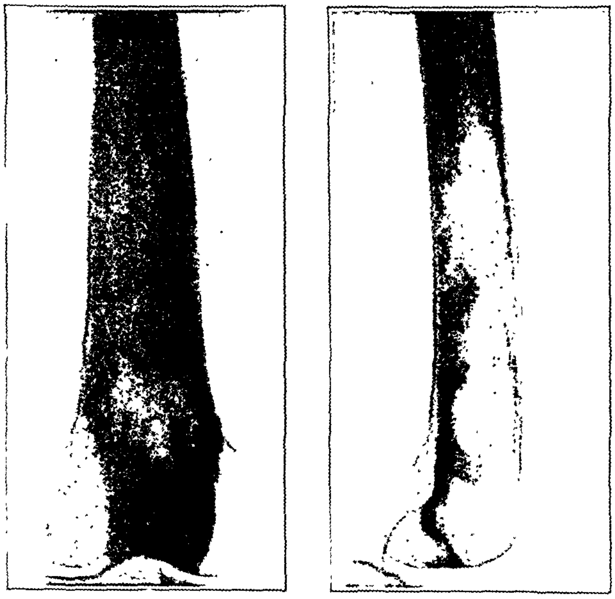
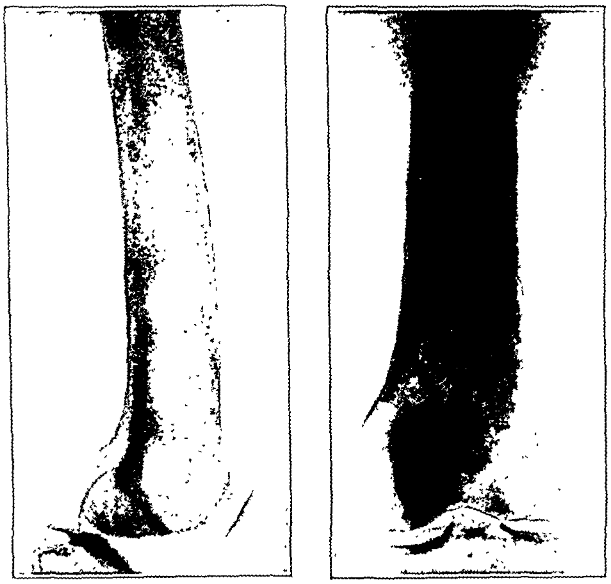
From the Radiological Clinic of Drs. Groover, Christie and Merritt.

(figs. 3 and 4). Further roentgen treatment was administered with *the same dosage to the thyroid and the parathyroids.* August 8 there was still further improvement. There was a marked gain in weight; the patient now weighed 116 pounds (52.6 Kg.). The symptoms or disability were no longer noticeable in the right knee. Roentgen treatment was administered to the thyroid and the parathyroids in the same dosage.



Figs. 5 and 6 (Aug. 29, 1931).—Additional calcification of cystic areas: normal architecture of bone appearing.

August 29, the patient felt well but was slightly nervous and had a slight tremor. There were no symptoms from or discomfort in the knee. Roentgen treatment was again administered to the thyroid and the parathyroids in the same dosage. Roentgenograms of the knee (figs. 5 and 6) showed still further new bone formation in the cystic areas. September 19, the patient weighed 120 pounds (54.4 Kg.); tremor had disappeared, and she was much less nervous. One more treatment to the thyroid and the parathyroids was advised at this time. October 12, when the patient returned for roentgen examination of the knee (figs. 7 and 8), there was scarcely a trace of the original bone lesion or of hyperthyroidism.



Figs. 7 and 8 (Oct. 12, 1931).—Scarcely any evidence of previous cystic areas; architecture of bone nearly normal.

1835 Eye Street N. W.

## REMOVAL OF MASSIVE VASCULAR FIBROMA BY ELECTROCOAGULATION

A. F. Tyler, M.D., and K. L. McShane, M.D., Omaha

The bloodless removal by electrocoagulation of a large tumor, so vascular that several attempts at surgical removal had failed because of hemorrhage, indicates the value of this method.

The tumor was large. It is the only one of this size, attached to the side of the face, reported in the literature.

*History.*—Miss A. M., an unmarried white woman, aged 33, complained of a large tumor on the right side of the face. The patient stated that instrumental delivery at birth resulted in injury to the right eye and deformity of the right orbit. At 3 months of age, the right eye was removed on account of festering of the eyeball. At 4 years of age, the late Dr. Harold Gifford, Sr., of Omaha removed a growth from the right eyelid and counseled against any future surgery to any tumorous growth of that region. At 5 years of age, multiple painless tumors of varying size began to develop all over the body. At 7 years of age, an attempt was made to remove a small tumor of the right supra-orbital region. At 15 years of age, a blood vessel in the right side of the neck was tied off and another attempt made to remove the tumor, which had gradually increased in size. The body was generally covered by soft, painless, movable tumors, pea sized to walnut sized, which caused no discomfort. However, the tumor in the right supra-orbital region slowly increased in size until it became very heavy. In March, 1931, another attempt at surgical removal was made but abandoned because of hemorrhage. The surgical wound healed, but in a short time the skin ulcerated and broke open on the lateral inferior surface and began a serosanguineous drainage. Following the operation, the tumor immediately took on a rapid growth and since the middle of August had increased tremendously in size until, November 26, it was approximately 18 inches (45 cm.) long by 10 inches (25 cm.) wide by 8 inches (20 cm.) thick.

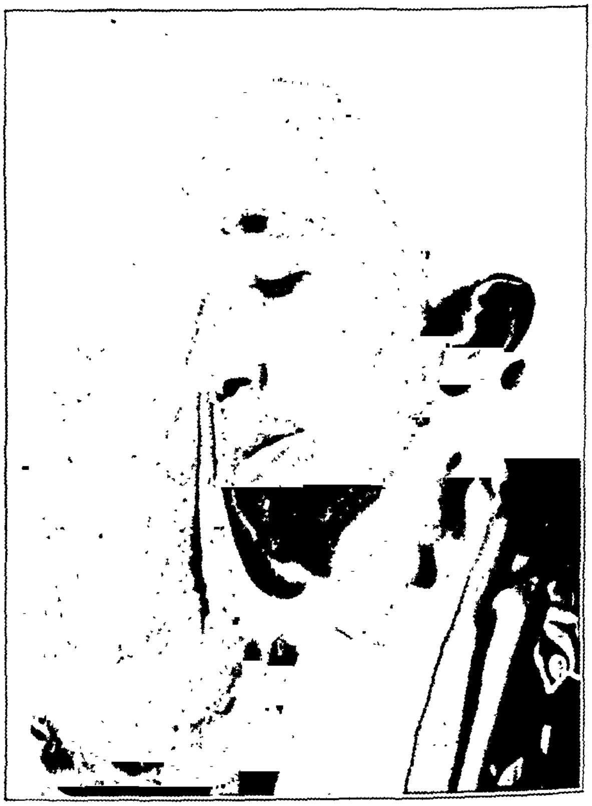


Fig. 1.—Tumor from the left side. The long vertical cleft in the skin is the elongated right palpebral fissure, the margins of which opened and closed when the left eye blinked.

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From the Tumor Clinic of Swedish Immanuel Hospital.
Read before the Immanuel Hospital staff meeting, Jan. 8, 1932.

*Examination.*—The patient was emaciated; she had lost 20 pounds (9 Kg.) from the middle of August to Nov. 26, 1931. Her skin was hot and dry (temperature 102) and studded with tumors, varying in size from that of a pea to that of a small orange, all over the body, including the scalp and the soles of the feet. One tumor about 0.5 by 1.5 cm. was attached to the buccal surface of the margin of the right upper gum.

From the entire right half of the face was suspended the large tumor. On the lower third of the lateral surface was an ulcerative, draining, exuberant mass with a horizontal and medial vertical cleft, extending up under the tumor surface for about 4 inches (10 cm.), and lined by necrotic tissue, giving off an offensive odor. On the medial surface of the tumor was a vertical cleft, lined with mucous membrane, about 4 inches (10 cm.) long, located in the medial third of the tumor, which twitched with the blinking of the left eye and was apparently the distorted right palpebral fissure.

The blood count revealed: Hemoglobin, 55 per cent; red blood cells, 3,600,000; white blood cells, 34,000; polymorphonuclears, 90 per cent; small lymphocytes, 7 per cent; large lymphocytes, 3 per cent. The urine was normal; the Wassermann test was negative.

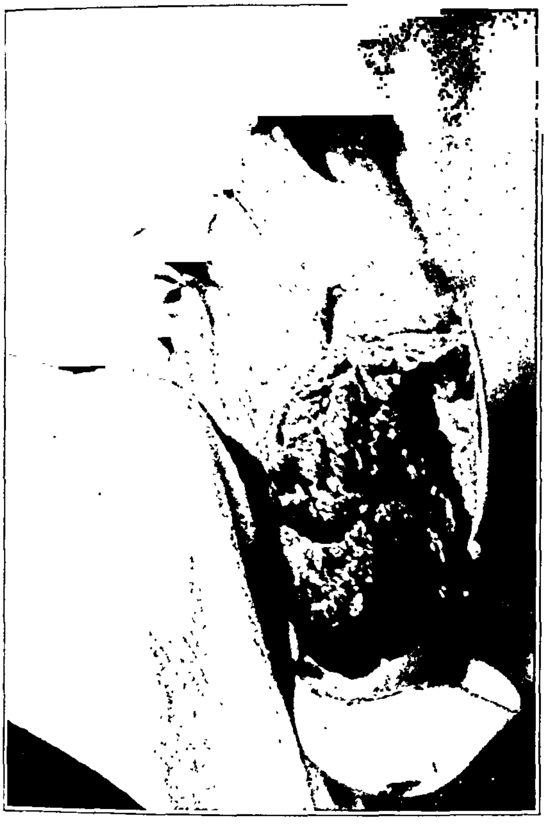


Fig. 2.—Tumor from the right side. Projecting are the ulceration and a large denuded tumor mass. The scars in the skin above the ulcerated area are marks at previous attempts at surgical removal.

The clinical diagnosis was neurofibromatosis with probable sarcomatous degeneration of the tumor on the right side of the face.

*Operation and Result.*—Following a preliminary hypodermic with one-sixth grain (0.011 Gm.) of morphine sulphate, "Avertin" was administered by rectum, 80 mg. per kilogram of body weight being used. This anesthetic was chosen because of the absence of fire hazard when electrocoagulation is used about the face. Aware of the size of the venous spaces which had made previous attempts at surgical removal fail, we used electrocoagulation, the current chosen being one of relatively low frequency, low voltage and high amperage. In order to increase the heat further, two pointed active electrodes were used. These were placed in contact with the tissue about 1.5 cm. apart and held in one position long enough to coagulate the tissue but not to char it. An adjacent area was then coagulated. This process was continued until the entire thickness of the skin and underlying tumor mass were coagulated across, the coagulated band being about 2.5 cm. wide. With one hand on each side of this coagulated band, gentle pressure was made so as to pull the tumor apart. The coagulated tissue easily separated. In this manner we were able to coagulate the vascular spaces and vessels before severing them, making a bloodless operation of it.

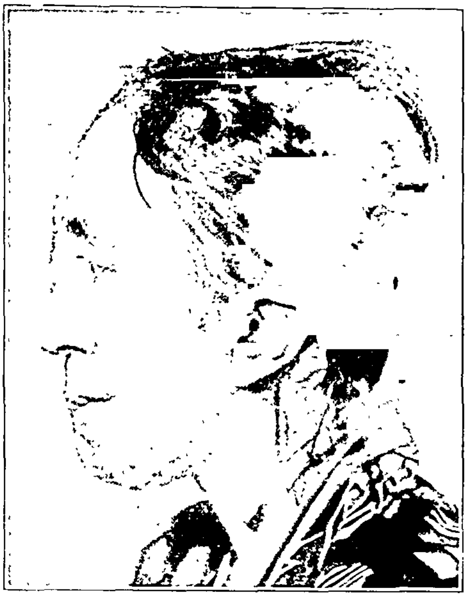


Fig. 3.—The left side of the face after removal of the tumor by electrocoagulation.

The coagulated tissue, attached to the proximal side of the wound, separated off in about one week, after which healthy granulations appeared. After the granulations were in a proper condition a plastic operation was done to close the defect as well as possible, although complete closure could not be made. The remaining defect was allowed to fill in by granulation and epidermization.

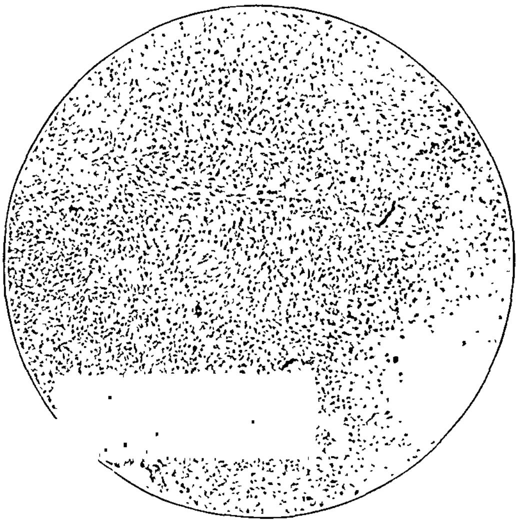
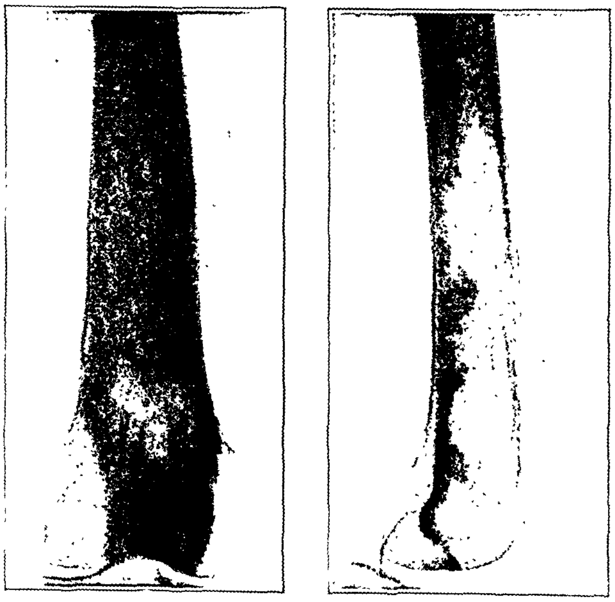


Fig. 4.—Section of tumor tissue showing the connective tissue fibers characteristic of fibroma molluscum.

The integument over the tumor was thickened to 4.5 cm. The superficial veins were about 1 cm. in diameter and the subcutaneous tissue contained large venous spaces so that hemostasis was impossible with hemostatic forceps. The technic described enabled us to coagulate this tissue, producing thrombi in the venous spaces before they were opened. The coagulated (figs. 3 and 4). Further roentgen treatment was administered with the same dosage to the thyroid and the parathyroids. August 8 there was still further improvement. There was a marked gain in weight; the patient now weighed 116 pounds (52.6 Kg.). The symptoms or disability were no longer noticeable in the right knee. Roentgen treatment was administered to the thyroid and the parathyroids in the same dosage.



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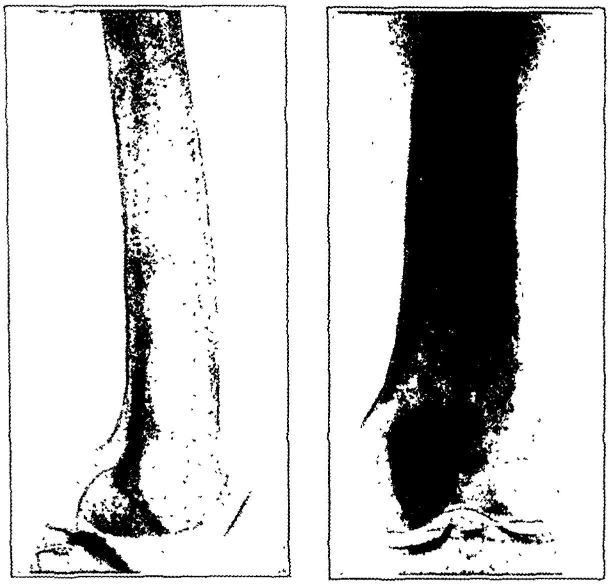

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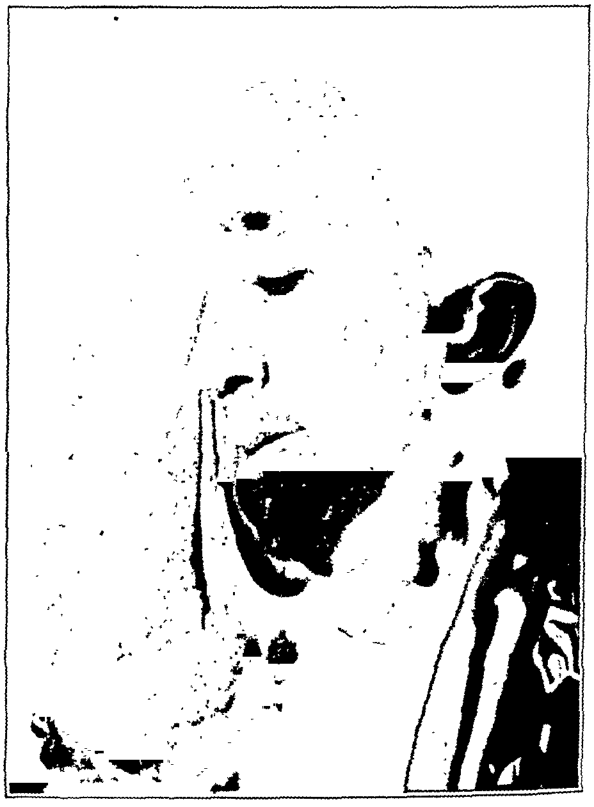

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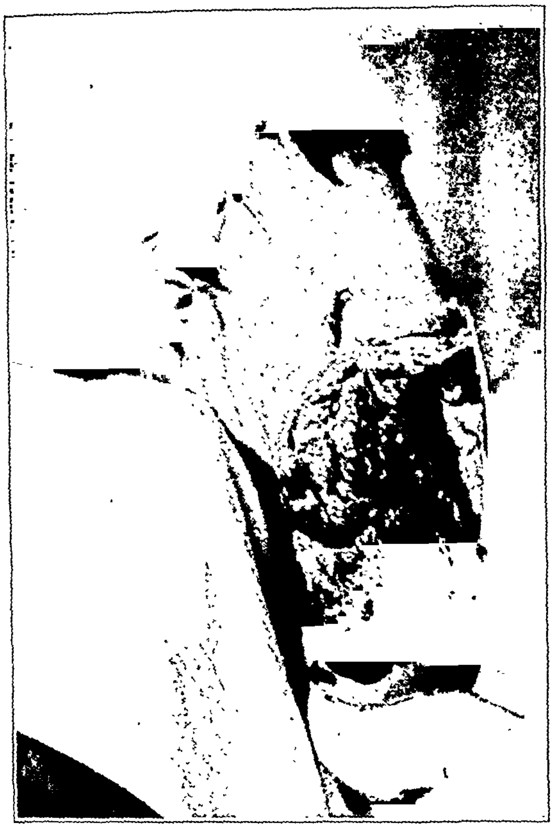
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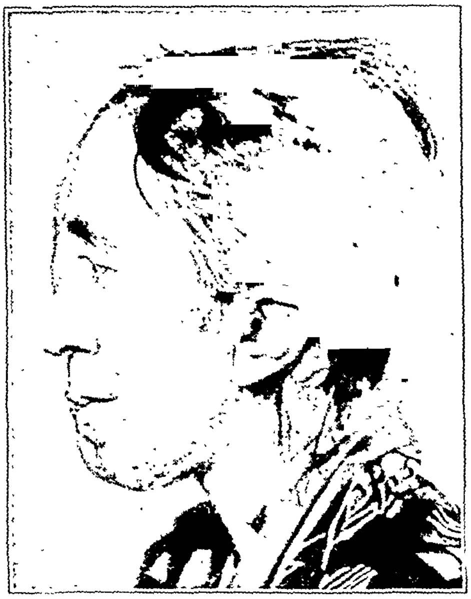
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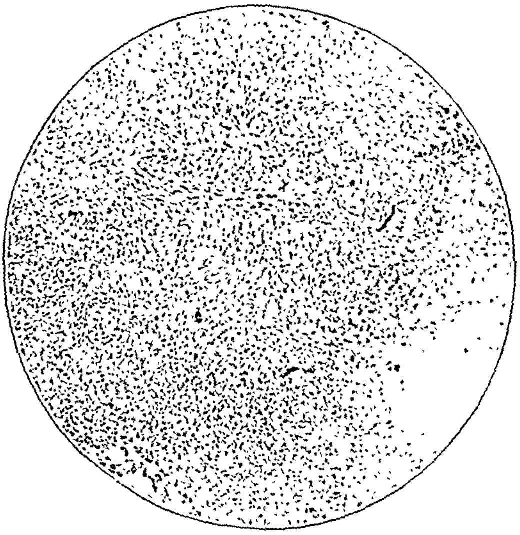
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The tumor was attached to the periosteum of the skull in the right temporal region. The thin areas in the skull bone were due to pressure atrophy of the outer table accompanied by deformity from the heavy tumor pulling downward and outward, instead of tumors in the orbit pressing outward, as we had thought before operation.

Besides the one large tumor there were numerous smaller ones in the subcutaneous tissues of the remaining flaps. On removal, these were firm, nonvascular and of the same color as cartilage.

Dr. H. E. Eggers made the microscopic observations. The material throughout consisted of connective tissue fibers, irregularly interlaced, and of a uniform stage of advanced fibroblastic development, without evidence of excessively active division. Nerve filaments could not be detected.

The microscopic diagnosis was fibroma.

This disease is often spoken of as multiple fibromatosis.

### SUMMARY

It would appear that there are four general divisions of symptomatology of von Recklinghausen's disease, or fibroma molluscum:

1. Tumors of the skin.
2. Tumors of the nerves.
3. Pigmentations of the skin.
4. Functional disturbances.

1216 Medical Arts Building.

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# CLUBFOOT

F. C. Kidner, M.D., Detroit

The cure of congenital clubfoot has always presented a difficult problem. In spite of many recognized methods of treatment, unsatisfactory results are still common. Such failure results in a greater or less degree of physical handicap which is lifelong in its effects.

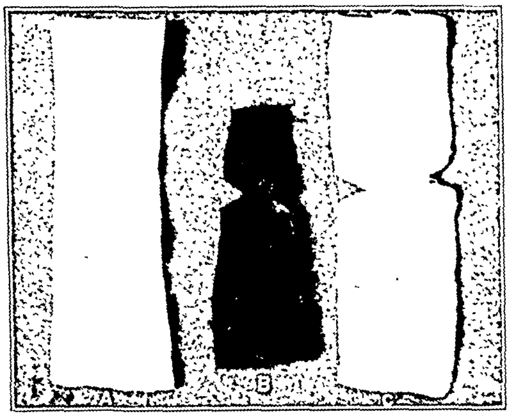

Fig. 1.—*A*, single thickness flannel next skin; *B*, felt pad for sole and heel; *C*, plaster-of-paris posterior mold cut for heel.

The three principal causes of failure are delay in the inauguration of treatment, imperfect nerve supply of the muscles, and failure to obtain complete overcorrection of the deformity. Fortunately, the first cause through education of the general practitioner is rapidly disappearing. Nowadays it is generally recognized that, the earlier treatment is undertaken, the better the chance for real cure. The second cause, as in cases of spina bifida, is and always will be a complication. Its presence offers a special problem which requires radical and long continued measures for its solution. The third cause, which is the most common, results from faults in the method of treatment used, or from lack of thoroughness in its application.

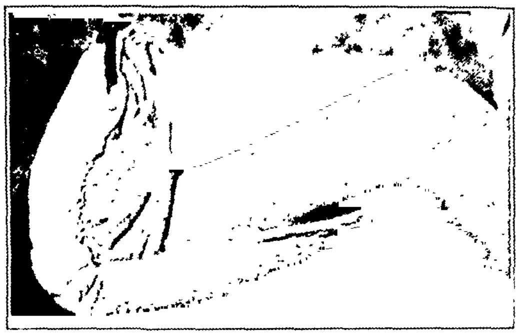

Fig. 2.—Padded posterior mold in place and hardened in corrected position.

Because it is difficult to obtain and maintain complete overcorrection to the extent of reversing the deformity by any form of treatment in common use, I am emboldened to add one more procedure to the many already recognized. It is intended for use on feet that are still sufficiently flexible to be overcorrected by manipulation. This procedure is relatively simple, is efficient, and avoids the common dangers of interference with the circulation of the foot and of pressure sores. The materials used are easy to handle and are obtainable anywhere. They are inexpensive. Plaster of paris, felt padding and flannelette are all that are required. The procedure is as follows:

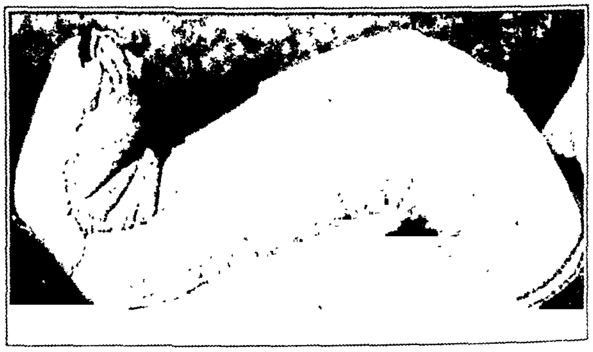

Fig. 3.—Rest of leg wrapped with bias flannel bandage.

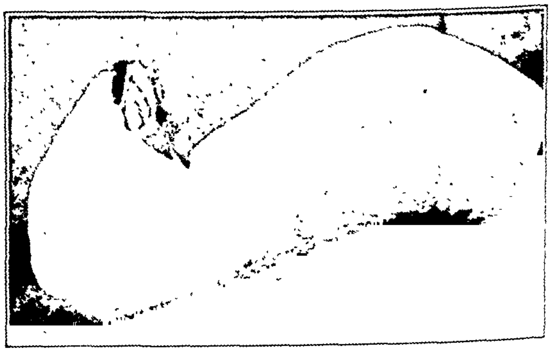

Fig. 4.—Lateral view of plaster completed.

A full overcorrection, which means correction to the point at which the dorsum of the foot can be brought in contact with

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From the Orthopedic Department of the Children's Hospital of Michigan.

the anterior surface of the leg, is obtained by manipulation carried out, except in very young infants, under a general anesthetic. This full overcorrection is sometimes obtained at the first trial, but more frequently two or more trials are necessary.

When it has been accomplished, a posterior plaster-of-paris mold long enough to extend from a point one-half inch beyond the ends of the toes around the heel to the upper limit of the calf, and one inch wider at the lower extremity than the width of the forefoot, is made. At the heel of this mold, two V shaped cuts are made in the side of the mold to prevent wrinkling. On top of the mold is placed a thin felt pad also cut to fit the heel. On top of this a soft layer of flannelette is placed. While still soft, this mold is bandaged to the sole of the foot and back of the calf with the flannelette layer in contact with the skin. During the process of hardening, the surgeon holds the foot in full overcorrection of the plantar flexion of the foot and of the adduction of the forefoot, care being taken to prevent squeezing of the toes together. As the mold has been cut wider than the sole of the foot, its turned up medial edge acts as a shelf against the inner side of the big toe to maintain the correction of the forefoot adduction. When the mold is hardened, it alone serves to maintain the correction. In order to hold the mold in place, the whole lower leg and thigh are bandaged with flannelette and then enclosed in circular plaster of paris with the knee at right angles. This circular plaster is carried around the sole of the foot without enclosing the front of the ankle. When the dressing is complete the whole dorsum of the foot and the front of the ankle are visible, so that there is no possibility of pressure in these regions. Thus the only obstruction to circulation is the fat and skin of the patient's foot where it wrinkles over the dorsum.

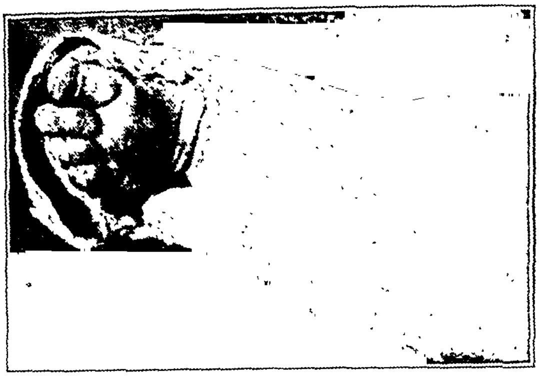

Fig. 5.—Anterior view of plaster completed, showing entire absence of pressure over anterior surface of foot and ankle with strong overcorrection. Also shelf on posterior plaster mold which prevents varus of the forefoot.

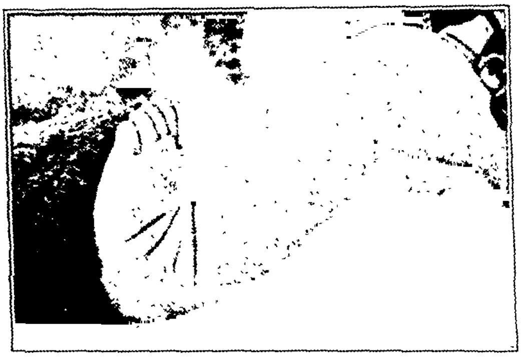

Fig. 6.—Amount of overcorrection easily maintained.

The advantages of this method are that it allows constant inspection and avoids all possibility of external pressure. The illustrations are self explanatory.

1337 David Whitney Building.

## FRACTURE OF THE ELBOW

James Warren Sever, M.D., Boston, and H. Quimby Gallupe, M.D., Waltham, Mass.

This case is reported for two reasons: first, because of its excellent functional and anatomic result, in spite of totally unorthodox treatment, and, second, because of its exemplification of Wolff's law, or the law of "bone transformation."

Wolff's law is as follows: Every change in the form and function of the bones, or of their function alone, is followed by certain definite changes in their internal architecture, and equally definite secondary alterations of their external conformation, in accordance with mathematical laws.

One of the corollaries of Wolff's law is that of "functional shape." The external force and internal architecture are determined by function alone.

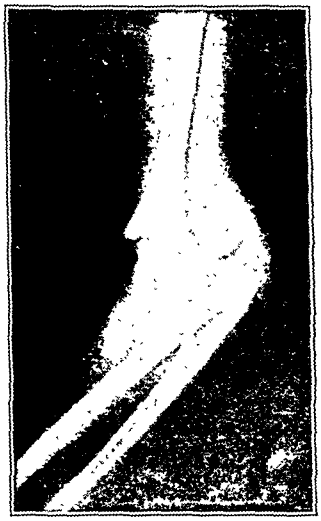

Fig. 1.—June, 1928: note backward displacement of lower end of humerus.

### REPORT OF CASE

J. M. C., a boy, aged 8 years, fell, June 10, 1928, and fractured his right elbow. A roentgenogram showed a supracondylar fracture which was at once reduced perfectly, but swelling and loss of radial pulse necessitated change of position of the elbow, and consequent loss of reduction of the fragments. This was necessary to preserve the hand and lower arm. As a result of the swelling, the skin in the bend of the elbow gave way, and there resulted for some time an open wound exposing the muscles but not communicating with the joint itself.

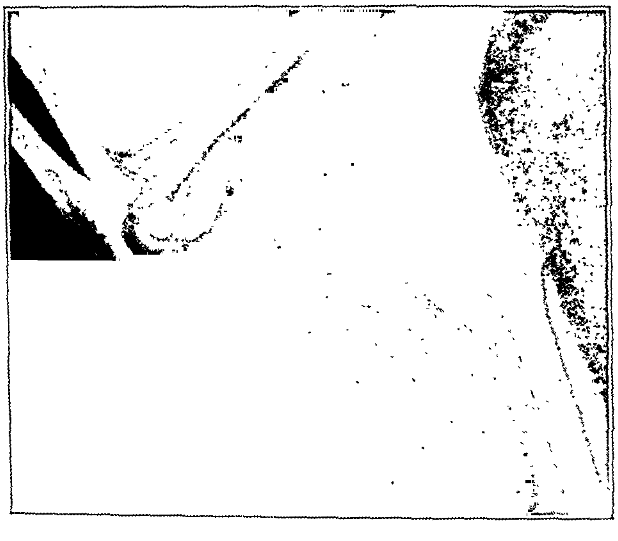

Fig. 2.—June 31, 1928: note new bone; displacement of lower fragment uncorrected.

We saw the child in consultation about a week later. An attempt was made at that time to reduce the fracture, but on account of the continued swelling and the open wound it was abandoned. An internal angular splint was applied and advice was given to leave the elbow as it was until the wound had healed and the swelling subsided. A roentgenogram taken the day of the accident shows the condition of the fracture, with the backward displacement of the lower fragment. There was also considerable lateral displacement (fig. 1).

The swelling disappeared and the skin healed. A roentgenogram, taken June 31, still showed considerable backward and lateral displacement of the lower fragment. There was a definite bridge of new bone uniting the fragment to the back of the shaft of the humerus (fig. 2).

The splint was omitted as soon as the wound had healed, and the elbow was held as fully flexed as possible for about three weeks, following which freedom was advised. The child also submitted to physical therapy three times a week for several months, but no forcible passive motions were made.

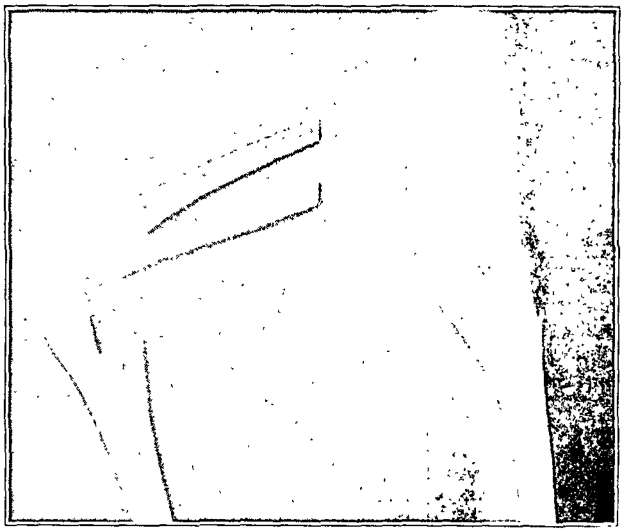

Fig. 3.—September, 1928: solid union; beginning absorption of proximal end of humerus.

In September, 1928, a tracing showed 55 degrees flexion and 120 degrees extension (fig. 3). The roentgenogram at this time showed solid union of the two fragments. There was marked absorption of the distal end of the proximal fragment, and the lateral displacement was becoming much less marked. These changes were due, we believe, to functional use alone.

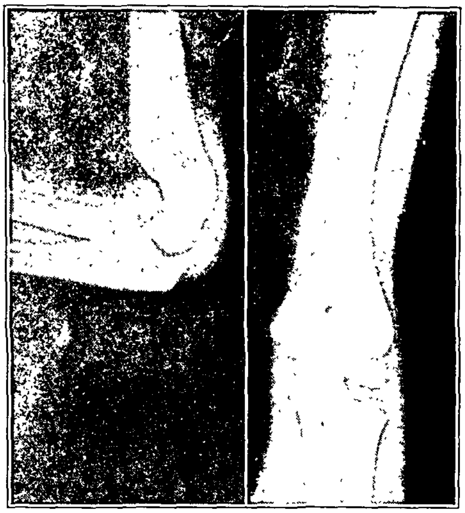

Fig. 4.—September, 1931: three years after fracture; normal function and motion; almost complete absorption of lower end of humerus.

The child then stopped treatment and was not seen again until January, 1931, at which time he had perfect motion and function, and no deformity.

He was seen again, Sept. 30, 1931; the result was perfect, anatomically and functionally. He was 10 years of age and in this period of two and a half years had developed through bone transformation and functional use a practically normal arm.

### COMMENT

This case represents not a standard nor even a generally accepted method of treatment but represents the best judgment of two surgeons in an attempt to prevent the development of an almost certain Volkmann's ischemic paralysis.

In the prevention of it there was a successful outcome; we were not so sure as to the fracture. Time, however, proved that growth and function could do great things. Throughout the conduct of this case, we had the hearty and interested cooperation of the parents, and they were at all times prepared to have the child operated on, but at each visit we delayed until the "next time." The end-result justified the means.

321 Dartmouth Street.

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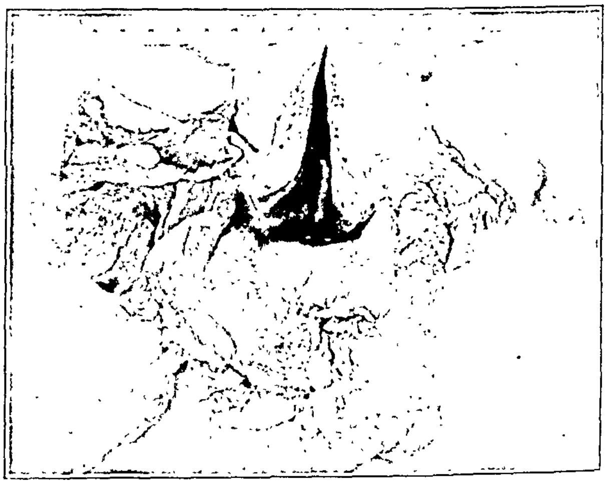
## THE CERVICAL PESSARY—A MENACE TO HEALTH AND LIFE

Harold O. Jones, M.D., Chicago

The widespread use of different types of cervical pessaries, presumably for therapeutic purposes but in reality for contraception, prompts this report. Physicians are led to believe that these instruments are beneficial to patients suffering with dysmenorrhea, or at least that they are harmless. Both assumptions are false. Within the last few years more than a dozen patients have been seen in the gynecologic service at St. Luke's Hospital with severe pelvic peritonitis and cellulitis due to infections originating about these pessaries. The following is an illustrative case history:



Pessary in place.

Mrs. M. R. entered St. Luke's Hospital in the service of Drs. Harry E. Mock and N. C. Gilbert too ill to permit either a complete history or a satisfactory examination. The clinical diagnosis was miliary tuberculosis.

Four months prior to admission, a cervical stem pessary had been inserted. Less than forty hours after admission, the patient died. Postmortem examination revealed a yellow metal pessary in the uterus; acute ulcerative endocarditis and ulcerative endocervicitis; thrombo-ulcerative endocarditis of the right auricle and the thebesian valve; mural thrombo-ulcerative endocarditis of the left ventricle; local fatty changes of the myocardium, and changes such as are usually seen with septicemia.

Cultures of the blood from the heart and from the uterus yielded Streptococcus hemolyticus.

The accompanying illustration shows the pessary in place.

104 South Michigan Avenue.

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**Psychology.**—It is an astonishing fact that in most countries medical courses boast no classes in psychology. Though no one seriously disputes the need of knowledge of psychology, the student is left to his own devices to secure such understanding, when, how and as he may.—Sigerist, H.: Man and Medicine, New York, W. W. Norton & Co., Inc., 1932.

## *Special Article*

# THE RELATIONSHIP OF THE PRIVATE MEDICAL PRACTITIONER TO PREVENTIVE MEDICINE

Sir ARTHUR NEWSHOLME, M.D., F.R.C.P., K.C.B.
BIRMINGHAM, ENGLAND

My duty here is to outline briefly developments and changes during recent decades, in Europe generally and particularly in Britain, in preventive as related to clinical medicine, and the influence of this altered orientation on the work of the private medical practitioner.

I may claim some advantage in discussing this subject; for not only did I engage in general medical practice during several years of my earlier professional life, but also for over thirty-five years I held responsible positions in public health work in England; and more recently I have during several years had opportunities to observe forward movements in America, and for the last three years have been completely occupied in a special study of the problem throughout Europe.[1]

My simplest plan would be merely to outline the main movements in Europe, leaving the reader—as I must in the end—to determine how far and in what respects, if any, European experience may be applicable to the circumstances of American life. To give this outline is my main task; but my sketch of European developments will, I am convinced, be more useful if prefaced by a few postulates, most of which will command unalloyed approval. These postulates, if accepted, will help in the judicial weighing and measuring of European developments. I am not without hope that some, at least, of these postulates will be considered worthy to rank as axioms.

My first postulate is that

> 1. Neither instructed public opinion nor the medical conscience, which in this connection is the advance-guard of Christian civilization, can tolerate the continuance of neglected sickness.

Several corollaries, or interdependent postulates, follow from this first postulate:

> 2. Medical care in its widest sense must be made available for all, as an important element in securing maximum efficiency and happiness in a civilized community.

Neglect to provide medical care for every member of the community being repulsive to the medical even more than to the public conscience, it follows that

> 3. Gaps and imperfections in present medical services must be made good and medical care must be of a quality which does not lack in any essential respect all that is necessary for expeditious recovery or for comfort, if recovery is unattainable.

It will be agreed that there can be no difference of opinion as to the preceding postulates. Controversy arises only when plans and methods are discussed, which necessarily are governed by financial as well as by medical considerations.

It is unnecessary for me to argue the truth of the further postulate that

> 4. Health is worth whatever expenditure is efficiently incurred in its maintenance or to secure its return.

I will therefore proceed at once to the postulate that

> 5. In present circumstances, both in America and in Europe, adequate scientific medical service has become unattainable by isolated or family effort standing alone, for a high proportion *of the total population.*

The evidence in favor of this statement is given in "Medicine and the State"; its truth is beyond dispute.

In passing, it is well to remember that there is a corresponding dependence on extrafamilial aid in our own training for the medical profession. In Britain, and I assume also in America, a large share of the cost of medical education is borne by state endowments or by gifts and endowments from the beneficent rich. It may be said, then, that neither doctors nor their patients are completely independent of communal financial aid, supplementing family resources.

The last postulate leads to the next:

> 6. For a large portion of the total sick population measures must be, and in part are already, organized to assist in providing necessary medical services, the sources available being private charity, communal taxation, and provident insurance for future needs.

In Europe these three sources, or two of them, are often seen in combination.

The need for special medical services (laboratory, physical diagnosis, specialist clinical departments) is an outstanding feature of modern medicine. While we welcome these aids to good work—for the rapid development of which general medical practitioners, in their wish to do the utmost for their patients, are largely responsible—I desire to add a further postulate as follows:

> 7. There is need to organize such cooperative work as will secure that specialism, which necessarily is concerned mainly with the disease, is not allowed to submerge the wider and wiser outlook of the general practitioner who is concerned with the patient himself.

Modern medicine calls for a further postulate, demanding a wider investigation of his patient than the private practitioner and specialist often give:

> 8. There is often needed a study of the patient from a psychic, social, economic and occupational standpoint, if his illness is to be accurately diagnosed and satisfactorily treated.

In view of this desideratum it is not surprising that social agencies and public authorities have taken a hand in medicine; and here again, as in the parallel case of experts and private practitioners, we still need to discover and to apply the best concerted methods of social team work.

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[1] The results of this investigation are given in my "International Studies on the Relation Between the Private and the Official Practice of Medicine": vol. I. Netherlands, Denmark, Sweden, Norway, Germany, Austria; vol. II. Belgium, France, Italy, Jugoslavia, Hungary, Poland, Czechoslovakia; vol. III. Great Britain and Ireland; and a more general statement in "Medicine and the State," Baltimore, Williams & Wilkins Company, 1932.

One further postulate is now generally accepted:

9. Modern medicine is becoming increasingly physiological and decreasingly pathological

—an effort on the part of the physician to aid in securing and maintaining maximum psychophysical efficiency, not merely or only efforts to regain it when damaged or lost. This change necessitates the searching out of early departures from health, and the giving of counsel in health which if adopted will diminish or prevent their occurrence.

At this point an almost parenthetical remark may be made on periodic medical examinations, the advocacy of which has become an accepted policy of the medical profession. In my view these examinations should usually form part of a medical overhaul of every member of a family by the family doctor, the findings to be reviewed at intervals. I have never disguised my opinion that periodic examinations of men, say between 40 and 60—though the advice based on such examinations is useful and may retard illness—are too late as regards the most serious causes of breakdown in this middle period of life, and that the earlier family care predicated above has an immensely wider scope of preventive potentiality. It is at earlier ages that the chief sources of permanent middle-life breakdown originate. In childhood and youth occur the septic diseases and acute infections, including acute rheumatism, which produce cardiac and other disablements in middle life; at the same period of life or in early adult life tuberculosis causes a serious though decreasing drain on life; while the syphilitic virus, usually inoculated in early adult life, produces its results in arterial degeneration, premature old age and insanity perhaps some twenty years later.

These three greatest sources of permanent disablement and death during the working years of life can best be obviated by the application of clinical and social medicine during childhood, youth and adolescence. But, let me add, I do not doubt that later medical overhauls have some preventive value, and a greater value in staying the progress of disease already present.

### PUBLIC AUTHORITIES AND MEDICINE

With the preceding postulates in mind, let us next glance at European developments in the relationship between the public and the private practice of medicine. Public authorities for long have busied themselves with the medical care of the sick poor (and of maternity) both domiciliary and in hospitals. In other directions their incursions into medicine have been more recent and have been activated chiefly by the growth of preventive medicine and public health.

*Medical Aid for the Poor.*—In all European countries there is some provision of medical aid for the necessitous, including help in childbirth. It may take the form of a special medical officer in every district for this work, as in Britain and the Scandinavian countries; or, as in France, every doctor may undertake this work according to a fixed schedule of fees. The French system is being advocated in Britain by the British Medical Association. This medical service for the poor includes also institutional medical treatment, now greatly improved in quality in Britain. In Ireland, in many, especially in rural, districts, half the population receive gratuitous medical service; and it may be said that Ireland approaches nearest of all countries known to me to a state medical service, the cost of which falls on general taxation. Its medical officers are not precluded from private practice.

In Scotland there is a special state service for its Highlands and Islands, in which, otherwise, medical aid would be lacking. The government guarantees the salaries of doctors in supplementation of fees paid by patients, and gives mileage allowances for traveling. Local needs in this important development have impelled governmental action at the expense of the national taxpayer. Is not such action indicated in certain mountainous parts of the Southern states in America, especially for midwifery and for that terrible disease trachoma? Not even the most rigid opponent of state intervention can doubt its necessity in areas where otherwise our three first postulates cannot be met.

This is the case of utmost need; but, short of this, nearly every private medical practitioner, especially in rural districts, day by day is himself a vicarious substitute for the state, for he gives medical aid gratuitously—as every member of the medical fraternity in conscience must—when need arises. He resembles the tax gatherer—except that much medical work is gratuitous—in that he charges his patients not according to their needs but according to their means; and as in the case of taxation it is payments by the well-to-do which enable him to attend his poorer patients gratuitously or at a charge which does not cover expenses. Thus the private doctor, the tax gatherer and the medical official alike are state servants, but the state service of the first of these is unacknowledged.

*Hospital Provision for the Poor.*—Hospitals in the first instance were an output of Christian charity, their full medical utility developing very slowly. In nearly every country hospitals are now the chief centers of medical work and of the research in medicine which is indispensable for progress. In Britain, voluntary hospitals, provided by the gifts and bequests of the charitable, still hold their premier position. But in recent decades public authorities in every country have been active in providing hospitals, and in continental Europe the hospitals of these authorities have almost completely replaced voluntary hospitals. In Britain, voluntary hospitals have held their ground, but they have not met the rapidly increasing needs of the public, and now official hospital beds—even when the beds in mental hospitals are excluded—largely exceed in number the beds in voluntary hospitals.

Private practitioners, as they will agree, are largely responsible for this great increase of treatment in hospitals, through their scrupulous desire to secure for their patients the full advantage of special skill in medicine and surgery.

In continental countries, payments are exacted from hospital patients according to their means, the payments for insured patients being made in part by the insurance societies to which the patients belong. In England very rapidly there is growing up a voluntary system of partial insurance for hospital treatment, independent of the compulsory national sickness insurance scheme, for about a third of the total population. For a weekly payment of perhaps three pence, employers sometimes contributing an equal amount, families are partially insured for consultative services and when necessary for treatment in hospitals. In some towns, half the cost of maintenance of voluntary hospitals is now derived from this and allied sources.[2]

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[2] See page 95 of my "Medicine and the State" for details.

Evidently such a system lends itself to increasing abstractions from private medical practice; and although the majority of these patients would be sent to a hospital by the medical practitioner treating them, there are others who should remain under his care. This needs to be more strictly regulated. In countries in which national sickness insurance schemes are in operation (Germany and Austria, Hungary, Poland) there has occurred an immense development of hospital and polyclinic (ambulatorium) work which greatly needs to be coordinated and regulated, owing to its independence of the work of the general practitioner.

Outside Britain, national insurance schemes include some hospital treatment, but continental insurance organization can seldom pay more than half the cost, and in all countries hospital charges are paid largely, sometimes completely, by general taxation. The arrangements in Britain have already been indicated.

The foregoing is a brief outline of the position reached in what, for lack of a better term, I must call socialization[3] of the medical services, domiciliary and institutional, for the absolutely necessitous, the poor, and for that large part of the total population who are not far above the poverty line.

Is clinical medicine preventive medicine? At this stage the criticism will suggest itself that my remarks do not relate to preventive medicine. But if, as I claim, medicine is preventive when it curtails illness, when it decreases suffering, when by treatment (e. g., of an operation for cancer, or the radical cure of hernia or varicose veins) it restores a patient to the rank of self-supporting citizens, or when, for instance, in the scientifically regulated administration of insulin, it gives many added years of useful life, then surely clinical medicine is preventive medicine in a real sense.

If this be admitted, then we must regard all efficient clinical medicine as also an important branch of preventive medicine. But we are especially concerned with new developments of clinical medicine having direct and obvious bearing on public health, and to these we must now direct our attention.

1. *Free Hospitals for Infectious Diseases.*—In its earlier development, public health was fairly distinct from clinical medicine in most particulars, but never completely so; for even in the course of the earlier dramatic triumphs won by sanitation, the necessity arose also of treating cholera patients and of treating and segregating cases of "fever" and smallpox. Now in nearly every country some hospital provision for the chief infectious diseases is provided gratuitously. Thus, for the isolation and treatment of the infectious sick the socialization of medicine has become almost complete.

2. *Free Immunization.*—A step beyond this has been taken. Public medical vaccinators are provided in most countries for gratuitous vaccination against smallpox. In rural districts in Norway, specially trained midwives do some of this work.

More recently a large amount of immunization against diphtheria has been done at the public expense, especially in America. In America this may be done also by private practitioners to whom public authorities supply the necessary toxoid-antitoxin at the public expense, and whose officers may give demonstrations of the method to be employed. My own view is that, subject to strict regulations as to methods,[4] private practitioners should be entrusted with this work for both smallpox and diphtheria, and paid for it by public authorities at a fixed charge irrespective of the social position of patients. Under such a system we should, I think, secure a much more widely protected population than at present.

3. *Free Ancillary Services.*—The provision by public authorities of ancillary aids to diagnosis is another development of socialized medicine of great importance. In the initiation of laboratory facilities for the diagnosis of diphtheria and tuberculosis, American pioneers, Biggs, Prudden and Park, have led the way.

The extensions of such work, including sometimes free examination of tumor specimens and of blood counts, and on the physical side x-ray photographs in tuberculosis, are well known. In every country these state-paid arrangements exist more or less fully developed. Here, then, is a further instance of the socialization of a branch of medicine, which, although it belongs to clinical medicine, is equally important in preventive medicine. One cannot easily exaggerate the value of the aid thus given not only to the doctor and his patient but also to preventive medicine, when adequately utilized by the medical practitioner in his daily work.

But public health authorities have not confined their activities to communicable diseases.

4. *Treatment of Non-infectious Diseases.*—I have already claimed clinical medicine as a branch of preventive medicine, in a large part of its activities. Let me take as a further example that of the institutional treatment of cripples. Local authorities in Britain on a large scale now treat institutionally cases of hip disease, extreme rickets, or the deformities following poliomyelitis, and thus, partially or entirely at the public expense, restore many children to useful life.

5. *The Care of Maternity.*—To a very exceptional extent—though in continental Europe a vast amount of public aid is given in maternity—the care of maternity has become in England a subject of wide action by public authorities. Midwives, who attend 60 per cent of total confinements, are strictly supervised and regulated by these authorities. They are obliged to call in medical aid in emergencies. The doctor called in is chosen by the patient, and the local authority is legally required to pay the doctor's fee on a fixed scale. The local authority recovers this fee from the patient or her husband, or part of it, when possible. Local authorities also provide lying-in hospitals for poorer women, treatment in which is given at low charges, sometimes remitted. They also provide antenatal consultation centers, the relation of which to the work of general practitioners is not yet thoroughly adjusted.

Returning to communicable diseases, tuberculosis and venereal diseases are two of the chief scourges of mankind, accounting probably for a fifth part of total deaths from all causes; and it is to combat these diseases that public authorities have entered most extensively into clinical medicine as an agent of public health.

6. *Control of Tuberculosis.*—Work for the control of tuberculosis in Europe is like that in America. Free bacteriologic examination of sputum is provided, still too often neglected by some private practitioners. Then the reporting or notification of cases of tuberculosis is

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[3] The word "socialization" is employed here to denote medical service given at the expense of the state (through taxation) or of a voluntary organization (through gifts), the patient not paying except so far as he may have been a taxpayer or a donor to the voluntary charity. If he pays in part, to this extent his position is changed.

[4] Strict regulations are called for to insure uniformly efficient work and to minimize the appreciable risks of septic complications.

required as soon as the practitioner has made his diagnosis; and here also one must bemoan that the fulfilment of this duty is often neglected and oftener seriously delayed.

The general measures taken are well known, and I need not particularize except to say that in all European countries the institutional treatment of tuberculosis is undertaken by public authorities, chiefly at the expense of the taxpayer. In continental Europe much of this cost is borne by sickness insurance funds, but in Britain it falls entirely on the public authorities. The position is accepted and acceptable to most practitioners. The fact that one third of the total population of Britain is insured under the national insurance scheme, and that the treatment by public authorities lifts some burden from the practitioner's shoulder, without implying any reduction of his per capita payments, is a factor in the position.

7. *The Treatment of Venereal Diseases.*—In most European countries, some treatment of venereal diseases is undertaken at the public expense. In several European countries (Austria, Italy, Denmark, Sweden and Britain), gratuitous treatment is undertaken by public authorities without restrictions. In Belgium, free medicaments are supplied to doctors, and great stress is laid on securing the cooperation of private practitioners. In Britain, private doctors have come to regard these diseases as needing specialist treatment, and I have often been informed by them that they thankfully pass on their cases of these diseases to the clinics of the public authority. A minority of doctors continue to treat their own patients, and arsphenamine is supplied free to these doctors.

The position in Britain has become one of almost complete socialization of the treatment of venereal diseases at the expense of the public purse. Clinics (usually attached to voluntary hospitals, that is, hospitals not supported by taxation) are provided in all considerable centers of population; and patients are treated at these (in hospital beds when necessary) gratuitously without any residential restriction and with entire disregard of financial position. Pathologic examinations (for gonococci and Wassermann tests) are also undertaken gratuitously for all practitioners.

A tribute must be paid to the attitude of the British Medical Association in this matter, as representing the mass of medical opinion. When the report of the Royal Commission on Venereal Diseases was published in 1916, and the government promptly made its national proposals, these were sent in draft to the council of the association; and in its reply the association, while realizing that they embodied "a new departure of a most important kind," resolved in general approval of these proposals that

> measures for the best modern treatment of venereal diseases should be readily available for the whole community, and that arrangements made should be such that persons affected by these diseases will have no hesitation in taking advantage of the facilities for treatment that are afforded.

It further resolved that

> the treatment at any institution included in a local authority's scheme should be free for all. There should be no refusal to treat a patient who is unwilling to go to his own doctor.

In its report on this subject, the council of the association made the following comment, subsequently endorsed by the representative meeting of the association.

> The policy of the association in connection with treatment at hospitals has always been that persons who are able to pay for their own treatment should not be treated at charitable institutions except in emergency, but should be referred to a private practitioner. In endorsing the recommendation of the Royal Commission the Council recognizes the exceptional nature of venereal disease; the reluctance of patients affected by them to go to their private medical attendant; the risk that they may go to unqualified persons for treatment with disastrous results to themselves and to others; and the importance to the community of adopting all possible measures for inducing sufferers from venereal disease to seek early and adequate treatment. On these grounds the Council is of opinion that the recommendations of the Royal Commission should be accepted and approved by the association.

As I was a member of the royal commission whose recommendations were thus endorsed, and as I was officially responsible for formulating and organizing the measures to give them effect, it is pleasant once more now to testify to the public-spirited action of the general medical profession in Britain as voiced by their association. At the present time unrestricted gratuitous venereal disease clinics are available everywhere, and the reduction in the amount of one of our chief social cankers has justified the action of the government and the medical profession's endorsement of this action.

8. *The Searching out of Disease.*—Public authorities have not been contented with sharing in the cost of treatment of a certain number of diseases at the expense of the communal purse. In recent decades a most striking development has occurred, as the result of increasing realization that delayed treatment of the sick implies a lowered prospect of recovery and protraction of inability to work; and more and more it is being realized that the ideal for the medical practitioner is not merely to treat patients who apply to him but to enter into an arrangement with the families entrusted to his care, which will enable him, without suspicion as to his conduct being altruistic, to strive to discover disease hitherto undetected and to prevent its continuance. This means an important development in preventive medicine. Payment according to the number of "medical acts" has discouraged development in this important direction; and until the circumstances of family remuneration are altered, most practitioners in all countries remain relatively helpless except for their insured patients. Meanwhile several of the postulates already stated are being partially neglected; and until or unless this neglect ceases, we cannot as private practitioners of medicine complain if public authorities "get busy." As a medical confraternity it is our business to make public activities at least partially superfluous.

9. *School Medical Service.*—This point is best illustrated in the findings of school medical inspectors. Without detailing the important work under this heading in many European countries, it may be said that in all of them some official treatment of defects and diseases found in school children is being effected, though, as a rule, parents are encouraged in the first instance to employ their own doctors. We cannot reasonably object, either, to the inspection or the medical treatment of school children at school clinics, unless as private practitioners we are able to organize arrangements which are equally good and complete for every child attending school whose parents are able and willing to pay. Even then children will remain for whom public treatment must be provided.

In continental Europe the amount of medical work needing to be done by educational authorities is less than that in Britain, because in the former dependents come within the scope of the treatment given under national sickness insurance schemes. In Britain also—except for the minor conditions for which parents seldom have a doctor—the treatment undertaken in school clinics is chiefly specialist in character (e. g., ringworm, ophthalmic tests, treatment of adenoids and deformities, dental treatment) and for most pupils this specialist treatment must be carried out either at hospitals or in special school clinics. It should be added that the morbid conditions found by school medical inspectors commonly are the late results of long-established disease (otorrhea, advanced dental caries, deformities) or of malnutrition; but although these ought often to have been discovered some years earlier, their neglect would, but for the school service, have been still further prolonged.

We have, then, in the medical inspection of schools and the resultant action a further instance of socialization of medicine, having as its object the discovery and treatment of neglected illness. It is a form of socialized medicine which might, to a very considerable extent, be replaced by cooperative team work by private medical practitioners. It is socially desirable that they should in fact arrange to take up this much neglected work and thus secure the fulfilment of the postulates already stated, either alone or with supplementary aid from public agencies.

10. *Treatment to Anticipate Disease.*—We come last to the greatest advance made in medicine, an advance shared in varying proportions between public authorities and the most far-seeing of private medical practitioners. This consists in action which, constituting, as it does, anticipatory treatment, prevents the occurrence of illness and defects. In this direction lie the chief future triumphs of medicine, and it is for private practitioners themselves to determine whether this work shall remain largely the domain of public authorities and social organizations or whether private practitioners shall carry out this work for every family in their care. To do this work, general practitioners will need to pool some of their activities, to employ jointly not only sick-bed nurses but also public health nurses (health visitors) to undertake much quasi-medical work, which is too costly when done by doctors and cannot be expected from them, though they should guide and direct it. On these lines, rickets will soon disappear; more favorable growth and development will be promoted, and the general standard of health will be raised through improved nutrition and general hygiene. The promotion of the psychic health of children forms an important part of a complete program in this direction, which the medical practitioner must recognize, even though his share in this work is chiefly indirect.

Meanwhile in every European country public authorities and voluntary agencies are busy with this most important of preventive work; while private practitioners who might be in charge of much of it, singly and cooperatively, have little concern with it, under present conditions of medical practice. The program here indicated cannot wait; hygienists and their organizations will not wait; educated public opinion will not wait; cannot we hope that private practitioners will make it a chief part of their future work?

11. *Insurance Treatment.*—In the preceding very rudimentary outline of my subject, I have only incidentally mentioned the great sickness insurance systems which are now established in most European countries. They have not hitherto conduced much to preventive medicine, except so far as treatment of disease tends to prevent its prolongation, to reduce its severity or to prevent its recurrence. I do not doubt that under highly satisfactory organization the medical care in sickness insurance can be made valuable as an instrument of preventive medicine; though this will be difficult. The difficulty in securing this end is undoubtedly increased by the fact that monetary benefits depend on medical certification; for a scheme of insurance for domiciliary medical care without money benefits during disablement has not, so far as I know, been adopted on a very large scale in any country. Even with the handicap constituted by combining insurance for medical and for monetary benefits, the cause of preventive medicine can be satisfactorily served if we secure almost superhuman competence in the management of the insurance scheme, and that the scheme furthermore is adhered to by every insured person and every doctor with almost superhuman loyalty and integrity.

I have already indicated my view that for a large section of the population a complete medical service necessitates contributions from the persons benefited on an insurance plan, and that even then some aid from the state is necessary. The only practical alternative consists in vast extensions of state service without insurance.

Under an insurance service, hospital and consultative services can be brought within the reach of all; and doctors by pooled effort can similarly supply a domiciliary service which will be satisfactory both to them and to their patients. Additional communal help would be needed for the poor.

I agree that money benefits during disabling sickness are a great boon, even though the medical problem is much more difficult when combined with the financial problem. The lot of the doctor who has to hand out certificates which authorize money allowances is not altogether happy, and the withholding of such certificates is often an obnoxious task. But it may need to be faced, especially so if—and this appears to me to be the position throughout Europe—the practical alternative is a medical system in which doctors would be, and their patients would be paid for, in the same way as are our state school teachers and the pupils under their charge in our system of national free elementary education.

But even the defects of existent sickness insurance systems should not loom too large in our minds. Furthermore, defects in other branches of public medicine and in private practice alike only partially obscure the great advances and improvement both in private and in public medicine of the last thirty years. Ignorance will continue, though it will grow less; the immeasurably more serious defects of character will also continue, in connection both with public and with private medicine; but they will, I am confident, decrease, and we can look forward to a higher standard of medical work and a more complete utilization of the invaluable aid which medicine practised in a cooperative spirit can give to humanity. But vigilance and altruistic effort will always be needed on whatever detailed lines increased utilization of medical skill develops and extends.

> Does the road wind uphill all the way?
> Yes, to the very end, my friend.

# Council on Pharmacy and Chemistry

## NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

**CHAPPEL LIVER EXTRACT (SUBCUTANEOUS).**—A sterile aqueous solution, containing the nitrogenous, nonprotein fraction G of Cohn et al. obtained from fresh mammalian liver, preserved with cresol 0.4 per cent. Each cubic centimeter contains the active material extracted from 10 Gm. of liver.

*Actions and Uses.*—Chappel liver extract (subcutaneous) is proposed for subcutaneous or intramuscular injection in the treatment of pernicious anemia.

*Dosage.*—Two cc. daily; the maintenance dose is 2 cc. daily at intervals of from ten to twenty days.

Manufactured by Chappel Bros., Inc., Rockford, Ill. No U. S. patent or trademark.

*Ampoules Chappel Liver Extract (Subcutaneous) 2.5 cc.:* Each cubic centimeter contains the active material extracted from 10 Gm. of liver.

To prepare Chappel liver extract (subcutaneous), finely ground equine livers are extracted several times with water. After precipitation of the proteins by heat, the liquid is concentrated in vacuo at low temperature, alcohol added to bring the alcoholic strength to 70 per cent, the precipitate filtered out, and the filtrate again evaporated. Sufficient absolute alcohol is then added to bring the alcoholic strength of the liquid up to 95 per cent. The precipitate is then dissolved in water and the reaction of the solution adjusted to $p_H$ 7.2. Each cubic centimeter of the finished product represents the active material from 10 Gm. of liver. Cresol 0.4 per cent is added as preservative and the solution is then filtered.

**ALLERGENIC EXTRACTS-LEDERLE.**—Liquids obtained by extracting the protein of substances believed to be the cause of specific sensitization.

*Actions and Uses.*—See Allergic Protein Preparations, New and Nonofficial Remedies, 1931, p. 24.

*Dosage.*—See Allergic Protein Preparations, New and Nonofficial Remedies, 1931, p. 24.

Allergenic Extracts-Lederle are marketed in 6 cc. vials.

Manufactured by the Lederle Laboratories, Inc., Pearl River, N. Y. No U. S. patent or trademark.

Undiluted and 1:10 Dilution: *Banana Allergenic Extract-Lederle,*[5] *Beef Allergenic Extract-Lederle,*[3] *Chicken Meat Allergenic Extract-Lederle,*[3] *Codfish Allergenic Extract-Lederle,*[3] *Cornmeal Allergenic Extract-Lederle,*[2] *Crabmeat Allergenic Extract-Lederle,*[3] *Green Pea Allergenic Extract-Lederle,*[2] *Horse Serum Allergenic Extract-Lederle,*[6] *Lamb Allergenic Extract-Lederle,*[3] *Lima Bean Allergenic Extract-Lederle,*[2] *Milk Allergenic Extract-Lederle,*[6] *Orange Allergenic Extract-Lederle,*[5] *Pork Allergenic Extract-Lederle,*[3] *Pyrethrum Allergenic Extract-Lederle,*[7] *Rice Allergenic Extract-Lederle,*[2] *Rye Allergenic Extract-Lederle,*[2] *Spinach Allergenic Extract-Lederle,*[5] *Tobacco Allergenic Extract-Lederle,*[7] *Wheat Allergenic Extract-Lederle,*[2] *White Potato Allergenic Extract-Lederle.*[5] Undiluted, 1:10 dilution, and 1:100 dilution: *Horse Serum Allergenic Extract-Lederle,*[6] 0.5 mg. of nitrogen per cc. and 0.05 mg. of nitrogen per cc.: *Chocolate Allergenic Extract-Lederle.*[8] 0.2 mg. of nitrogen per cc. and 0.1 mg. of nitrogen per cc.: *Sheep Dander Allergenic Extract-Lederle.*[4] 0.2, 0.1, 0.01, and 0.001 mg. of nitrogen per cc.: *Horse Dander Allergenic Extract-Lederle,*[4] *Orris Allergenic Extract-Lederle.*[7] 0.2 and 0.01 mg. of nitrogen per cc.: *Cow Dander Allergenic Extract-Lederle,*[4] *Flaxseed Allergenic Extract-Lederle.*[1] 0.2 and 0.001 mg. of nitrogen per cc.: *Cottonseed Allergenic Extract-Lederle.*[1] 0.1 mg. of nitrogen per cc: *Feathers Allergenic Extract-Lederle,*[4] *Goat Dander Allergenic Extract-Lederle.*[4] 0.1 and 0.01 mg. of nitrogen per cc.: *Buckwheat Allergenic Extract-Lederle.*[2] 0.1 and 0.005 mg. of nitrogen per cc.: *Almond Allergenic Extract-Lederle,*[1] *Peanut Allergenic Extract-Lederle.*[1] 0.1 and 0.001 mg. of nitrogen per cc.: *Dog Dander Allergenic Extract-Lederle,*[4] *Egg White Allergenic Extract-Lederle,*[6] *Kapok Allergenic Extract-Lederle,*[1] *Mustard Allergenic Extract-Lederle.*[9] 0.05 and 0.001 mg. of nitrogen per cc.: *Cat Dander Allergenic Extract-Lederle,*[4] *Rabbit Dander Allergenic Extract-Lederle.*[4]

Allergenic extracts-Lederle are prepared from various substances by extraction with a buffered saline solution composed of sodium chloride 0.5 Gm., potassium dihydrogen phosphate ($KH_2PO_4$) 0.0363 Gm., sodium phosphate ($Na_2HPO_4.12H_2O$) 0.1431 Gm., Phenol 0.4 Gm., distilled water to make 100 cc.

Products marked 1 are prepared by the following method: The material is shelled and ground, treated with toluene, alcohol and ether. The dry and oil-free flour is extracted with the buffered solution. The extract is dialyzed and sterilized by filtration.

Products marked 2 are prepared by the following method: The powdered whole grains are washed with toluene, alcohol and ether. The buffered saline extract of the defatted flour is dialyzed, concentrated and sterilized by filtration.

Products marked 3 are prepared by the following method: The ground material is treated with toluene and then placed immediately in the buffered extracting fluid. The extract is dialyzed and sterilized by filtration.

Products marked 4 are prepared by the following method: The material is ground in a mortar and washed with ether and alcohol. The dry residue is extracted with buffered extracting fluid. The dialyzed extract is concentrated and the amount of nitrogen per cubic centimeter of the filtered extract is determined by the Kjeldahl method.

Products marked 5 are prepared by the following method: The material is prepared by dialyzing the pressed juice at once against the buffered solution diluted (1-2) until nonirritating to normal skins. The dialyzed extract is concentrated and sterilized by filtration. If the ground material contains very little juice, it is mixed with the extracting fluid and the pressed extract is handled the same, as an original juice.

*Products marked 6 are prepared by the following method:* These extracts are merely dilutions of the original substance in the buffered saline solution. Milk is decaseinated with rennin. The whey is dialyzed against a slightly alkaline buffered solution, concentrated and sterilized by filtration.

Products marked 7 are prepared by the following method: The powdered material is washed with toluene, alcohol and ether. The buffered saline extract of the defatted flour is dialyzed, concentrated and sterilized by filtration. The alcohol-ether treatment is exhaustive and the dialysis continued for a long time in order to insure stability of the extract and complete removal of toxic fractions present.

The product marked 8 is prepared by the following method: Raw unroasted cacao beans are ground and treated with toluene and ether until practically oil free. The resulting powder is extracted with the buffered solution. The extract is sterilized by filtration and standardized on the nitrogen basis per cubic centimeter.

The product marked 9 is prepared by the following method: The powdered material is washed with toluene, alcohol and ether. After evaporation of the fat solvent, it is extracted with the buffered solution. The extract is dialyzed until skin tests prove it to be no longer irritating. The final product is sterilized by filtration and standardized on the basis of its nitrogen content per cubic centimeter.

**DIGALEN-ROCHE (CLOETTA)** (See New and Nonofficial Remedies, 1931, p. 136).

The following dosage form has been accepted:

*Digalen Injectable-Roche:* Ampules containing 2.1 cc. Each 2 cc. represents 1 cat unit, in 8 per cent alcohol.

*Dosage.*—The average dose of digalen injectable-Roche is 2 cc.

**BRUCELLA MELITENSIS VACCINE** (See The Journal, Feb. 6, 1932, p. 480).

The National Drug Co., Philadelphia.

*Undulant Fever Vaccine.*—A heat killed suspension of Brucella melitensis organisms (2,000 million per cubic centimeter) preserved with 0.4 per cent of cresol. The usual sterility tests prescribed by the U. S. government are made, and in addition blood agar streaks are made of the heat killed stock vaccine before the addition of the cresol. Safety tests are made on the stock vaccine by injecting guinea-pigs with the maximum human dose, 1 cc. No potency tests are made. Purity of cultures is determined by the study of colony formation, carbohydrate reactions, and agglutination test with specific serum. The product is marketed in packages of one 5 cc. vial, in packages of one 15 cc. vial, and in packages of one 30 cc. vial.

*Dosage.*—The subcutaneous injection at seven to ten day intervals of doses of 0.25 cc., 0.5 cc. and 1 cc., respectively, is recommended.

## REPORTS OF THE COUNCIL

The Council has authorized publication of the following reports.

W. A. Puckner, Secretary.

### BACILLUS ACIDOPHILUS MILK-HERMES OMITTED FROM N. N. R.

Bacillus Acidophilus Milk-Hermes (Hermes-Groves Dairy Co., Pittsburgh, Pa.) is a whole milk cultured with B. acidophilus. It was accepted for New and Nonofficial Remedies by the Council in 1928. Since the period for which it was accepted would expire at the close of 1931, the firm was asked in June of that year to submit the current labels and advertising for the product in order that the Council might pass on its eligibility for continued inclusion in New and Nonofficial Remedies. The firm did not reply to the report and failed to reply to a second letter. Since noncompliance of a manufacturer with the request for this material deprives the Council of the means of judging the eligibility of the product for continued acceptance, the Council voted to omit Bacillus Acidophilus Milk-Hermes from New and Nonofficial Remedies, 1932.

### IODYL NOT ACCEPTABLE FOR N. N. R.

Under the name Iodyl, the Vel Company, Long Island City, New York, markets a preparation stated to be "an Iodine Dusting Powder containing approximately .69% resublimed iodine and 99.31% of pure boric acid." On the label and in the advertising the iodine content is declared, but the identity and amount of boric acid is not declared on the label, and in the advertising the presence of boric acid but not the amount is declared. The preparation is proposed for use in the treatment of chronic suppurative otitis and in nasal sinuses.

The Council declared Iodyl unacceptable for New and Nonofficial Remedies because a proprietary name for a simple unoriginal mixture of iodine and boric acid cannot be recognized and because the use of a mixture of iodine and boric acid in fixed proportions is not in the interest of rational therapeutics.

# Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## VAN CAMP'S PURÉED GREEN BEANS

*Manufacturer.*—The Van Camp Packing Company, Inc., Indianapolis.

*Description.*—Puréed green beans slightly seasoned with salt, retaining in large measure the original vitamin and mineral content of the raw beans used; packed in enamel lined tins.

*Manufacture.*—Fresh, crisp green beans of choice quality are carefully inspected and any imperfect or discolored ones eliminated. The selected beans are washed in a cylinder equipped with high pressure sprays of water. Following this they are given a short blanch in boiling water, immediately removed from the water, and pressure cooked in an atmosphere of steam. The cooked beans are puréed in an atmosphere of water vapor by being forced through a screen the openings of which are of such size as to produce the desired fineness and texture in the final product. Highly fibrous portions of the beans are discharged from the end of the screen and are discarded. The puréed material is adjusted with hot water to the desired consistency, slightly seasoned with salt, heated, and immediately filled into enamel lined tins, which are sealed and heat processed.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 92.0 |
| Total solids | 8.0 |
| Ash | 1.2 |
| Salt (NaCl) | 0.6 |
| Fat (ether extract) | 0.2 |
| Protein (N × 6.25) | 1.4 |
| Sucrose (copper reduction method) | 2.0 |
| Reducing sugars as dextrose | 0.4 |
| Crude fiber | 0.9 |
| Total carbohydrates other than crude fiber (by difference) | 4.3 |
| Alkalinity number (cc. of normal acid per gram of ash) | 2.1 |
| *p*H | 5.2 |

*Calorics.*—0:2 per gram; 6 per ounce.

*Vitamins.*—The vitamin content of the raw beans is retained in large measure in the manufacturing process by the use of equipment and procedure which excludes admixture of air; the vegetable material is exposed to steam atmosphere only.

*Claims of Manufacturer.*—The Puréed Green Beans are supplementary to the infant milk diet, and a valuable protective food, having a smooth consistency supplying a desirable bulk without roughness. The puréeing renders the nutrient content readily available for digestion. The product is scientifically prepared to retain in large degree the natural mineral and vitamin values of green beans.

## MORTON'S FREE RUNNING SALT

*Manufacturer.*—Morton Salt Company, Chicago.

*Description.*—A table salt containing 0.7 per cent added magnesium carbonate which tends to preserve its "free running" properties.

*Manufacture.*—The raw salt is obtained by hydraulic mining from underground deposits of rock salt from 250 to 2,300 feet deep by pumping surface water into wells drilled into the salt body. The water with dissolved salt is forced to the ground surface and conveyed to treating and settling tanks, where the brine is chemically treated with small quantities of calcium hydroxide and sodium carbonate for the reduction of natural impurities and is concentrated in "vacuum" pans; the precipitated salt crystals are removed by special mechanical devices. The salt crystals are washed with fresh brine to remove adhering brine containing impurities from the evaporation process. The salt, after washing, is a thick slurry of crystals and brine; excess brine is removed by filtering and the crystals are dehydrated to about 2.5 per cent moisture. The dried salt is further dried at 132-148 C. in rotary kiln driers to 0.1 per cent moisture. The kiln dried salt is mechanically separated into crystals of various granulations. Salt of a definite granulation is mixed with about 0.7 per cent magnesium carbonate, which tends to keep it "free running." The mix is automatically packed in special moisture-resisting cartons and sealed.

An only exception to the foregoing procedure occurs when the crude salt is produced by solar evaporation of sea water, whereby a very coarse large crystal salt is obtained. This crude salt is washed and is dissolved in fresh water, and the brine is handled as described.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 0.10 |
| Calcium carbonate | 0.01 |
| Calcium sulphate | 0.52 |
| Calcium chloride | 0.03 |
| Magnesium chloride | 0.01 |
| Magnesium carbonate | 0.70 |
| Salt (NaCl) | 98.60 |

*Claims of Manufacturer.*—Morton's Free Running Salt is for all table and cooking uses of salt. The added magnesium carbonate tends to preserve its "free running" qualities.

## BROMM'S KEW BEE BREAD

*Manufacturer.*—L. Bromm Baking Company, Inc., Richmond, Va.

*Description.*—A white bread made by the sponge dough method.

*Manufacture.*—The sponge dough ingredients, patent flour of northwest and southwest wheats, water, lard, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, dextrose, lard, powdered skimmed milk, a mixture of calcium acid phosphate and calcium peroxide and potato flour to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 32.6 |
| Ash | 0.8 |
| Fat (ether extraction method) | 1.2 |
| Protein (N × 6.25) | 9.8 |
| Crude fiber | 0.2 |
| Carbohydrates other than crude fiber (by difference) | 55.4 |

*Calories.*—2.7 per gram; 77 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## CLOVERDALE GINGER ALE (AMBER)

*Manufacturer.*—Cloverdale Spring Company, Baltimore.

*Description.*—A carbonated beverage prepared from Cloverdale Mineral Water, sucrose, citric acid, ginger extract and capsicum; colored with caramel.

*Manufacture.*—The ingredients noted above in definite proportions are dissolved in Cloverdale Mineral Water (The Journal, March 5, 1932, p. 816). The solution is bottled and carbonated as described for Cloverdale Mineral Water.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 90.2 |
| Total solids | 9.8 |
| Ash | 0.01 |
| Protein (N × 6.25) | 0.02 |
| Fat (ether extract) | 0.0 |
| Reducing sugars as dextrose | 0.8 |
| Sucrose (copper reduction method) | 6.3 |
| Titratable acidity as citric acid | 0.09 |
| Caramel color | present |
| Undetermined | 2.6 |
| Flavored with essential oils and essence of ginger | |

*Calories.*—0.3 per gram; 9 per ounce.

*Claims of Manufacturer.*—A bottled, carbonated ginger ale colored with caramel.

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SATURDAY, MAY 14, 1932

## THE "TRACE" ELEMENTS IN THE BODY

Any one who consults the books on physiology of a previous generation will soon discover that they contain only scanty accounts of the inorganic constituents of the body and their possible rôle in nutrition. Considerable stress was placed on the need of common salt (sodium chloride); the occurrence of calcium and phosphorus in the bones was well recognized; iron was associated with the hemoglobin of the blood; and the elements potassium, magnesium and occasionally silicon also received mention. All of these were known to exist both in our foods and in our bodies in readily measurable amounts. The occurrence of "traces" of other elements, notably some of the heavy metals, was reported from time to time; but they were regarded as accidental constituents that had found their way into the organism as chance ingredients of the food or water that was consumed. Biologic importance was rarely assigned to them except when through increasing proportions they suggested the possibility of becoming toxic.

In the Mendel anniversary number of the *Yale Journal of Biology and Medicine*, Mary Swartz Rose[1] has pointed out that during the past ten years we have gradually become accustomed to thinking quantitatively in nutrition, not only in terms of calories and grams of proteins, fats and carbohydrates but also in terms of fractions of milligrams of mineral elements and vitamins. Vitamin A exerts a protective action when present in no higher concentration than 1 part in 2 million in the body of the rat; and the minimum protective dose of vitamin D against rickets is reckoned as no more than one ten-thousandth of a milligram of viosterol. Estimates of the total iodine content of the body scarcely exceed 50 mg. Lunde and Closs have recently estimated the iodine in human blood as from 11 to 16 micrograms per hundred cubic centimeters, and the amount necessary to meet all requirements of metabolism at about 0.05 mg. daily. For prevention of goiter in healthy adults much less may be adequate, since von Fellenberg reports about one third of this amount daily as sufficient for the maintenance of iodine balance in an adult. On this basis the iodine requirement for three years would be no more than the amount of iron required for a single day.

Rose points out that investigation as to the occurrence and function of "trace" elements in both plant and animal life is now active. Boron, zinc and manganese have all been shown essential to the growth of maize; boron, to a great variety of dicotyledonous plants; without zinc, wheat and barley die in the early stages of growth, and buckwheat, sunflowers, broad beans and red kidney-beans never come to full maturity or produce seed.

The search for so-called trace elements in foods and in the tissues and fluids of the body is beset with difficulties. The quantities are often too small to be measurable with success by the usual devices of the analytic chemist. In recent years he has therefore called the spectrograph to his aid. In this way exceedingly small amounts of the less familiar inorganic tissue constituents (or contaminants) can be identified in surprisingly small samples of material. By means of spectrographic analysis, Dutoit and Zbinden[2] have investigated the ash of human organs. Rose quotes them as finding chromium, copper and tin in practically all organs; silver and aluminum somewhat less widely distributed; cobalt and nickel in the pancreas but not the liver; titanium in the lungs, only traces elsewhere; zinc especially in the generative organs, thyroid, liver and kidney; tin in the suprarenal glands, and all of these elements in the blood. Spectrographic analysis of the ash of milk has shown traces of arsenic, boron, titanium, vanadium, rubidium, lithium and strontium, heretofore not known to occur in milk.[3]

The latest spectrographic analyses of human tissues come from England. Sheldon and Ramage[4] of Norwich designate as the universally recognized constituents of protoplasm the elements C, H, O, N, P, S, Na, K, Mg, Ca, Cl and Fe. Their latest studies suggest that copper is a universal, and is probably an essential constituent of living tissue. It occurs in greater concentration in fetal tissues than in adult, and reaches its maximum amount in the fetal liver, where the percentage of copper may be as much as ten times in excess of that present in the maternal liver. This is what one might expect in view of the alleged importance of copper in hematopoiesis in early life. Manganese occurs spasmodically in many tissues but is chiefly concentrated in the liver, pancreas, suprarenal and kidney. It is present in bile, fetal bile containing a high proportion. In the blood it appears to be confined to the serum. More surprising are some of the added observations. Rubidium is almost as widely distributed as copper and occurs in greatest concentration in the heart and in striated muscle. Silver is found to a less extent than the preceding metals but appears to be a normal constituent of the thyroid and the tonsil. Lead, strontium and lithium were found to occur spasmodically. One's first impression naturally is to regard all these rarer "trace" elements as contaminants rather than essentials or as physiologically significant. The experience of the past few years with iodine and copper, for example, is a warning to keep an open mind on the subject.

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[1] Rose, Mary S.: The Nutritional Significance of Some Mineral Elements Occurring as Traces in the Animal Body, Yale J. Biol. & Med. **4**: 499 (March) 1932.

[2] Dutoit, P., and Zbinden, C.: Compt. rend. Acad. d. sc. **188**: 1628 (June 17) 1929; **190**: 172, 1930.

[3] Wright, N. C., and Papish, Jacob: The Inorganic Constituents of Milk, Science **69**: 78 (Jan. 18) 1929.

[4] Sheldon, J. H., and Ramage, H.: A Spectrographic Analysis of Human Tissues, Biochem. J. **25**: 1608, 1931.

## THE RECTAL ADMINISTRATION OF SUGAR

The vogue that was attached some time ago to the use of nutrient enemas has disappeared almost completely. There are, of course, not infrequent indications for rectal feeding under conditions in which the oral path of administering food offers temporary difficulties. The earlier attempts to introduce such nutrient products as milk or other semiliquid foods into the rectum to supply imperative needs in the body usually ended in disappointment. It became clear after a time that digestion is a prerequisite for absorption of the foodstuffs. The opportunities for digestive hydrolysis in the lowest reaches of the bowel are extremely limited. Actual investigations presently showed that rectally introduced proteins and fats are returned with the subsequent evacuations of the bowel. One fact, the fairly ready absorption of water from the lower bowel, stands out conspicuously. Hence the alleged benefits of the rectal enema were probably for the most part attributable to the absorption of water and perhaps also salts. In any event it is not unlikely that administration of fluid by rectum is a more useful procedure under some conditions of dehydration than is commonly believed and that it deserves greater recognition in practical medicine.

The end-products of the digestion of sugars are monosaccharides, among which dextrose stands out as the most conspicuous and physiologically characteristic; for dextrose is the normal circulating carbohydrate of the blood. On this account it has been assumed, or at any rate hoped, that dextrose can be freely administered parenterally when indicated. The sugar is, in fact, currently used for intravenous injection; and it can be administered without loss in other ways. A recent textbook[1] clearly summarizes the present views with the statement that the nutrient enema furnishes a valuable means of giving both food and water to the patient who for any reason cannot be adequately fed by stomach. There are, however, definite limits as to both the quantity and the kind of food that may be given in this manner; these limits should be clearly recognized by the physician. The author points out that the injected material does not go beyond the ileocecal valve, unless perchance that valve is incompetent, and all absorption therefore as a rule takes place in the colon. Since the large intestine is intended chiefly as a reservoir in which no appreciable digestion takes place and from which only water and salts are normally absorbed, he adds, its usefulness as an organ of nutrition is obviously limited.

On these accounts "it is seldom if ever advisable to include in them anything other than water, glucose and sodium chloride."[1] Even dextrose has recently fallen under the ban of dependable value. Scott and Zweighaft[2] of the Department of Physiology at Columbia University have administered enemas containing from 20 to 40 Gm. of dextrose, in 10 per cent solution, by rectum to many healthy persons. They have been unable to demonstrate any rise in the blood sugar content as a result of such procedures. They found that a variable and frequently considerable amount of dextrose administered by enema may be recovered from the stools after two and one-half hours. According to Scott and Zweighaft, the sugar that was not recovered in the stools may possibly have risen higher in the large bowel because of antiperistalsis or for some other reason, there to be retained for a slow absorption, partial destruction by fermentation or a later return. A certain amount may have entered the blood stream at a rate too slow to elevate the blood sugar concentration significantly. In any event these studies fortify the views of those earlier investigators[3] who have become skeptical of the practical value of the rectal administration of dextrose.

## A COMPARISON OF MILK FROM THE TWO BREASTS

In a recent review of the nutritive aspects of human milk, Macy[1] of the Research Laboratory of the Children's Fund of Michigan emphasizes the fact that at times not only do the most carefully prepared scientific formulas fail to satisfy the nutritive needs of a particular infant but even mother's milk may fail. Therefore, renewed interest has been focused on mother's milk and it is being subjected to careful chemical and biologic investigation in respect to its adequacy in all known details and the possibility of its improvement through maternal care. Macy points out the difficulties of defining a standard composition of breast milk because milk secreted by different women has been shown to vary in composition between wide limits. Furthermore, it has been demonstrated that the following conditions may be effective in altering the quality and quantity of milk secreted: the size and anatomic structure of the mammary gland; the amount and kind of food intake; heredity; the environmental conditions, such as fresh air, sunshine, the amount and intensity of work, rest and exercise; and the emotional make-up of the individual, as well as extraneous disturbances. Evidently there are many influences operating to change not only the total quantity of mother's milk secreted but its integral components. The circumstance that an infant has been fed at the breast is no guarantee of a fixed sort of nutritive intake. Macy notes that even under standardized methods of expression, sampling, and analysis at four-hour intervals during the twenty-four hour day, changes have been observed in the flow and chemical composition of breast milk that are of nutritional and clinical significance.

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[1] McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 2, Philadelphia, W. B. Saunders Company, 1931.

[2] Scott, E. L., and Zweighaft, J. F. B.: Blood Sugar in Man Following the Rectal Administration of Dextrose, Arch. Int. Med. 49: 221 (Feb.) 1932.

[3] Levi, David: Brit. J. Surg. 15: 282 (Oct.) 1927. Mekie, Eric, and Miller, Hugh: Brit. M. J. 1: 244 (Feb. 9) 1929. Franke, W., and Wagner, R. J.: J. Metab. Research 6: 375, 1924. Rubino and Varela: Klin. Wchnschr. 1: 2370 (Nov. 25) 1922.

[1] Macy, Icie G.: The Nutritive Aspects of Human Milk, Yale J. Biol. Med. 4: 451 (March) 1932.

The quantity of milk secreted by a lactating woman is dependent on the individual capacity of the mammary glands. This thesis has been further established by studies in the Detroit laboratories, where Brown, Macy, Nims and Hunscher[2] have measured the output and composition of milk from the two mammae of women. The two breasts often function differently in the total production of milk and milk nutrients. For example, the total daily quantities in some cases showed differences as great as 346 cc. even under rigidly controlled and standardized conditions. The observers believe that it is logical to expect greater inequalities in total volume output when the baby is the chief performer in securing the milk. Such observations, they state, are significant in considering the nutritional status of infants nourished exclusively on the milk from one breast.

The principal determinations, however, concerned the actual composition of the milk from the two breasts. Earlier conjectures had contemplated the existence of differences. The comment was made, for instance, that differences in the quality of milk from the two mammae were to be expected as the natural sequel of their relative anatomic position in relation to the blood supply. On the contrary, it has been found by the Detroit workers that the two mammae secrete milk uniform in the percentage concentration of fat, protein, lactose, total solids, solids not fat, total ash, calcium and phosphorus. At least this is true under carefully controlled conditions of milk expression and analysis, and on the basis of samples taken at each four hour interval during the twenty-four hour day. This indicates uniformity in cellular activity in the two glands. It has been declared, as Macy and her co-workers point out, that the processes involving the production of the milk fat are governed by a mechanism entirely separate from that regulating other milk constituents, although the actual processes involved remain obscure. The formation of fat has been attributed to a breaking away and degeneration of mammary gland cells. However, simultaneous secretion by the two glands of milk identical in fat concentration would imply that such a degeneration would proceed at the same rate and magnitude in the two breasts. Consequently, as Macy concludes, the data presented may offer convincing evidence against theories of the derivation of milk fat from cell degeneration, and evidence for theories of the formation of milk fat by processes of cellular secretion.

# Current Comment

## HYPERVITAMINOSIS D AND ARTERIOSCLEROSIS

Following the discovery that irradiated crude cholesterol and then, more specifically, irradiated ergosterol (viosterol) promotes mineralization of rachitic bones, the observation was made that enormous overdosage with this potent therapeutic agent leads to the development of distinctly pathologic changes in the body. It was variously stated that irradiated ergosterol, as customarily employed, contained a toxic substance as well as a calcifying principle. The characteristic lesions resulting from administration of excessive amounts of this material are areas of calcification widely distributed in the tissues. Vanderveer[1] has recently reported observations of hypervitaminosis D and arteriosclerosis which have a decided bearing on the multiplicity of effects induced by overdosage with irradiated ergosterol. Rabbits were employed and the tissues were examined microscopically after spontaneous death. Gross examination of the aorta showed "an irregularity of contour from an outpouching and twisting of its walls." When cut open, grayish, plaquelike depressions were seen on the intimal surface, these areas being "bounded by the normal arterial wall, which had the appearance of a fold in this situation." Further examination indicated that the arteriosclerosis thus produced is not specific. Lack of round cell infiltration showed that inflammatory processes had no part in its development. It appears that a preliminary change of nonspecific nature occurs in the matrix surrounding the elastic fibers in the media, which change is followed by a deposition of calcium salts around the fibers in that region. The resulting inhibition to the mechanical action of the elastic fibers is apparently responsible for the characteristic circulatory disturbances and for hypertrophy of the heart and smaller blood vessels. The fibers are stretched out and fixed by the incrustation of lime salts, so that at death the usual postmortem contraction does not take place; these areas appear as dilatations from the outside of the vessel and as thin places in the vessel wall in microscopic section. Similar examination of cardiac and gastric muscle and of the kidneys was made. Calcification due to hypervitaminosis D appears to follow a preliminary injury to the tissue concerned. The cementing substance around the elastic fibers and muscle cells as well as tissues undergoing hyaline degeneration seem to be favored loci for deposition of lime salts. Vitamin D has only recently been isolated and prepared in crystalline form;[2] this substance is presumably a definite chemical compound. It will be of great interest to determine whether or not the observed toxic properties of irradiated ergosterol can still be demonstrated with crystalline vitamin D.

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[2] Brown, Minerva; Macy Icie G.; Nims, Betty, and Hunscher, Helen A.: Human Milk Studies: VIII. A Comparison of the Composition of the Milk from the Two Breasts, Am. J. Dis. Child. **43**: 40 (Jan.) 1932.

[1] Vanderveer, H. L.: Hypervitaminosis D and Arteriosclerosis, Arch. Path. **12**: 941 (Dec.) 1931.

## Association News

### PERSHING HALL MEMORIAL

The total sum to date for the Pershing Hall Memorial is $2,510.10. The following list represents the most recent contributors:

C. L. Ogle, M.D., Grants Pass, Ore.
Herman L. Kretschmer, M.D., Chicago.

### MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 2:25 to 2:30 p. m., over Station WBBM (770 kilocycles, or 389.4 meters), and on Friday from 1:25 to 1:30 p. m. over Station WBBM and other stations of the Columbia Broadcasting System.

The program for the week is as follows:

May 16. Why Plant a Garden?
May 18. Hot Cereal and Milk.
May 20. Sick Enough.

There is also a fifteen minute health talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM, Chicago.

The program for the week is as follows:

May 21. What To Do — What To Do.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### CALIFORNIA

**License Revoked.**—At a meeting of the state board of medical examiners in Los Angeles, February 2, the license to practice medicine and surgery in the state of Dr. Clarke S. Smith, was revoked on a charge of violation of his probation (THE JOURNAL, Aug. 8, 1931, p. 395), testimony being introduced to the effect that he is now incarcerated at the Spadra State Hospital for Narcotic Addicts. Dr. Smith was committed to the hospital in January for a term of not less than eight months or more than two years.

**Society News.**—Dr. Benjamin Y. Katz addressed the Los Angeles County Medical Association, April 21, on "Erysipelas of the Pharynx and Larynx," and Dr. Norman J. Kilbourne, "Leg Ulcers of Unrecognized Etiology—X-Ray Diagnosis of Circulatory Diseases with Uroselectan."——Dr. Robert B. Greenough, Boston, addressed the San Diego County Medical Society, May 5, on "What the Doctor Can Do in the Control of Cancer," and Dr. Henry J. Ullmann, Santa Barbara, "The Work of the Cancer Commission."——The Oakland Urological Club was recently organized. Among others, Dr. Arthur E. Dart spoke at the initial meeting on "Recurrent Adenoma of the Prostate."

**Survey of Heart Disease.**—All forms of heart disease have been made reportable in San Francisco for a period of three months, beginning March 15, 1932, with the possibility of extending the time to one year, in a city-wide survey on heart disease morbidity. Collaborating in the survey are the San Francisco Department of Public Health and the San Francisco Heart Committee, which constitutes a joint affiliation with the San Francisco County Medical Society and the San Francisco Tuberculosis Association. Physicians in the city have been provided with suitable forms for reporting all their cardiac cases. A final analysis of the data will be made after completion of the study. This summary will include, as a comparative study, two provisional surveys recently undertaken by the cardiac clinics section of the San Francisco Heart Committee, of which Dr. John J. Sampson is chairman.

**Summer Courses at the University.**—Summer courses for graduates in medicine will be offered at the University of California Medical School, San Francisco, June 6-18. The subjects to be presented are general medicine and surgery, ophthalmology, otorhinolaryngology, genito-urinary diseases, pediatrics, circulatory diseases, diseases of the blood-forming organs, diseases of the endocrine glands, including diabetes, and diseases of the gastro-intestinal tract, laboratory diagnosis, pathology and operative technic. There will also be symposiums in the departments of medicine and surgery, daily noon lectures and clinicopathologic conferences and round table discussions on three evenings each week, open to the medical public free of charge. Among those giving courses in the summer session at the university, June 23-August 5, will be J. W. Bridges, Ph.D., professor of abnormal psychology, McGill University Faculty of Medicine, and Mark A. May, Ph.D., professor of educational psychology at Yale University. Professor Bridges will offer two courses, one on personality, normal and abnormal, and the other on abnormal psychology. Professor May will give one course on personality and character tests.

### GEORGIA

**State Medical Meeting.**—The eighty-third annual session of the Medical Association of Georgia will be held, May 17-20, in Savannah with headquarters at the Hotel DeSoto, and under the presidency of Dr. Arthur G. Fort, Atlanta, who will speak on "Economic Drift of Modern Medicine." Dr. Dean Lewis, Baltimore, will deliver the Abner Wellborn Calhoun Lecture on "Clinical Manifestation of Malignant Disease." Public meetings, Wednesday, will be addressed by Drs. William Mithoefer, Cincinnati, on "Relation of Diseases of the Nasal Accessory Sinuses to Systematic Derangements," and Walter C. Alvarez, Rochester, Minn., "Practical Points in the Care of Patients with Indigestion." At a meeting, Thursday, Dr. William R. Dancy, Savannah, will be presented with the Crawford W. Long Memorial Prize. There will be symposiums on sinus disease and the psychoneuroses, and public health. Scientific papers to be presented will include "Tuberculosis of the Kidney," Wallace L. Bazemore, Macon; "Abnormal Ureters," Spencer A. Kirkland, Atlanta; "Perinephritis Abscess," Emmet B. Anderson, Americus; "Effects of Injections of Ovarian Follicular and Anterior Pituitary Hormones on Conception and Pregnancy in Laboratory Animals," George Lombard Kelly, Augusta; "An Efficient Method of Traction for Fractures of Femur," Charles H. Watt, Thomasville; "Method of Precision in the Diagnosis of Early Pregnancy (Aschheim Zondek Test)," H. F. Sharpley, Jr., Savannah, and "Rickets," Mercer Blanchard, Columbus. The annual dinner of the alumni of Emory University School of Medicine will be held Wednesday, as will the annual dinner of the alumni of the University of Georgia Medical Department.

### ILLINOIS

**Personal.**—Dr. J. C. Westervelt, Shelbyville, recently completed fifty-four years in the practice of medicine; Dr. Westervelt has served also as mayor of the city for several terms.

### Chicago

**Personal.**—Dr. James H. Hutton, Chicago, has been appointed consulting endocrinologist to the hospitals of the Illinois State Department of Public Welfare.

**Society News.**—A symposium on Perthes' disease was conducted before the Chicago Roentgen Society, May 11. The participants included Drs. Dallas B. Phemister, Robert C. Lonergan, Marcus H. Hobart and Gentz Perry.——At a recent meeting of the Chicago Society of Allergy, Dr. Leon Unger was made president, and Dr. Meyer R. Lichtenstein, secretary. Dr. Isadore Pilot is vice president.

**Cook County Hospital Graduate Clinics.**—The seventh annual postgraduate clinics by the attending staff of Cook County Hospital will be held under the auspices of the Chicago

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[2] Crystalline Vitamin D, editorial, J. A. M. A. **97:** 1628 (Nov. 22) 1931.

Medical Society, June 6-18. The object of the clinics is to furnish information which will aid the practicing physician in the diagnosis and treatment of the more important medical and surgical diseases. Special emphasis will be given to diagnosis, operative technic, pathology and the recent advances in medicine and surgery. The clinics will be divided into two main groups—medical, including the medical specialties, and surgical, including the surgical specialties. They will be held simultaneously throughout the day in two large amphitheaters. Special demonstrations in obstetrics and gynecology will be arranged. A fee of $10 is charged to cover the expense of organization.

**Albert B. Kuppenheimer Foundation.**—In January, 1931, following the death of Mr. Albert B. Kuppenheimer, it was announced that he had bequeathed $1,000,000 to the University of Chicago for research and study in the field of venereal diseases. At a recent meeting of the board of trustees of the University of Chicago, the Albert B. Kuppenheimer Foundation was established and a committee was appointed to allocate the funds. This committee is composed of Drs. Joseph L. Miller, clinical professor of medicine; Oliver S. Ormsby, clinical professor of dermatology, Rush Medical College; Samuel W. Becker, associate professor of dermatology; Oswald H. Robertson, professor of medicine and acting chairman, department of medicine; Dallas B. Phemister, professor of surgery and chairman of the department of surgery; Fred L. Adair, professor of obstetrics and gynecology; Franklin C. McLean, director, University of Chicago Clinics, and Frank R. Lillie, Sc.D., dean, Division of Biological Sciences. The bequest, which has suffered considerable shrinkage since the original announcement, has been turned over to the university. In accordance with the terms of the bequest, the income is to be expended wholly within the University of Chicago, of which Rush Medical College is a part.

## IOWA

**Annual Renewal Fees Due Before June 1.**—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application for renewal to the state department of health before June 1, enclosing the renewal fee of $1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendation of the board of health and the payment of the overdue fees.

**Conference on Child Health.**—The Iowa White House Conference on Child Health and Protection was held in Des Moines, April 14-15, with Dr. Daniel C. Steelsmith, state health commissioner, presiding as general chairman. Among the many speakers on the program were Drs. Everett D. Plass, Iowa City, on "Study of Maternal and Neonatal Mortality in Iowa"; Erval R. Coffey, U. S. Public Health Service, "Rural Health Organization"; Andrew H. Woods, Iowa City, "Mentally Handicapped"; Dennis H. Kelly, Des Moines, "Study of Rheumatism in Children in Iowa"; Milford E. Barnes, Iowa City, "Training of Personnel"; Jacob Breid, Toledo, "Indian Children"; Mark L. Floyd, Iowa City, "Chronic Nonspecific Lung Infections in Children in Iowa"; Mae H. Habenicht, Des Moines, "The Handicapped"; Edward H. Lauer, Ph.D., Iowa City, "Physical Education and Recreation," and George D. Stoddard, Ph.D., Iowa City, "Infant and Preschool Child."

## KANSAS

**Typhoid at College.**—Seven cases of severe illness, said to be typhoid, with one death, occurred among students at the Kansas State College of Agriculture and Applied Science, Manhattan, recently. The source was traced to a boarding house near the college. Although all the food handlers had previously been tested, it was later discovered that one of the pantry cook's daughters had typhoid about two years before. It was also brought out that a niece had it about the same time as the daughter. Following another test which was positive, the pantry cook was discharged, since which time no further cases have been reported.

## KENTUCKY

**Outbreak of Food Poisoning.**—Thirty-six students became ill at Cumberland College, Williamsburg, recently, of food poisoning. Investigation disclosed that thirty-three of the thirty-six students had eaten fruited cream dessert. The cook ate the dessert Friday morning and was not sick, but ate some left over in the icebox and had an attack similar to the attacks of the students on the previous day. The remainder of the student body, about sixty-five students, ate "any and all of the supper dishes" and had no ill effects. Examination tests made on all persons employed at three dairies were negative for typhoid or paratyphoid. The conclusions of the investigation indicate that the probable causative agent of the outbreak was the meat and bread dressing which was prepared Thursday and reheated Friday evening, after having remained for some time without refrigeration.

**Society News.**—A symposium on diseases of the ear and some complications was a feature of the meeting of the Jefferson County Medical Society, April 18; the speakers were Drs. Albert L. Bass, Walter Dean, Gaylord C. Hall and Franklin Jelsma, Louisville. Dr. Thomas Cook Smith, Louisville, read a paper before the society, April 4, on "The Premature Infant." Dr. James Duffy Hancock, Louisville, addressed the society, May 2, on "Nonparasitic Abscess of the Liver." ——The Boyd County Medical Society was addressed in Ashland, April 2, by Drs. Albert L. Bass, and Claude T. Wolfe, Louisville, on hay fever and trachoma, respectively.——Speakers before the Christian County Medical Society, April 19, included Drs. Robert Lyle Motley, Memphis, on "Normal and Abnormal Heart Physiology"; Thomas D. Moore, Memphis, "A New Method of Treating Prostatic Obstruction"; William D. Haggard, Nashville, "Cancer of the Colon and Rectum," and Carl R. Crutchfield, Nashville, "Thyroid Surgery with the Radio Knife."——The Four-County Medical Society was addressed, April 28, by Drs. John L. Jones and Philip F. Barbour, Louisville, on diphtheria and scarlet fever and diagnosis and treatment of pneumonia in children, respectively.

## MARYLAND

**Dr. Sigerist Succeeds Dr. Welch at Johns Hopkins.**—Dr. Henry E. Sigerist, director of the Institute of History of Medicine at the University of Leipzig, Leipzig, Germany, has accepted the chair of the history of medicine in Johns Hopkins University Medical School. He will assume his duties July 1. Dr. Sigerist will succeed Dr. William H. Welch, in whose name the chair was founded at the same time that the William H. Welch Medical Library was established. Dr. Sigerist succeeded Dr. Karl Sudhoff as director of the Institute of Medicine at the University of Leipzig in 1925 when, at the age of 70, Dr. Sudhoff retired. Dr. Sigerist gave a series of lectures at Johns Hopkins last October and November, as visiting lecturer in the history of medicine. He studied at the universities of Zurich, London, Leipzig and Munich and received his medical degree at the University of Zurich in 1921. Three years later he was made professor of the history of medicine there. Dr. Welch, who retired last June, was the first professor of pathology at Johns Hopkins, having served in that capacity from 1884 until 1916, when he became the first director of the School of Hygiene and Public Health (The Journal, Feb. 14, 1931, p. 536). In 1926 he resigned that position to accept the newly created chair of the history of medicine. Dr. Welch's eightieth birthday in 1930 was marked by an international celebration.

**State Medical Meeting and Election.**—Dr. Joseph Albert Chatard, Baltimore, was elected president of the Medical and Chirurgical Faculty of Maryland at its meeting in Baltimore, April 26-27. The vice presidents are Drs. Samuel A. Nichols, Clarksville; Elliott H. Hutchins, Baltimore, and William S. Seymour, Easton. Drs. Walter D. Wise and Charles E. Brack, Baltimore, were reelected secretary and treasurer, respectively. Dr. Randolph Winslow, who was nominated delegate to the American Medical Association, is the oldest living continuous member of the faculty, having been active in its affairs for fifty-five years. The Trimble lecture was delivered by Dr. Henry A. Christian, Boston, on "Digitalis in Relation to the Therapy of Heart Disease." Another Trimble lecture was given by Dr. Alexius McGlannan on "Postoperative Thrombosis and Embolism." Other speakers on the program included Drs. Joseph Albert Chatard on "Necrology"; John Mason Hundley, Jr., "Hyperplasia of the Endometrium"; Henry J. Walton, "Roentgenology in Obstetrical Diagnosis"; Warfield M. Firor, "Effect of Hypophysectomy on Rabbit Pregnancy"; Lay Martin, "Studies on a New Organic Material, Presumably an Enzyme, Secreted into the Gastric Juice"; Allen F. Voshell, "Progressive Pseudohypertrophic Muscular Dystrophy"; Lewellys F. Barker, "Relation of the State Board of Health to the General Practitioner"; Earle P. Clemson, "Acute Hydronephrosis; Hydro-Ureter," and William H. Pearce, "The Alcoholic Problem." At a general meeting, April 27, a portrait of Dr. Henry M. Hurd, the first medical superintendent of Johns Hopkins Hospital, was presented, as well as a picture of Dr. Caleb Winslow by his sons Drs. John R. and Randolph Winslow.

## MASSACHUSETTS

**Mental Hygiene Clinics.**—Two new child guidance clinics have been organized and started within the last two months in Gloucester and Lowell. The Gloucester Clinic is under the auspices of the Danvers State Hospital, and the Lowell Clinic under the auspices of the state division of mental hygiene. There are now seventy-eight mental hygiene clinics for children and adults in the state.

**Courses for Graduates at Harvard.**—A special four months' course in internal medicine began at Harvard University Medical School, April 1, and will extend to August 1. A course in orthopedic surgery begun in April will be continued through May. Beginning June 20 for six weeks, a course in internal medicine at the Massachusetts General Hospital will be carried on in charge of Dr. Frank Dennette Adams. Dr. Samuel A. Levine will conduct a course in modern diagnosis and treatment of heart disease at the Peter Bent Brigham Hospital during July. There will be a symposium on genito-urinary surgery, July 11-16, which will be an intensive review of diagnostic and operative problems under the direction of Dr. William C. Quinby. Full information may be obtained from the assistant dean, Courses for Graduates, Harvard University Medical School, Boston.

## MINNESOTA

**Physicians Appointed to Recodify Health Ordinances.**—A committee of six local physicians has been appointed in Duluth to recodify existing health ordinances, in cooperation with Dr. Mario McC. Fischer, recently appointed director of public health. When the proper health and sanitary code has been drawn up, it will be recommended for adoption to the city council with simultaneous recommendation of repealing all existing health ordinances. Following adoption of the new ordinance, the committee of six will be appointed as the board of health under it.

**Dr. Rothrock Honored.**—Dr. John L. Rothrock, St. Paul, was recently the guest of honor at a dinner given by 125 members of the medical profession. Dr. Rothrock, who has practiced in St. Paul for more than forty years, was recently promoted to a professorship of obstetrics and gynecology at the University of Minnesota School of Medicine. He addressed the dinner meeting on "Medical Progress in the Last Forty Years." Although Dr. Rothrock's retirement from active practice has already been announced, he now intends to give up his practice gradually.

**State Medical Meeting at St. Paul.**—The seventy-ninth annual session of the Minnesota State Medical Association will be held, May 23-25, at the Auditorium, St. Paul, under the presidency of Dr. Melvin S. Henderson, Rochester. Hotel headquarters will be at the Lowry Hotel. The program will include clinicopathologic conferences, a medical economics meeting, and symposiums on functional disorders and pediatrics. Speakers to be heard at the meeting will include Edward A. Fitzpatrick, LL.D., Milwaukee; Drs. Olin West, Secretary, American Medical Association, Chicago; Walter Sebening, Frankfort-on-the-Main, Germany, and Theodore M. Davis, Greenville, S. C. Among the topics listed for discussion are the element of fear in the development of functional disorders; the appeal of quackery to the neurotic patient; glandular dysfunction as related to the sexual hormone; pathogenic parasites in man; surgical use of maggots; professional pharmacy as applied to the physician; hemorrhoidectomy—an anatomic method; preliminary hemostasis in goiter surgery; gradual decompression of the biliary system, and subdiaphragmatic and liver abscess. A fracture clinic will be held Wednesday afternoon.

## MISSISSIPPI

**State Medical Election.**—At the annual meeting of the Mississippi State Medical Association, April 14, Dr. James M. Acker, Jr., Aberdeen, was installed as president; Dr. John W. D. Dicks, Natchez, was made president-elect, and Dr. Thomas M. Dye, Clarksdale, was reelected secretary. The next annual session will be held at Jackson, May 9-11, 1933.

## MISSOURI

**Society News.**—Arthur I. Kendall, Dr.P.H., Chicago, among others, addressed the Jackson County Medical Society, May 10, on "Filtrability of Bacteria and Its Clinical Significance."——Dr. William L. Nelson addressed the St. Louis Medical Society, April 12, on "Interpretation of Abnormal Personality," and Miss M. E. Steele, social worker, Psychiatric Child Guidance Clinic, "The Genetic Development of Abnormal Personality."

**Malaria Control Program.**—It has been announced that the malaria control program of the Missouri Pacific Lines, which has been conducted for the last eight years, will be continued this year. The cost of this year's work will bring the total expended for this purpose to $120,000, part of which has been borne by the communities in which the work has been done. Mr. L. A. Henry, sanitary inspector and engineer, with headquarters in St. Louis, is directing the work. The program calls for the destruction of mosquito breeding places by oiling ponds and stagnant creeks, screening of windows and the distribution of quinine among residents of the communities.

**Suspend Clinical Years at Missouri.**—The clinical years of study at the University of Missouri School of Medicine will be suspended, beginning August 31, until such time as the university finances permit their continuance, it was announced, April 2. The third and fourth years of study were reestablished a year ago last fall by the board of curators, after having been discontinued since 1910. During the present academic year about twelve students have been enrolled in the third year, and the fourth year curriculum was to have gone into effect next fall. Provision has been made to transfer the advanced students to other institutions, and arrangements may be made whereby these students will receive their degrees from the University of Missouri on the completion of their course elsewhere. Concerning the suspension of the course, it was stated that the "suspension is temporary in character and is due entirely to the shortage of state funds. The establishment and maintenance of the third and fourth years in medicine at Columbia have been amply justified. The clinical facilities provided have been more than sufficient in practically all branches for modern, medical education."

## NEBRASKA

**State Medical Meeting at Lincoln.**—The annual meeting of the Nebraska State Medical Association will be held at the Lincoln Hotel, Lincoln, May 24-26, under the presidency of Dr. Lucien Stark, Norfolk. There will be symposiums on toxemias of pregnancy and cerebral birth injuries, prevention and treatment. Speakers at this meeting will include Drs. Thomas J. Kinsella, Glen Lake, Minn., on "Surgical Aspects of Pulmonary Tuberculosis"; Charles G. McMahon, Superior, "Traumatic Surgery in a Rural Hospital"; William J. Arrasmith, Grand Island, "Hyperthyroidism and Neurasthenia"; Ernest S. Wegner, Lincoln, "Infant Feeding"; Herbert H. Davis, Omaha, "Pathological Diagnosis and Treatment of Tumors of the Breast"; Karl A. Menninger, Topeka, Kan., "Sexual Neurosis in General Practice: Impotence and Frigidity"; Earle G. Johnson, Grand Island, "Diseases of the Gallbladder"; William J. Gentry, Gering, "Mumps with a Double Complication of Meningitis and Pancreatitis"; J. Frederick Langdon, Omaha, "Fascia Transplant in Treatment of Hernia"; Arthur D. Dunn, Omaha, "Cholecystography—Discussion of Intravenous and Oral Methods"; Charles M. Swab and Herbert F. Gerald, Omaha, "Present Status of Botulism in Food Poisoning"; Andrew C. Ivy, Chicago, "Physiology of Mucus Secretion with Some Experimental Results on the Prevention of Ulcer with 'Gastric Mucin' "; Walter D. Abbott, Des Moines, "Surgical Procedures on the Sympathetic Nervous System in the Treatment of Peripheral Vascular Diseases"; Walter C. Alvarez, Rochester, Minn., "Practical Points in the Handling of Patients with Gastro-Intestinal Disease."

## NEW JERSEY

**Society News.**—Dr. Harold Neuhof, New York, addressed the Hudson County Medical Society, May 3, on "Studies in the Diagnosis and Treatment of Pulmonary and Pleural Suppuration."——The Camden County Medical Society was addressed, May 3, by Drs. Vincent P. Del Duca on "Chronic Subdural Hematoma in an Infant with Necropsy Findings"; David F. Bentley, Jr., "Hematuria," and Hyman I. Goldstein, "Heredofamilial Angiomatosis with Recurring Familial Hemorrhages."——Dr. Edgar B. Friedenwald, Baltimore, addressed the Atlantic County Medical Society, May 13, at Atlantic City, on "Diet Problems and Therapeusis in Children."

**Tuberculosis Institute.**—A five-day postgraduate tuberculosis institute will be given at the Jersey City Medical Center, May 16-25, under the joint auspices of the Hudson County Medical Society, Hudson County Tuberculosis League, and the Hudson County Tuberculosis Sanatorium and Clinics. Dr. James Burns Amberson, Jr., assistant professor of clinical medicine, Columbia University College of Physicians and Surgeons, New York, will be the guest lecturer and will deliver a didactic lecture each day, followed by bedside instruction. Dr. Amberson's subjects will be: pathology and pathogenesis;

x-ray and physical diagnosis; symptomatology and clinical course of tuberculosis; nontuberculous chest diseases and differential diagnosis, and treatment of tuberculosis.

**Courses in Pharmacy.**—The New Jersey state board of pharmacy, Trenton, adopted a resolution, March 1, governing the approval of four year courses in pharmacy. Courses totaling less than 800 hours of instruction per college year for each of the four years of the course and which do not include at least 40 per cent of laboratory work are among those which will not be approved. In the near future, the state board reports, it will request all colleges of pharmacy desiring to submit their courses for approval to do so. In 1929, the board adopted a resolution making it mandatory for applicants for registration as pharmacists in New Jersey, who begin their college course in pharmacy any time after Jan. 1, 1932, to submit proof of graduation from a four year course in a college of pharmacy approved by the board. A resolution was adopted in 1930, declaring that the board's approval shall be confined to such courses and institutions as will recognize the need for fundamental training in physics, chemistry and biology as a basis for the course in pharmacy, as well as the need for the addition of so-called cultural subjects to the curriculum.

## NEW YORK

**Personal.**—Fenimore D. Beagle, who has been connected with the state health department thirty-four years, has been appointed secretary of the health department, succeeding Dr. Huntington Williams, who resigned last October to become director of health of Baltimore.——Dr. Lillian DeArmit, Schenectady, was recently appointed assistant school medical inspector in the medical inspection bureau of the New York State Education Department. She will maintain supervision of medical inspection and health service in the state normal schools.

**Changes at Penal Institutions.**—Dr. Frank L. Heacox, physician at Auburn prison, has been appointed superintendent of the State Training School for Women, Albion. He succeeds Dr. Gordon F. Willey, who became superintendent of the Bedford State Reformatory for Women, replacing Dr. Leo J. Palmer. Dr. Palmer was made warden of the new state "medium security prison" at Wallkill. The latter institution is reported to be a prison without walls, fences or bars, where inmates live in rooms, not cells. Only short-term convicts are to be sent to the new prison, which will eventually have a capacity of 500 prisoners.

### New York City

**Eighth Harvey Lecture.**—Dr. Albert Policard, Lyons, France, will deliver the eighth Harvey Society Lecture at the New York Academy of Medicine, May 19, on "Histochemistry: Present State and Future."

**Course on Tumors.**—Dr. William H. Woglom will give a course in the pathology and diagnosis of tumors at the Institute of Cancer Research in connection with the summer session of Columbia University, beginning July 5 and continuing six weeks. Classes will be held daily from 2 to 4 p. m., except Saturday, and the fee will be $37. Application should be made to the director of the summer session, Columbia University.

**Dr. Diner Retires as Dean.**—Dr. Jacob Diner is now dean emeritus of Fordham University College of Pharmacy, following his retirement as dean on account of ill health. Dr. James H. Kidder, a 1928 graduate of Cornell University School of Medicine, has been appointed to succeed Dr. Diner. Dr. Diner graduated from Fordham University School of Medicine in 1913. He is president of the New York State Board of Pharmacy.

**Study of Heart Disease in Children.**—The department of education is undertaking a city-wide study of cardiopathic children now attending regular classes in the elementary schools, the *Weekly Bulletin* states. Parents of children whose record indicates the presence of any cardiac abnormality will be requested to take the child to a physician who is also asked to give his opinion as to whether the child should be in a hospital or in a convalescent home; whether school attendance is advisable; whether attendance at a special class for cardiac patients is indicated, and whether the child should climb stairs.

## NORTH CAROLINA

**State Medical Election.**—Dr. John B. Wright, Raleigh, was installed as president of the Medical Society of the State of North Carolina at its annual meeting, April 20; Dr. Isaac H. Manning, Chapel Hill, was made president-elect, and Dr. Lewis B. McBrayer, Southern Pines, reelected secretary. The next annual meeting will be held in Raleigh, April 17-19.

## OHIO

**Society News.**—The Union Medical Association was addressed, April 13, by Drs. George N. Wenger, Massillon, on "Anal Pruritus"; Maxwell Harbin, Cleveland, "Surgery of the Knee Joint"; Alex M. Rosenblum, Youngstown, "Pneumonia," and David S. Arbuckle, Akron, "Relation of Sinus Disease to Asthma."——Dr. Harold E. B. Pardee, New York, addressed the Columbus Academy of Medicine, April 11, on arteriosclerotic heart disease.——Dr. James M. Pierce, Cincinnati, addressed the Montgomery County Medical Society, May 6, on "Hygiene of Pregnancy."

**New Admission Regulations at Cincinnati.**—Commencing in September, 1934, candidates for admission to the freshman class in the University of Cincinnati College of Medicine must present official evidence of three years of college preparation of not less than ninety semester hours, in a college of satisfactory standing. The following subjects must be included: chemistry; zoology or general biology; general physics; English; foreign language, and embryology. Preference will be given to those applicants who are graduates of approved colleges and to those who have completed three years of college work and who signify that they will receive their academic degree on the satisfactory completion of the first year of the medical course. Preference will also be given to those applicants for admission who, in the opinion of the committee on admission, present evidence of high achievement in their college education and who are most likely to succeed in medicine, rather than to those who present the largest number of hours credit, or who have limited their preparation to the premedical sciences. Candidates for admission to the freshman classes of 1932 and 1933 will be required to present the minimum requirements in current effect at the school.

## OKLAHOMA

**Society News.**—At a recent meeting of the Southern Oklahoma Medical Society in Duncan, the speakers included Drs. George N. Bilby, Oklahoma City, "Relation of Public Health to the Medical Profession"; Udonna C. Boon, Chickasha, "Iritis"; Horace Reed, Oklahoma City, "Surgery as an Aid in the Treatment of Advanced Pulmonary Tuberculosis"; Leander A. Riely, Oklahoma City, "Diseases of the Gallbladder," and Edward P. Allen, Oklahoma City, "Toxemia of Pregnancy." Dr. Dock Long, Duncan, also spoke.——The Muskogee County Medical Society was addressed recently by Drs. Francis B. Fite on "Early Day Surgery in Territorial Days"; Jesse L. Blakemore, "Obstacles Met and Overcome by the General Practitioner in Organized Medicine before Statehood"; Floyd E. Warterfield, "Early Day Practice," and Claude A. Thompson, "Organized Medicine, Its Outlook and Prospects at This Time and Since Statehood."

## PENNSYLVANIA

**Personal.**—Dr. Eugene A. Conti, Pittsburgh, was recently appointed medical director of Allegheny County, succeeding Dr. John R. Conover.——Dr. Frederick Whitney Davis has been appointed health officer of Lackawanna County, succeeding Dr. Frank R. Wheelock.

### Philadelphia

**Changes at Temple University.**—Announcement has been made of the following changes and additions to the staff at Temple University Medical School:

Dr. Lowrain E. McCrea, to associate in genito-urinary surgery.
Drs. James Merriman Lynch and Nathaniel Hurwitz, clinical assistants in medicine.
Dr. George D. Mulligan, clinical assistant in rhinolaryngology.
Dr. Joseph A. Parrish, clinical assistant in surgical research.
Dr. Joseph Weiner, instructor in medicine.

**Society News.**—The Obstetrical Society of Philadelphia was addressed, May 5, by Drs. Thaddeus L. Montgomery on "Lesions of the Placental Vessels," and Clifford B. Lull on "Cesarean Section in Philadelphia."——Among others, Dr. George U. Pillmore addressed the Philadelphia Roentgen Ray Society, May 5, on "Economic Problems of the Hospital Radiologist."——A symposium on cancer constituted the meeting of the College of Physicians of Philadelphia, May 4.——Drs. Lee A. Rademaker and Benjamin F. Buzby spoke before the Philadelphia Academy of Surgery, May 2, on "Effects of Blood in Experimental Peritonitis" and "Recurring External Dislocations of the Patella," respectively.——Harold S. Burr, Ph.D., New Haven, Conn., addressed the Medical Club of the Woman's Medical College of Pennsylvania, May 6, on "An Electrodynamic Theory of the Development of the Nervous System."

## WISCONSIN

**Society News.**—Dr. Irving F. Stein, Chicago, addressed the Kenosha County Medical Society at Kenosha, April 21, on "Value of Roentgen Diagnosis in Obstetrics."——Dr. Temple S. Fay, Philadelphia, addressed the Milwaukee Academy of Medicine, April 19, on "Management of Cerebral Trauma and Intracranial Pressure."——Dr. Thomas C. Galloway, Evanston, Ill., and Norbert Enzer made addresses before the Medical Society of Milwaukee County, April 8, on "Surgical Diathermy in Otolaryngology" and "Relationship of Pathology to the Practice of Medicine," respectively.——At a meeting of the Milwaukee Pediatric Society, April 13, Dr. Louis W. Sauer, Evanston, Ill., spoke on pertussis and Dr. George Light on otitis media and sinusitis in infants and children.

**Course in Obstetrics and Gynecology.**—A twelve weeks' course in obstetrics and gynecology will be conducted in southwestern counties of the state, beginning June 13. The program, which will be held in La Crosse, Tomah, Portage, Platteville, Richland Center and Monroe, is sponsored by the state medical society, the University of Wisconsin Medical School and the university extension division. The meetings in each center will be held on the same day each week for twelve weeks at the same time and place. The instructors will be Drs. Otto H. Schwarz, professor of obstetrics and gynecology, Washington University School of Medicine, St. Louis, and Everett D. Plass, professor of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City. Subjects to be covered will include the pelvis, pelvimetry and the contracted pelvis; antepartum and postpartum hemorrhage; causes, diagnosis and treatment; obstetrical analgesia and anesthesia; forceps: indications, contraindications, methods; management of breech presentations and version; cesarean section; uses, indications and abuses; management of normal pregnancy; complications of pregnancy including abortion and premature labor; management of normal labor and management of normal puerperium. The fee for the course is $30. Application may be made to the university extension division, room 108, Madison.

## WYOMING

**White House Conference and Health Officers' Meeting.**—A joint session of the Wyoming White House Conference on Child Health and Protection and the County Health Officers' Association was held in Casper, May 5-7. Drs. Joseph C. Kamp, Casper, spoke on "The Children's Charter"; Herbert L. Harvey, Casper, "Health Education"; Albert B. Tonkin, Riverton, "Maternal and Infant Mortality"; Neil C. Geis, Casper, "Infant and Child Care and Feeding"; Odra S. Pavy, Laramie, "Physical Examination"; Allan McLellan, Casper, "Growth and Development"; Freeman G. Huffman, Wheatland, "Communicable Disease Control"; John H. Goodnough, Rock Springs, "Preventive Medicine and Immunization"; William O. McDermott, Casper, "Sanitation"; Nathan E. Wells, Newcastle, "Medical Service and Administration"; Joseph R. Hylton, Douglas, "Tuberculosis of Spine in Children"; Platt W. Covington, Salt Lake City, "Public Health"; Thomas J. Riach, Casper, "Mental Health of Children in Wyoming," and Arthur G. Crane, Ph.D., president, University of Wyoming, "Children During the Depression." There were many other speakers on the program. Those on the program of the County Health Officers' Association included Dr. McDermott on "City Health and Administration"; Dr. Wells, "Control of Typhoid Fever"; David M. Sayles, Gillette, "Prenatal Care," and Walter O. Gray, Worland, "Tick Fever Immunization."

## GENERAL

**Directory of Occupational Therapists.**—Announcement was made, May 2, that the American Occupational Therapy Association, New York, is about to issue its first annual directory of qualified occupational therapists, which will include the names of those who applied and were found qualified for admission to the National Register established by the association early in 1931. It is hoped that this directory will protect hospitals and related institutions from unqualified persons posing as occupational therapists.

**Medical Bills in Congress.**—*Changes in Status:* S. 4273 has been favorably reported to the Senate, without amendment, authorizing an annuity to the widow of Dr. Aristides Agramonte, a member of the Yellow Fever Commission (H. Rept. 661). The Economy Bill, H. R. 11597, has passed the House as Part 11 of H. R. 11267, a bill making appropriations for the legislative branch of the government for the fiscal year ending June 30, 1933. The House eliminated all provisions in the bill relating to veterans, and in lieu thereof inserted a provision providing for a joint congressional committee to conduct a thorough investigation of the operation of the laws and regulations relating to the relief of veterans and to report to the Congress, not later than the first Monday in December, 1932, a national policy with respect to veterans and their dependents. *Bill Introduced:* H. R. 11927, by Representative Kurtz, Pennsylvania, to authorize the construction of a veterans' hospital in the counties of Blair, Centre, Clearfield or Cambria, Pennsylvania.

**Tuberculosis Meeting in Colorado.**—The annual meeting of the National Tuberculosis Association will be held in Colorado Springs, Colo., June 6-9, under the presidency of Dr. Alfred Henry, Indianapolis. Among speakers listed on the program are Drs. Henry Sewall, Denver, on "Allergy in Tuberculosis"; Theobald Smith, Princeton, N. J., "Modern Trends in Bacteriological Research"; James Burns Amberson, Jr., New York, "Comparative Value of Paper and Celluloid Films for Chest Roentgenograms; Report of 1,000 Cases"; Carl H. Greene, Rochester, Minn., "Treatment of Addison's Disease with Cortical Hormone of the Suprarenal Gland," and Col. Earl H. Bruns, Denver, "Nontuberculous Diseases Simulating Tuberculosis." Symposiums will be held on "The Blood Cell Count in the Diagnosis of Active Tuberculosis" and "Racial Aspects of the Tuberculosis Problem." Dr. Gerald B. Webb, Colorado Springs, will address the annual dinner meeting on Robert Koch. The Trudeau medal will be awarded at the opening session. The American Sanatorium Association and the National Conference of Tuberculosis Secretarie will hold meetings concurrently and the western branch of th American Public Health Association will meet, June 9-11.

**Medals Awarded.**—Two medals were presented by the National Academy of Sciences at its annual dinner, April 26, in Washington, D. C. One was the Public Welfare Medal, which was awarded posthumously to Wickliffe Rose "for his organization and direction of the work of the International Health Board of the Rockefeller Foundation by which he made, to the promotion of public health and welfare, a contribution of world-wide significance and importance." The announcement of the award was made in April, 1931, the medal to be presented at the next meeting of the Academy. However, Dr. Rose died in September, 1931, before the medal was presented and delivery of it was made to his son, H. Wickliffe Rose. The Public Welfare Medal is provided through the Marcellus Hartley Fund, a trust fund established in 1913-1914 through the gift of Mrs. Helen Hartley Jenkins, in memory of her father, Marcellus Hartley. The Mary Clark Thompson Medal and accompanying honorarium of $250 were presented to David White of the U. S. Geological Survey and a member of the academy, for his researches in paleontology. The trust fund providing this medal was established in 1919 by the gift of Mrs. Mary Clark Thompson for whom it was named.

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# Government Services

## Naval Medical Journal Twenty-Five Years Old

The *Naval Medical Bulletin* celebrated its twenty-fifth anniversary with the April issue. The journal was first issued in April, 1907, under the editorship of Dr. William H. Bell, then a passed assistant surgeon. Succeeding editors have been Drs. Charles N. Fiske, James C. Pryor, Ralph W. McDowell, Theodore W. Richards, Joseph L. Nielson, L. W. Johnson, Robert C. Ransdell, J. S. Taylor, William M. Kerr, Luther Sheldon, Jr., and Robert P. Parsons. The bulletin has always been a quarterly publication except for a period from January, 1922, to December, 1925, when it was issued monthly.

## Dr. Dunbar Promoted to Rear Admiral

Capt. Arthur White Dunbar was promoted to the rank of rear admiral in the medical corps of the U. S. Navy, March 29. Dr. Dunbar, who was commissioned an assistant surgeon in the medical corps of the navy, Oct. 10, 1894, is at present attached to the bureau of medicine and surgery, navy department, Washington, D. C., as inspector of medical department activities on the East Coast. Admiral Dunbar was ordered to duty as executive and later succeeded to the command of the first hospital ship, the U. S. S. *Relief*. During the World War he was in command of the Hospital Ship *Comfort* and later in command of the Hospital Ship *Mercy*. During the period April, 1925-June, 1927, he served as assistant to the chief of the bureau of medicine and surgery, navy department.

# *Foreign Letters*

## LONDON

*(From Our Regular Correspondent)*

April 16, 1932.

### The Decline of Tuberculosis in England

The Ministry of Health has published a report on tuberculosis by Dr. A. S. Macnalty, senior medical officer for tuberculosis, which is a comprehensive study of the present position regarding prevention and treatment and a review of the incidence and mortality during the whole period for which figures are available. The salient fact is a great and steady decline. The mortality in England and Wales has fallen by 72 per cent since the decade 1851-1860. The ratio of deaths from tuberculosis to deaths from all causes shows a corresponding decline. Thus, taking the deaths from all causes as 100, the figures for deaths from tuberculosis were:

| | Males | Females |
|---|---|---|
| Decade 1851-1860 | 15.7 | 17.2 |
| Decade 1901-1910 | 11.4 | 10.2 |
| Quinquennium 1921-1925 | 9.5 | 8.3 |
| Four years, 1926-1929 | 8.5 | 7.1 |

Both the actual and the comparative mortality have fallen more rapidly in females than in males. The mortality per million of population was:

| | 1901 | 1929 |
|---|---|---|
| From pulmonary tuberculosis | 1,263 | 738 |
| From nonpulmonary tuberculosis | 544 | 194 |

However, tuberculosis is still responsible for 37,000 deaths per annum and for 31 per cent of all deaths between the ages of 15 and 45. Although the decline in mortality is proceeding with fair rapidity in this country and our mortality compares favorably with that of the majority of European countries, it is higher than that of New Zealand, Australia and Canada. In 1928 our mortality per hundred thousand of population was 75.5, while that of New Zealand was 40.9. For the age period 5-45 years, tuberculosis is the chief killing disease. Toward the end of childhood and in young adult life it is responsible for a higher mortality in females than in males. At this period approximately one third of the deaths from all causes among males and almost one half among females are due to tuberculosis, chiefly pulmonary. On the other hand, in middle life and old age the mortality from tuberculosis is much greater in males. The mortality both from pulmonary and from nonpulmonary tuberculosis is higher in urban than in rural districts. In recent years the figures of notification are available and tell the same tale as the mortality. In 1913, 80,788 cases of pulmonary and 36,351 cases of nonpulmonary tuberculosis were notified, while in 1929 the figures were only 57,274 and 18,682.

It is noteworthy that the decline of tuberculosis began before special attention was devoted to the problem. Dr. Macnalty attributes this to higher wages, an improved standard of living, and hygiene and public health measures, with segregation of advanced cases of pulmonary tuberculosis in poor-law hospitals. It was not till the last decade of the nineteeth century that energetic measures were taken against the disease and that the value of sanatorium treatment was appreciated. The diminishing figures year by year afford great encouragement to antituberculosis work.

### Tobacco Smoking Denounced

It has chanced that tobacco smoking has been denounced at the same time at two different societies. At a meeting of the Society for the Study of Inebriety, Dr. J. D. Rolleston opened a discussion on the cigaret habit. He said that travelers reported that it was prevalent in South America in the eighteenth century. Thence it spread to Spain, where Casanova spoke of it in 1767. Its diffusion over Europe began with the Crimean War, and Germany was the last country to adopt the cigaret largely. North America did not come under its spell until it had become universal in Europe. There had been a considerable increase in the habit since the Great War, especially among women. The cigaret differed from all other forms of tobacco smoking in nicotine content being lower but carbon monoxide higher. Moreover, furfurol, usually absent from the smoke of the pipe or cigar, and present only in small amount in that of the Turkish cigaret, was in large amount in that of the cheap cigaret. The *Lancet* had stated that habitual cigaret smoking was only slightly less harmful than drinking spirits between meals. It had been computed that each man, woman and child in the United States smoked 1,000 cigarets annually. "Smokers' throat" was mainly due to the pyridine content.

The medical profession was not unanimous as to the part played by tobacco in the causation of certain diseases, particularly those of the heart and especially angina pectoris. Many considered it a precursor of cancer. It was notorious that the deterioration of tuberculous persons who smoked was rapidly accelerated. Both smoking and the cocktail habit were detrimental in diabetes. Tobacco amblyopia was a definite ill effect. One high authority had predicted a large increase of cancer of the buccal mucous membrane from the universal indulgence in cigarets.

The tobacco habit was discussed also at the fifth annual meeting of the National Society of Non-Smokers. In the annual report it was urged that smokers should be banned from places in which food is served and that restaurants should provide non-smoking rooms. Young men were giving up smoking because they thought it effeminate, but Boy Scouts and even Girl Guides had succumbed to the habit. The chairman, Dr. Pryns Hopkins, referred to the statement made in the report of the discussion of Dr. Rolleston's paper that smoking soothed the nerves. The fact was that smokers were very irritable people when unable to smoke. Smoking had a tendency to impair the moral faculties; smokers seemed to lose certain qualities of truthfulness and consideration for others.

### Railway and Road Accidents Compared

The minister of health, Sir Hilton Young, speaking at an anniversary meeting of railway servants, said that 241 railway servants were killed and 17,997 injured in 1931 in the performance of their duties. But the number of passengers who were killed was only 76, while 5,000 were injured. These were remarkable figures for the passengers, considering the chances involved. They compared favorably with accidents on the roads, in which 7,000 were killed and 150,000 injured in the same year. He wished the public could be excited to take the same interest in automobile accidents they did in railway accidents.

### Deaths from Injection Treatment of Varicose Veins

It is generally held that the risks of the injection treatment of varicose veins are small. However, a number of deaths from pulmonary embolism have been recorded. In his recent oration to the Harveian Society on pulmonary embolism, Sir Bernard Spilsbury, the government pathologist, reviewed 120 fatal cases in which he had made or assisted at a necropsy. In three of these, pulmonary embolism was due to the injection treatment of varicose veins—in two, sodium salicylate was used, and in 1, sodium morrhuate. Sir Bernard thought that the rarity of this complication was a testimony to the comparative safety of the method, as to which originally he had some misgivings. Another case has just occurred and been the subject of an inquest, at which the incorrect statement was made that it was the first in this country. A woman, aged 62, received an injection in her left leg for varicose veins at the

German Hospital, London. She had pain afterward and remained in bed for a week, after which she went about her ordinary housework. She suddenly became faint and was found sitting on a sofa and asking for water. She died before medical aid could be summoned. The necropsy showed that death was due to a tubular clot of blood in the heart, 3 inches long and three-eighths inch in diameter. The coroner criticized the usual practice of allowing patients to get about after injection of varicose veins. He thought that it would be much safer for them to rest until such time as the clot in the vein had dispersed.

## PARIS

*(From Our Regular Correspondent)*

March 30, 1932.

### Herpes Zoster and Chickenpox

The question of the possible identity of herpes zoster and chickenpox, as raised by Mr. Netter, was the subject of a recent discussion before the Société des médecins des hôpitaux de Paris. Mr. Armand Delille and Madame Trocmé reported an observation that has a bearing on the question. At the Hôpital Herold, these authors observed, October 12, in a tuberculous young girl undergoing pneumothorax treatment, who had been in the department since June, a thoracic herpes zoster of the eighth and ninth right dorsal roots. Exactly fifteen days later, October 27, two children, one in the neighboring cubicle, the other in the cubicle opposite, came down with a typical chickenpox. A third case of chickenpox developed the day following. This outbreak gave rise to a fourth case, fifteen days later. There had been no case of chickenpox in the department for more than a month. It was therefore considered reasonable to incriminate the case of herpes zoster as the cause of the cases of chickenpox. Netter also recalled similar cases of chickenpox in another hospital service, in children adjacent to a patient suffering from herpes zoster. Mr. Hallé confirmed this opinion, but Mr. Comby remained skeptical and advanced the theory that the contagion might have come from without, through visitors of the young patients. Mr. Apert stated that he had long held the same opinion as Mr. Comby, but that recent observations made in his department had served to change his point of view. Such happenings occur too often to be simple coincidences.

At a later session of the same society, the nervous disorders that are sometimes observed during chickenpox and that appear to show that the central nervous system is attacked, as is the case in herpes zoster, were discussed. Mr. Sendrall and Madame Dudevant reported a syndrome of choreo-athetosis that developed during convalescence from chickenpox. There appeared first a grave meningeal syndrome, followed by a paralysis of the lower limbs and motor disorders of a choreoathetosic type, which attacked at the same time the muscles of the arms, the head and the trunk. These symptoms, however, retrogressed spontaneously and the patient recovered without sequels. In connection with this communication, Professor Marfan stated at the following meeting that, in 1893, he reported a case of chickenpox in a child, which was associated with complete paralysis of the left arm. He referred these nervous symptoms to the action of the virus of chickenpox, but his conclusions were at that time rather doubted. But now practically all the authors who have studied this question are of this opinion and accept the possibility of a neurotropic action of the virus of chickenpox. Marfan recalled also a case of ophthalmoplegia externa that he reported in 1898; also cases of atrophy of the quadriceps, which followed this disease. The author confirmed thus the possibility of nervous lesions associated with chickenpox. Further, Mr. Cathala reported a case of facial paralysis that developed twelve days after the onset of chickenpox and was accompanied by a slight weakness of the right leg, with abolition of the achilles reflex. The father of this young girl, likewise affected with chickenpox, presented two days later a monoplegia of the left arm. All these accidents were, however, transitory. Netter recalled that the observations of Professor Marfan are the first that were published on the question and emphasized that such accidents were usually of a benign nature. Mr. Paraf cited similar cases, and also Mr. Babonneix. Mr. Sézary pointed out that Déjerine had observed such facts but regarded them as rare. He holds that, just like the spirochete, certain viruses may evolve and present affinities that are more and more neurotropic.

### The Law Pertaining to the Practice of Medicine

The text of the law pertaining to the practice of medicine in France, as passed by the senate, has been adopted without debate by the chamber of deputies. The provisions that present the greatest interest outside of France are the following: A physician must be a citizen of France and must possess a doctor's diploma in medicine, granted by the central government. Foreign countries in which physicians of French nationality are authorized to practice medicine may, however, demand of the French government diplomatic conventions relieving applicants "in certain cases" of the requirement of French citizenship. But a parity must be established between the number of physicians coming from countries with which conventions have been entered into, to practice medicine in France, and the number of French physicians practicing in those countries. The holders of a foreign diploma, certifying graduation as a doctor of medicine, who seek the doctor's degree granted by the French government must give evidence of possessing the credits required to enter on the course leading to the diploma certifying to adequate preparation in physics, chemistry and the natural sciences and must submit to an examination. They may not under any circumstances be relieved for more than three years of the obligation to submit such evidence. Foreigners holding a French "university diploma" in medicine will be subject to the same conditions, except as regards proofs of scholarship and the examinations. They may be relieved for four years of the necessity to submit evidence of scholarship. They may likewise be relieved of examinations, provided examinations do not in any case concern their knowledge of anatomy, physiology and the clinical subjects. No dispensations from examinations or from evidences of scholarship will be accorded to foreign students seeking a government doctor's diploma in medicine, irrespective of the length of time spent on studies in foreign countries. French naturalization will not be required of physicians who are regular practitioners of medicine in France the day of the promulgation of this law, provided they possess on that date the government doctor's diploma in medicine, nor of students who are taking a regular course of study leading up to such a diploma.

### An American Gift to the University City in Paris

Mrs. Harriett Hale Woolley has made the University of Paris a gift of $50,000 for the upkeep of rooms in the American Dormitory, which Dr. Gage had erected in the University City, Boulevard Jourdan. The right to occupy these rooms will be reserved to the beneficiaries of the scholarships established by Mrs. Woolley.

### International Congress on Urban Hygiene

The third International Congress on Technic and Urban Hygiene met recently in Lyons under the chairmanship of Dr. Tanon, professor of hygiene at the Faculté de médecine de Paris, the session continuing for a week. The first session was held in Prague, in 1930, and the second, last year, at Milan. At Milan, and also at Lyons, the congress met during the period that a large industrial and commercial exposition was held. Four hundred French and foreign delegates attended the congress, outside of the regular members. The first session was devoted to a presentation by Professor Greber on the importance of open spaces in laying out a large city, together with the presentation of photographs of cities illustrating this point, notably American cities. Chomel spoke on the accomplishments in hygiene and city development, already achieved or begun, at Lyons; Augustin Rey, on the importance of securing for dwellings the maximal amount of sunlight; Mazel and Robin on the rôle of the physician in the vocational guidance of young persons to prevent occupational diseases; Trillat on the influence of fogs; Turlin on the illumination of large cities; Kiemplin on the smoke evil; Verbouwe of Brussels on the danger of massive emissions of factory smoke, with citation of the fatal accidents that occurred, two years ago, in the valley of the Meuse; Henry Ferré, on the sanitary advantages of cremation; Knepen, on the suppression of moisture in walls by his system of permanent drainage; Violle of Marseilles, on the disinfestation of houses and individuals; Loir of Havre, on the need of an international society for the destruction of rats; Rey, on the location of hospitals with reference to the sunlight.

The congress passed five resolutions: one on the importance of the direction in which houses face, from the standpoint of the best insolation; a second on the minimum floor space of rooms of dwellings; a third on the necessity of renovating periodically the façade of dwellings; a fourth on the ventilation of rooms and dwellings, and a fifth on the abolition of the smoke evil. An exhibit of sanitary equipment and sanitary documents added to the interest of the congress. There were various new installations from the city of Lyons, new abattoirs, animal markets, and especially the new city of Villeurbane, where a central heating plant furnishes heat for 1,800 apartments and steam for 100 factories. The city of Lyons, owing to the initiative of its mayor, Mr. Herriot, is probably the most enterprising city in France, from the standpoint of breadth of view and the organization of city projects.

### The Excess of Physicians in France

The number of physicians in France continues to increase faster than the population. The total number is at present about 28,000. During the last year, 1,120 government diplomas have been conferred. It requires only a single arithmetical operation to foresee what the result will be in a few years. It may be considered that a physician practices, on an average, a period of thirty years. To maintain the present figure of 28,000, only 933 new graduates each year will be required, from which it appears that this year 187 more diplomas were issued than would be necessary to preserve the status quo. On the other hand, 1,120 graduates each year corresponds to a total of 33,600 physicians. However, the present total of 28,000 physicians constitutes, for the population of France, one physician for a little more than 1,400 inhabitants; while a total of 33,600, the figure toward which we are tending, represents one physician for less than 1,200 inhabitants. But since the present proportion is already too high, what will it be when the number of physicians shall reach 33,600? It should be noted also that, promotions having been more rapid in recent years, a larger proportion of the physicians are young practitioners, and for that reason the situation is more grave than it would be otherwise. It behooves the medical profession to give this question close attention. There are in France about 6,000 surgeon-dentists, and on every hand the syndicates of these practitioners are combating this overcrowding of their profession. While for the physicians an average career extending over thirty years may reasonably be assumed, it may be considered that, since the studies of the surgeon-dentists are begun at an earlier age and the studies are much less extensive, their opportunities to practice are just so much prolonged. Their practice will extend over a period of thirty-five years. Under these circumstances, in order to maintain the present total number of surgeon-dentists (6,000), 175 graduates annually would suffice, instead of 600, the present number. Six hundred graduates annually corresponds to 21,000 dentists, and one needs only to cite this figure to explain the grave error that has been committed, to which the medical profession should not remain indifferent. That is why limitation of the number of students to be admitted to the facultés is being seriously considered, as has been the case for some time in the large schools of technology.

### Death of Prof. Charles Debierre

The death of Charles Debierre, professor of anatomy at the Faculté de médecine de Lille, at the age of 79 has been announced. He was the author of numerous scientific works, among which is "A Treatise on the Anatomy of Man," which has been translated into several languages. He had many brilliant pupils. In 1897 he was appointed corresponding member of the Academy of Medicine. In 1911 he was elected senator of the department of Nord, which post he held until his death. Up to the age of 75, his duties as senator in Paris did not prevent him from returning three times a week to the Faculté de médecine de Lille to lecture. In the senate, he was an earnest advocate of the policy of making a strong course in the classics a preliminary requisite for students of medicine.

## BERLIN

*(From Our Regular Correspondent)*

March 21, 1932.

### Professor Forssell and the Campaign Against Cancer

Prof. Gösta Forssell of Stockholm has, of late years, carried on, in a most praiseworthy manner, a crusade against malignant tumors. He and three of his assistants, Berven, Heymann and Reuterwall, addressed recently the Berlin Medical Society. A large body of foreign physicians attended the meeting.

Forssell spoke on the organization of the cancer crusade in Sweden; Berven on the radiologic treatment of cancer of the mouth; Heymann on the radiologic treatment of tumors of the female genitalia, and Reuterwall on the anatomopathologic experiences at the Stockholm radiologic institute, which was established by Forssell in 1910, and is known throughout the world as the Radium Hemmet (Radium Home). The speakers were listened to with great attention by the large audience. The Swedish ambassador was present. Geheimrat Goldscheider warmly welcomed the foreign guests and emphasized the friendly relations that have long existed between the Swedish and the German peoples.

In the cancer campaign in Sweden the chief emphasis is laid on radiation therapy, which is in keeping with the training of Forssell. Its main feature is the centralization and full utilization of the available supplies of radium. Here is the main difference between the Swedish organization and the German, but, at the same time, also the deeper reason why Germany cannot adopt in its entirety the excellent Swedish organization. The methods of irradiation that have been developed in Sweden are based on a considerable supply of radium in the absolute sense and large in comparison with the population of the country. Forssell's Institute in Stockholm has alone more than 5 Gm.; the institute of the University of Lund more than 2 Gm., and the new institute in Gotenburg about 2 Gm. That represents a cost of several million marks. Germany has not the funds with which to purchase any such amounts of radium and consequently has been forced to develop especially the technic of the hard roentgen rays in combating tumors. The Berlin institute of the university, in the Charité Hospital, under the direction of Ferdinand Blumenthal, has about 1 Gm. of radium, and the Werner-Siemens-Institut, in the Moabit Hospital, under the direction of Frik, has 0.2 Gm. With regard to the best utilization of the German supply of radium, doubtless much could be learned from Sweden. We have divided up our forces too much. In Sweden, the whole radium supply of the country is collected in three places, where it works day and night in the campaign against cancer. Cancer patients have to go where the radium is—not the reverse. The Radium Hemmet was originally a research institute. Now it is a radiologic clinic which has beds for more than 1,500 patients annually, and, in addition, treats 8,000 outpatients. There is in Sweden, said Forssell, not a single village in which one or more cancer patients are not indebted to the Radium Hemmet or to one of its sister institutions. The central government pays the traveling expenses of needy patients, which necessitates the expenditure of about $25,000 annually. The most effective method of applying radium, in the opinion of these Swedish radiologists, is irradiation *à distance,* with filtered hard rays from the so-called radium cannon; but this method requires relatively large quantities of radium and can thus be successful only by means of centralization and economic utilization of all radium supplies. This point was emphasized repeatedly by the speakers —likewise the need of special cancer clinics and the special radiologic training of the physician, for which Germany has, to be sure, now made provision. The Swedes are not content with their supply of radium, and the large fund collected by popular subscription on the seventieth birthday of King Gustaf will enable them to increase it. At present there are in Stockholm 3 Gm. of radium available for treatment *à distance.* In addition, there are of course also the necessary roentgenologic apparatus and surgical assistance. The Swedish radiologist did not disparage the surgical method of treatment; on the contrary, he emphasized that in Sweden there were many excellently trained surgeons available for the treatment of cancer.

Berven discussed the technic and the excellent results in cancers of the mouth. The electrical production of heat within the cancer tissues (endothermy) is frequently resorted to as an aid to surgery. In gynecology, the results of the treatment discussed by Heymann are not so satisfactory. He reported, however, 20 per cent of permanent recovery (extending over more than five years) in statistics that were subjected to severe adjustment and that include numerous cases that were hopeless when treatment was first begun.

It was a thoroughly complete and reliable accomplishment that the Swedish scientists described at that evening session.

### The Hormone of the Pars Intermedia of the Hypophysis

Prof. Bernhard Zondek, whose researches on the sexual hormone, in collaboration with Aschheim, have achieved great importance, spoke recently before the Kaiser-Wilhelm-Gesellschaft on the hormone of the pars intermedia of the hypophysis. He succeeded in isolating an almost pure specimen of the hormone and then performed experiments to determine the significance of the hormone. He obtained the best results in cold-blooded animals, particularly in Leuciscus phoxinus, a cyprinoid fish about the size of a sardine, found in German waters. With the hormone of the pars intermedia he was able to produce a red stain on the body of the fish. It is therefore a hormone that influences the metabolism of colors. A number of color changes that occur in human beings are well known. In certain diseases, dark shades or losses of color are observed; but, above all, it is known that, during pregnancy, stains appear on the body surface of the woman. Heretofore it has not been fully established what caused these changes. The discovery of the hormone of the pars intermedia of the hypophysis opens now possibly the way to get back of the secret of the metabolism of colors.

### Lowering of the Fee Schedules

The economic distress in Germany has exerted a deep influence on the life of physicians. That private medical practice has suffered a terrible decline is not surprising to any one who is somewhat familiar with conditions, although it had previously been depressed by the extension of social insurance in Germany, during the years following the war. Under the influence of the wave of economy, Germany is seeking to make all possible retrenchments in order to protect itself against financial collapse. With the federal ministry of the interior and the federal ministry of labor, the federal commissioner for price control has entered into negotiations with the League of Physicians of Germany, the Deutscher Aerztevereinsbund and the Federal League of Dentists of Germany, concerning the question of lowering the fees for private medical and dental services. The negotiations resulted in the following agreement: The fees of the fee schedules of Prussia and the other states *(länder)* are to be made the basis for the determination of the fees of physicians and dentists. In evaluating their services, the physicians and dentists will consider the decreased purchasing power of the population, resulting from the changed economic conditions. The physicians and dentists reserve, however, the privilege, in particular cases, after previous expressed understanding with the patient, if his financial condition permits, of departing from these fee schedules. Local fee schedules established by medical and dental societies may be retained in force only after they have been revised and the fees have been reduced by at least 10 per cent, as against those of 1931. Furthermore, it must be recognized that the minimum fees of the local schedules may be shaded. The so-called chambers of physicians and chambers of dentists (in the absence of such chambers, the medical or dental societies) are establishing, if they have not previously existed, arbitration centers, where protests of patients against the fees charged them may be heard. In considering the nature and tone of these regulations, which certainly appear necessary, under the circumstances, one cannot help but regret in retrospect that the medical profession, which in the main offers and represents ethical values, has been drawn into the daily struggle of economic life, to such an extent.

## TURKEY

*(From Our Regular Correspondent)*

Ankara, March 30, 1932.

### Foreign Physicians in Turkey

According to the medical practice act of 1928, no one may practice in any form unless he is a Turkish subject and has a diploma from the Turkish medical school or from a foreign medical school recognized by the government.

According to article 77 of the present law, only those physicians, surgeon-dentists, dentists and midwives of foreign nationality who can produce official evidence to the effect that they have practiced medicine in Turkey before 1914 are according to the Lausanne treaty of 1923 permitted to continue to practice. Therefore a foreign physician desiring to practice medicine in Turkey qualifies by becoming a Turkish subject. Following application to this effect, the applicant comes before a jury for investigation. If it has been ascertained that the diploma is a true one and is the property of the applicant, and if the jury is convinced that he is a physician, a license is issued without further examination.

A foreign physician holding a teaching position at a government institution is not permitted to engage in private practice but may be called on for consultation. The intention to call a foreign physician for a teaching position led to the passing of a special law in December, 1930, reading as follows: On condition that he does not engage in private practice but practices medicine only on the inmates of the hospital clinics of the said institution, a foreign specialist physician may be appointed for a period of four years to direct the Gülhane Hospital, the postgraduate school for army physicians, where at the same time he is to lecture on military medicine.

### Influenza in Asia Minor

With the beginning of the new year, influenza appeared. Reports from all parts of the country, especially the big cities, showed that on account of the epidemic all schools were closed for two weeks. At first, complications were negligible, but they soon became serious and increased the fatality rate. It was at first thought best to close all motion picture houses, but they remained open and were mainly responsible for the spread of the disease; also, it was Ramazan, the month of the fast preceding the Bayram, when for thirty days believers abstain from food or drink from sunrise to sundown and go to the mosque for prayer. It was also at that time that the Koran was first read in Turkish instead of Arabic, which is quite an event. The people flocked into the great mosques by tens of thousands every night. Furthermore, unusually cold weather prevailed at this time.

### The Incidence of Rickets in Infants

As the result of an investigation into the incidence of rickets in infants, Prof. Dr. Ihsan Hilmi of the Chichli children's hospital in Istanbul points out that his investigation in Ankara, Kayseri and Istanbul revealed a relatively high incidence of rickets in city infants. Faulty nutrition is mainly responsible for this condition. Infants generally develop well during the first six months, but after that time, owing to the fact that the infant is still kept on milk only and the diet is devoid of vitamins and minerals, rickets soon develops. As a rule, during the first and second year the child receives milk and in addition a carbohydrate pudding. Among the poor, the infant is for economic reasons often kept on breast milk long beyond the required time. The age limit of the children studied in this investigation was 2 years; they were mostly brought to the hospital dispensary for advice concerning diet or because they were restless, sleepless or unmanageable or showed other signs of irregular feeding. In all, 3,797 children were studied, 2,060 boys and 1,737 girls. The accompanying table shows the incidence of rickets according to age and sex.

*Incidence of Rickets*

| Age | | Boys | | | Girls | | |
|---|---|---|---|---|---|---|---|
| | | Healthy | Rickets | Total | Healthy | Rickets | Total |
| 0- 6 months | 0- 3 months | 232 | 27 | 259 | 197 | 7 | 204 |
| | 3- 6 months | 177 | 71 | 248 | 171 | 37 | 208 |
| 6-12 months | 6- 9 months | 158 | 107 | 265 | 120 | 67 | 187 |
| | 9-12 months | 117 | 225 | 342 | 142 | 155 | 297 |
| 12-18 months | | 296 | 303 | 599 | 244 | 294 | 538 |
| 18-24 months | | 213 | 134 | 347 | 163 | 140 | 303 |
| Total (0-2 years) | | 1,193 | 867 | 2,060 | 1,037 | 700 | 1,737 |

Expressed in percentages, of infants up to 3 months of age, 10.2 per cent boys and 3.5 per cent girls had rickets; from 3 to 6 months, 28.6 per cent boys and 17.8 per cent girls; from 6 to 9 months, 40.3 per cent boys and 35.8 per cent girls; from 9 to 12 months, 65.8 per cent boys and 52.1 per cent girls; from 12 to 18 months, 51.0 per cent boys and 54.6 per cent girls; from 18 to 24 months, 38.0 per cent boys and 46.2 per cent girls; of all infants up to 2 years, 39 per cent of the boys had rickets and 35 per cent of the girls. The fact that rickets is more often seen in boys is due in part to the fact that the uneducated mothers still cling to the old custom of keeping boys on breast milk longer than girls, often until they are 2 years old. This study has also revealed that relatively few mothers (17 per cent) know what rickets is and what bearing it has on the development of the child. Out of 1,507 children having rickets, 266 were brought to the dispensary because the mother thought that the child was probably having rickets, 389 were brought to the dispensary because they were weak, anemic or suffered from loss of appetite, and 912 were brought for other reasons. Consequently the disease was already in a more or less advanced state. Because rickets had already become chronic and the infants were suffering from another disease in need of urgent treatment, the treatment for rickets could not always be started immediately. In 428 cases, or 27.3 per cent, urgent treatment was needed for disease other than rickets; in 1,076 cases, or 68.6 per cent, treatment for rickets was immediately started, and in 63 causes, or 4 per cent, treatment for rickets was given along with treatment for other diseases. Though the mothers were asked to bring the children at regular intervals and the need of their cooperation was explained to them, 995, or 63.5 per cent attended but once; 307, or 19 per cent, twice; 117, or 7 per cent, three times; 57, or 3 per cent, four times; 40, or 2.5 per cent, five times; 16, or 1 per cent, six times, and only a few seven, eight or nine times.

## RIO DE JANEIRO

*(From Our Regular Correspondent)*

April 15, 1932.

### Tuberculin Tests in Children Vaccinated with B C G

In a recently published article, Dr. A. de Carvalho of Rio de Janeiro reports on 723 intradermal reactions with large doses of tuberculin (up to 1 mg.) in 661 infants, from birth up to the age of 36 months, who had previously received the B C G vaccine by oral administration, in order to determine the presence of allergy to tuberculin in those infants. The general results confirmed the previous experience of the author. The reactions gave positive results in 582 tests (80.5 per cent); the results were negative in 119 tests (16.4 per cent), and there were doubtful results in 22 tests (3.1 per cent). The positive reactions seemed to be caused by the action of the B C G bacillus, because they occurred in vaccinated infants who did not live in a tuberculous environment. In the group of infants who lived among tuberculous persons, the percentage of positive results may be compared to that given by the first group (group without contact with tuberculous persons). However, there was a larger number of positive reactions among infants in the first group than among those in the second group. Allergy to tuberculin caused by the first vaccination with the B C G vaccine has an average duration of eighteen months.

### Identification of Leptospira from Man and from Rats

Dr. L. Salles Gomes, in a lecture before the Sociedade de Medicina e Cirurgia of São Paulo reported two cases of Weil's disease, previously observed by Drs. J. T. Piza and A. Ayrosa in Brazil. In these cases, the diagnosis was confirmed by histopathologic studies and by experimental inoculation. The author also reported a case of Weil's disease in which, after confirmation of the diagnosis, he succeeded in isolating the organism Leptospira icterohaemorrhagiae (Inada and Ido's type). He used the semisolid culture medium advised by Noguchi. The material from which cultures were to be made was collected by puncture from the kidney of guinea-pigs, previously inoculated with blood from the patient. All the culture tubes that were left at room temperature did not present any growth, while the culture tubes left at a temperature of 37 C. (98.6 F.) presented, on the eighth day, pure cultures of the spirochete. The author stated that in 1929 he also succeeded in isolating from wild rats of Sorocaba a type of Leptospira that is pathogenic for guinea-pigs. The genus was identified from culture tubes left at room temperature. He called the attention to the fact that Leptospira from rats could be identified from culture tubes left at room temperature, while, in order to identify the same genus from human blood, it was necessary to leave the culture tubes at a higher temperature: 37 C. (98.6 F.). He showed fresh smears of the organism with the darkfield, as well as histologic slides from the kidney and liver of experimentally infected guinea-pigs, which organs contained a large number of leptospiras stained by Levaditi's method.

## Marriages

George Courtenay Glass, Jr., Hartford, Conn., to Miss Gladys Boardman of New Haven, April 16.

William R. Johnson to Miss Naomi L. Allen, both of Baltimore, at Alexandria, Va., March 2.

James Quinn Dorgan, Columbus, Ohio, to Miss Viola Margaret Hall of Hines, Ill., April 14.

Richard T. McMurty to Miss Pauline Jett, both of Covington, Ky., April 15.

Eugene B. Elder, Knoxville, Tenn., to Miss Frances Williams, recently.

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## Deaths

**Arthur Carl Heublein** ⊕ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1902; member of the American Roentgen Ray Society, New England Roentgen Ray Society, Radiological Society of North America, American College of Radiology and the American Radium Society; roentgenologist to the Hartford Hospital; aged 52; died, April 7, of bronchopneumonia and myocarditis.

**William Stephenson** ⊕ Colonel, U. S. Army, retired, New York; College of Physicians and Surgeons in the City of New York, 1880; entered the army as an assistant surgeon in 1883; veteran of the Spanish-American War; was promoted through the various grades to that of colonel in 1912 and was retired in 1919, by the President, being 62 years of age; aged 76; died, April 11, of cerebral hemorrhage.

**Goldye L. Hoffman,** Chicago; University of Illinois College of Medicine, Chicago, 1915; member of the Illinois State Medical Society; associate in gynecology at her alma mater; president of the Medical Women's Club of Chicago; on the staffs of the Iroquois Memorial and Emergency hospitals and the Research and Educational Hospital; aged 38; died, April 17, of pneumonia.

**Julius Kangisser,** St. Joseph, Mo.; St. Louis University School of Medicine, 1912; member of the Missouri State Medical Association; served during the World War; aged 46; on the staffs of St. Joseph's Hospital and the Missouri Methodist Hospital, where he died, March 25, of sepsis following perforation of the intestine.

**Harvey Charles Maurer,** Beloit, Wis.; State University of Iowa College of Medicine, Iowa City, 1905; member of the State Medical Association of Wisconsin; served during the World War; on the staff of the Beloit Municipal Hospital; aged 49; was found dead in his garage, April 7, of carbon monoxide poisoning.

**Robert Menzies Mitchell,** Weyburn, Sask., Canada; Trinity Medical College, Toronto, Ont., 1892; past president of the Saskatchewan Medical Association; member of the American Psychiatric Association; formerly superintendent of he Weyburn Mental Hospital; aged 66; died in February.

**Louise H. Rainey Grieve,** Westerleigh, N. Y.; Woman's ledical College of the New York Infirmary for Women and hildren, 1893; for seven years a medical missionary in India; ed 68; died, March 4, in the Staten Island (N. Y.) Hos- al, of chronic fibrous tuberculosis and myocarditis.

**Allen Lawrence Lear,** Sewanee, Tenn.; University of the th Medical Department, Sewanee, 1908; member of the Ten- ee State Medical Association; for many years on the staff he Emerald-Hodgson Memorial Hospital; aged 45; died suddenly, April 2, of heart disease.

**Bessica Faith Curtis Medlar Raiche,** Santa Ana, Calif.; Tufts College Medical School, Boston, 1903; member of the California Medical Association; past president of the Orange County Medical Society; aged 57; died, April 10, of an accidental overdose of a sedative.

**Irvin Ebaugh,** Baltimore; University of Maryland School of Medicine, Baltimore, 1889; formerly professor of materia medica and therapeutics at his alma mater; aged 70; died, April 15, of hypertension, cardiovascular disease and embolus with infarction of the lung.

**Wilda Edwin Butler,** Hamden, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1897; member of the Connecticut State Medical Society; for many years on the staff of the Grace Hospital, New Haven; aged 61; died, April 12, of thrombosis.

**Charles Rees Palmer,** West Chester, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 62; on the staff of the Homeopathic Hospital, where he died, April 6, of heart disease.

**Ozias Boynton Gould,** Utica, N. Y.; University of Vermont College of Medicine, Burlington, 1877; member of the Vermont State Medical Society; aged 78; died, February 21, of carcinoma of the intestine and intestinal obstruction.

**William Joseph Gorey,** Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1919; member of the Ohio State Medical Association; aged 37; died, April 14, in the Grant Hospital, of abdominal carcinomatosis.

**Pauline Myers Townsend Hanson,** Marshalltown, Iowa; Woman's Medical College and Hospital of Philadelphia, 1895; aged 66; died, April 5, in the Mary Thompson Hospital, Chicago, following an operation for carcinoma.

**Thomas Martin Hays,** Santa Anna, Texas; American Medical College, St. Louis, 1887; member of the State Medical Association of Texas; on the staff of the Sealy Hospital; aged 66; died, January 18, of heart disease.

**Lincoln E. Penny,** St. Paul; Hahnemann Medical College and Hospital, Chicago, 1885; for many years on the staff of the Ancker Hospital; aged 72; died, March 28, in St. Luke's Hospital, of hemorrhage of the stomach.

**Hiram Ansley Fulton,** Eau Claire, Wis.; Milwaukee Medical College, 1901; served during the World War; aged 54; died, April 5, in the Sacred Heart Hospital, of chronic myocarditis and cirrhosis of the liver.

**George David Parker,** Houston, Texas; Kentucky School of Medicine, Louisville, 1888; member of the State Medical Association of Texas; served during the World War; aged 69; died, March 26, of myocarditis.

**Elon B. Gilbert** ⊕ Geneseo, Ill.; Jefferson Medical College of Philadelphia, 1885; formerly president of the board of health of Geneseo; on the staff of the J. C. Hammond City Hospital; aged 72; died in April.

**Ettore Varvaro,** Clifton, N. J.; Royal University of Naples Faculty of Medicine and Surgery, Naples, Italy, 1896; aged 61; died, March 23, in St. Joseph's Hospital, Paterson, of cerebral hemorrhage.

**Virgil Wilson Leggett,** Hobgood, N. C.; University of Louisville (Ky.) School of Medicine, 1914; aged 42; died, March 26, at the Norfolk Naval Hospital, Portsmouth, Va., of acute endocarditis.

**Ivus Irvin Richmond** ⊕ East Bridgewater, Mass.; Harvard University Medical School, Boston, 1902; member of the school board; aged 62; died, April 8, in a hospital at Brockton, of pneumonia.

**William McSpadden Copenhaver** ⊕ Helena, Mont.; University College of Medicine, Richmond, Va., 1900; on the staffs of St. Peter's Hospital and St. John's Hospital; aged 56; was drowned recently.

**Charles B. Murphy,** Mannsville, Okla.; Ensworth Medical College, St. Joseph, Mo., 1897; aged 63; died, March 22, of injuries received when the automobile in which he was driving overturned.

**Leonard Woods Atkinson,** Patton, Calif.; Boston University School of Medicine, 1884; member of the California Medical Association; aged 72; died, February 27, in the Patton State Hospital.

**George D. Thomas,** Meadville, Pa.; Jefferson Medical College of Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; aged 77; died, February 18, of arteriosclerosis.

**James Harvey Bissell,** Troy, N. Y.; Albany Medical College, 1887; member of the Medical Society of the State of New York; aged 75; died, April 8, in the Leonard Hospital, of pneumonia.

**John Lawson Felder,** San Antonio, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1904; member of the State Medical Association of Texas; aged 49; died, January 16.

**Newell Eddy Lavely** ⊕ Detroit; University of Michigan Homeopathic Medical School, Ann Arbor, 1920; aged 39; died in April of lobar pneumonia, pericarditis and pulmonary embolism.

**Alexander Armstrong** ⊕ White Haven, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 58; died, April 6, in the Pennsylvania Hospital, Philadelphia, of uremia.

**Adolphus B. Frame** ⊕ Piqua, Ohio; Medical College of Ohio, Cincinnati, 1868; Civil War veteran; on the staff of the Ball Memorial Hospital; aged 92; died, April 11, of angina pectoris.

**William Erastus Smith,** Whittier, Calif.; American Medical College, St. Louis, 1892; served during the World War; aged 61; died, February 25, in a hospital at Los Angeles, of uremia.

**Edmund Peter Arens,** Detroit; St. Louis University School of Medicine, 1908; aged 49; died, April 2, in the Deaconess Hospital, of carcinoma of the prostate and uremia.

**Walter B. Stewart,** Joliet, Ill.; College of Physicians and Surgeons of Chicago, 1888; member of the Illinois State Medical Society; aged 66; died, April 15, of cerebral hemorrhage.

**Raymond Johnson,** Worthington, Ind.; Indiana University School of Medicine, Indianapolis, 1916; aged 42; died, March 30, in the Freeman Greene County Hospital, Linton, of uremia.

**Elisha Sheperd Boland,** Boston; Medical College of Ohio, Cincinnati, 1877; an affiliate Fellow of the American Medical Association; aged 81; died, April 7, of chronic endocarditis.

**James Edwin Mead,** Detroit; Detroit College of Medicine, 1899; member of the Michigan State Medical Society; aged 58; died, April 17, in Traverse City, Mich., of pneumonia.

**Sanford Lammie Givan,** Spring Lick, Ky.; University of Louisville School of Medicine, 1893; formerly member of the state legislature; aged 74; died, April 2, of heart disease.

**George Pendleton Dale** ⊕ Dayton, Ohio; Miami Medical College, Cincinnati, 1900; aged 58; for many years on the staff of the Miami Valley Hospital, where he died, March 20.

**Arden Thomas McKinney,** Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1909; member of the Arkansas Medical Society; aged 51; died, March 17.

**Denwood Nowal Livingston Newbury,** Spokane, Wash.; Columbia University College of Physicians and Surgeons, New York, 1896; aged 65; died, January 31, of heart disease.

**Andrew C. Biehn** ⊕ Quakertown, Pa.; Jefferson Medical College of Philadelphia, 1893; on the staff of the Quakertown Hospital; aged 63; died, April 11, of secondary anemia.

**Lewis C. Knapp** ⊕ Monroe, Mich.; University of Michigan Medical School, Ann Arbor, 1891; aged 64; died, in April, at the University Hospital, Ann Arbor, of pneumonia.

**Michael F. McMeel,** Clinton, Iowa; College of Physicians and Surgeons, Keokuk, 1893; formerly county coroner; aged 63; died, April 10, of acute dilatation of the heart.

**Calvin R. Johnson,** Eminence, Ky.; Miami Medical College, Cincinnati, 1877; for many years member of the board of education; aged 77; died, April 3, of pneumonia.

**Joseph P. Craney,** Denver; Medico-Chirurgical College of Philadelphia, 1902; member of the Colorado State Medical Society; aged 56; died, April 8, of heart disease.

**Abraham Lincoln Cothran** ⊕ San Jose, Calif.; University of California Medical Department, San Francisco, 1893; aged 66; died, February 23, in the San Jose Hospital.

**William Harter McGrew,** La Fontaine, Ind.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1872; aged 84; died, March 30, of bronchopneumonia.

**William L. Wallace,** Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1896; member of the Tennessee State Medical Association; aged 63; died, March 13.

**Merrill Maitland Myers,** Des Moines, Iowa; Rush Medical College, Chicago, 1918; member of the Iowa State Medical Society; aged 40; was drowned, March 26.

**Joseph Rothkowitz,** New York; Cornell University Medical College, New York, 1906; aged 47; died, March 25, of coronary thrombosis and angina pectoris.

**Arthur A. Woods,** Los Angeles; Miami Medical College, Cincinnati, 1876; formerly health officer of Erie, Pa.; aged 76; died, April 12, of bronchopneumonia.

**William Porter Fears,** Lufkin, Texas; University of Louisiana Medical Department, New Orleans, 1870; Civil War veteran; aged 88; died, March 18.

**James Gratton Kennedy,** Elk City, Kan.; Jenner Medical College, Chicago, 1898; served during the World War; aged 67; died, March 29, of pneumonia.

**John C. Owens,** Plainfield, Ill.; Syracuse University College of Medicine, 1881; aged 75; died, April 2, in Detroit, of diabetes mellitus and myocarditis.

**Annie May Cheney Spofford,** Batavia, N. Y.; University of Buffalo School of Medicine, 1898; aged 58; died, April 11, in St. Jerome's Hospital, of uremia.

**James Weston Miller,** Santa Paula, Calif.; Rush Medical College, Chicago, 1884; aged 73; died, in March, of chronic interstitial nephritis and uremia.

**Earl Chalmers Ford,** Knoxville, Tenn.; University of Louisville (Ky.) School of Medicine, 1919; aged 42; died, April 12, of heart disease.

**Lewis E. McBride,** Franklin, Pa.; Chicago Homeopathic Medical College, 1895; on the staff of the Franklin Hospital; aged 62; died, March 15.

**Edgar Melville Hatton,** Orlando, Fla.; Starling Medical College, Columbus, 1892; aged 80; died, March 20, in a local hospital, of nephritis.

**A. A. Maynard,** Kerr, N. C.; College of Physicians and Surgeons, Baltimore, 1885; aged 72; died, April 4, in a hospital at Fayetteville.

**William J. Grimes,** East Liverpool, Ohio; Starling Medical College, Columbus, 1886; aged 74; died, March 31, of cerebral hemorrhage.

**Dickerson H. Welling,** Worthington, Ohio; Eclectic Medical Institute, Cincinnati, 1878; Civil War veteran; aged 84; died, March 18.

**James Henry Kimball,** Wakefield, Mass.; Harvard University Medical School, Boston, 1867; aged 87; died, March 30, of arteriosclerosis.

**John Cantrell Bynum,** Mountain View, Calif.; College of Physicians and Surgeons of St. Joseph, Mo., 1880; aged 84; died, February 23.

**Samuel Ross Miller,** Bismarck, Ill.; Rush Medical College, Chicago, 1878; aged 82; died, March 20, in La Fera, Texas, of senility.

**David E. Hills,** Fife Lake, Mich.; Detroit College of Medicine, 1900; postmaster; aged 59; died, March 27, of cerebral hemorrhage.

**Sarah Ann Emery Allison,** Money Creek, Minn.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 89; died, March 15.

**Fred Arthur Cozad,** Powersville, Mo.; St. Louis College of Physicians and Surgeons, 1896; aged 57; died, March 20, of heart disease.

**Frank E. P'Pool,** Socorro, N. M.; University of Nashville (Tenn.) Medical Department, 1878; aged 76; died, March 7, of pneumonia.

**John Marshall Williamson,** San Francisco; University of California Medical Department, 1885; aged 70; died, April 2, of leukemia.

**Everett Douglas Rodgers,** Chicago; Miami Medical College, Cincinnati, 1884; aged 71; died, April 16, of chronic myocarditis.

**Richard Haehl,** Stuttgart, Germany; Hahnemann Medical College and Hospital of Philadelphia, 1898; aged 59; died, February 7.

**J. Romeo Gauthier,** McLennan, Alta., Canada; School of Medicine and Surgery of Montreal, Que., 1906; aged 49; died, in March.

**Adah Leona Collison** ⊕ Seattle; Woman's Medical College of Pennsylvania, Philadelphia, 1915; aged 59; died, March 4.

**Charles Atkinson Winans,** San Francisco; Bellevue Hospital Medical College, New York, 1888; aged 67; died, February 13.

**Frank D. Walsh,** Guelph, Ont., Canada; Bellevue Hospital Medical College, New York, 1890; aged 63; died, April 9.

**Peter Francis Gunster,** Amity, Ore.; Bellevue Hospital Medical College, New York, 1871; aged 84; died, January 22.

**Mary Weeks Burnett,** Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1879; aged 89; died, February 12.

**William H. Krieger,** Dayton, Ky.; American Eclectic Medical College, Cincinnati, 1887; aged 85; died in March.

**John Lynn Pratt,** Milford, Del.; Jefferson Medical College of Philadelphia, 1894; aged 68; died, March 14.

**George E. Dienst,** Aurora, Ill.; National Medical College, Chicago, 1898; aged 74; died, April 10, of senility.

**Hugh Thomas Walker,** Riceville, Iowa; Rush Medical College, Chicago, 1889; aged 82; died, March 10.

**Alexander Gilfillen,** Russellville, Ohio; Medical College of Ohio, Cincinnati, 1876; aged 81; died, March 15.

**Elisha Bishop,** Turners Station, Ky.; Miami Medical College, Cincinnati, 1879; aged 83; died, March 17.

**Andrew Crawford,** Scottsbluff, Neb.; Omaha Medical College, 1888; aged 80; died, February 14.

# Correspondence

## NITROUS OXIDE-OXYGEN-ETHER EXPLOSION

*To the Editor:*—The article by Dr. Carl R. Steinke on this subject (The Journal, April 9, p. 1267) interests me because of the deductions drawn from the explosion occurring, Nov. 11, 1926.

"This particular explosion might have been due to sparks resulting from discharges of static electricity. However, it is believed there was a small leak in the breathing tube." Competent anesthetists know that ether-oxygen mixtures, especially when enclosed, are explosive. There is always exhalation of ether and oxygen (with ethylene or nitrous oxide, if added) through an exhaling valve in all anesthetics, and intelligent prevention of such accidents will not be found in the periodic inspection of all electrical equipment or gas machines but in the use of common sense. Such anesthesia should never be used in the presence of electrical equipment. There is no field for ether enclosed anesthesia in an x-ray room at any time. The best is nitrous oxide only.

W. V. Chalmers-Francis, M.D., Los Angeles.
Chief of Anesthetists' Staff, Hospital
of the Good Samaritan.

## STERILIZATION OF FABRICS IN HOSPITALS

*To the Editor:*—I have read with considerable interest an article entitled "The Importance of More Adequate Sterilization Processes in Hospitals" by Dr. Walter E. Dandy and published in the *Bulletin of the American College of Surgeons* (**16**:11 [March] 1932).

Permit me to call attention to the following statement, printed in italics, in his contribution: "Sterilization for one hour under a constant pressure of not less than twenty pounds is therefore the minimum that will assure destruction of all organisms." Later he states that every sterilizer should be equipped with two instruments, one for recording the time and the temperature of the chamber of the sterilizer during the entire period of sterilization, and the other one for recording the pressure curve during the entire period of sterilization. The latter statement, concerning temperature, is the one which might better have been put in italics.

It is a common fallacy, which has been perpetuated by the manufacturers of sterilizers, that the pressure within the sterilizer is the criterion by which the efficacy of the sterilizing process should be measured. It is obviously possible to have a pressure of a thousand pounds and have no sterilization result because the temperature might be at zero. The pressure in the sterilizer is simply used to cause a higher temperature by the compression of live steam.

The great danger in steam sterilization is that the steam admitted to the chamber may not be 100 per cent steam but may be mixed with air. Under these conditions, one may obtain the required pressure without obtaining the required temperature. In order to have a sterilizer filled with pure steam, it is necessary either to exhaust the chamber as many as five or six times during the sterilization or to have the sterilizer equipped with an automatic device for eliminating air and water of condensation. While it is true that a satisfactory temperature will not be reached unless from 17 to 20 pounds of pressure is applied to the sterilizer, the pressure of itself is of no significance. The latest type of bacteriologic sterilizers are equipped with thermometers, and it is unfortunate that pressure gages were ever provided for hospital sterilizers except to indicate the safety point for the steam pressure. It is obvious, therefore, that a record of the pressure curve is without significance, for the record of the temperature curve is all that is important.

As a matter of fact, the arbitrary period of one hour of sterilization, in practice in the Mayo Clinic for years, is really unnecessary if the sterilizers have been properly packed, and it is equally true that it is possible to pack a sterilizer in such a way that even an hour will be insufficient time for sterilization. The important point in hospital sterilization is that an adequately trained, conscientious supervisor should see to it that each item going into the operating room has been carefully and conscientiously sterilized and that at *irregular* intervals bacteriologic supervision is given to operating room equipment. Even these precautions will not take care of the many personal factors introduced into an operation by the surgeon and his assistants, and the practice of the most ideal methods of sterilization will not relieve the surgeon of the responsibility which he personally has in protecting his patient against operating room infections.

T. B. Magath, M.D., Rochester, Minn.

# Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## PROGNOSIS AND TREATMENT IN NEPHRITIS

*To the Editor.*—During my third year of medical school I had scarlet fever and was in a hospital for contagious diseases under a regimen of rest and diet for six weeks. I now have a considerable amount of albumin in my urine, plus hyaline casts. My blood pressure is 140 systolic and 90 diastolic. My heart is normal in size but the pulse rate is 85 while at rest. There is a moderate amount of nocturia, averaging once during the night. There has been no edema or any other signs or symptoms. I am 29, 6 feet 2 inches (188 cm.) in height, and weigh 225 pounds (102 Kg.). I seem to be in perfect health but have been recently turned down by the government because of my urinalysis and blood pressure. I should like to know what my prognosis is as regards length of life, first, with a normal everyday average diet; second, with a protein poor and salt poor diet; third, with a very strict nephritis diet. Please advise me what functional tests are necessary to a further study of my condition. Please omit name.

M.D., California.

Answer.—The type of nephritis here described seems to be acute glomerulonephritis. Not many of these cases become chronic, complete recovery in the greater number occurring in the course of several months. If scarlet fever occurred recently, the prognosis for recovery is good. A blood pressure of 140 systolic is hypertension in a young person. The most important factors in treatment demand a certain amount of rest daily, preferably after meals, and abstinence from more than the ordinary strain of everyday life. Exercise beyond short walks should not be indulged in at this time. There is no necessity for protein restriction unless the nonprotein nitrogen of the blood exceeds 50 mg. per hundred cubic centimeters of blood. Even under these circumstances there should be only a slight reduction in protein intake. In fact, when a large amount of albumin is passed, it is often advisable to increase the protein intake. However, for one of this weight a restriction in the total intake of food leading to a loss of weight is to be recommended. Recent work by various investigators has shown that a salt free diet has its place in nephritis with edema and myocardial insufficiency, but not in glomerulonephritis. A low salt intake is preferable. As bouillons, spices and condiments are generally quite salty, and act mainly as stimulants to the appetite, they should be avoided.

There are two relatively simple tests of functional activity of the kidney, the one an estimation of the nonprotein nitrogen of the blood, already mentioned, and the other a urinary concentration test. The latter may be carried out in several ways. The method recommended here has the advantage of combining a dry and a wet period. No food or fluid is taken after dinner at 6 p. m. Urine thereafter is collected in separate containers until 10 o'clock the following morning, at which time from 1,000 to 1,500 cc. of water is taken. The urine is again collected for several hours in separate containers. The small quantities with higher specific gravities, reaching to 1.028 or 1.030, are obtained in the night and morning. Following the intake of the water, amounts reaching to 300 or 400 cc. with a specific gravity as low as 1.005 are not uncommon. With impaired renal function there is a tendency toward fixation of specific gravity and amount of urine passed during the whole period. This test may be combined with the administration of phenolsulphonphthalein at the time of the intake of the water. A more complicated test is the one of measurement of urea concentration. A description of this can be found in Addis's recent book on nephritis or in any other recent textbook.

### ECZEMATOID ERUPTION OF FINGERS

*To the Editor:*—I have a patient, an unmarried woman, aged 27, who has seen many noted physicians for a peculiar eruption of the fingers. It begins on the palmar surface and extends almost to the fingernail. There is no itching but there is a scaling of the surface. It begins as blisters and ends in scales. The patient is a typist and had to quit once because of soreness. She had spots of alopecia of the head and last September began with amenorrhea, which lasted until the latter part of December. The treatment I gave her was anterior pituitary, 1 cc., two times a week and solution of pituitary, 1 cc., once a week. After the second dose she menstruated normally and has since. The condition of the fingers has practically cleared up. The spots of alopecia are covered with hair, but this week she has had a relapse and the eruption is worse than ever. The patient should have menstruated two days ago but has not done so. The physical condition is otherwise normal. Can you give me any suggestions? Treatments first began about Dec. 15, 1931.

M.D., California.

Answer.—The eruption on the fingers has nothing to do with the endocrine disturbance except secondarily. It is probably an eczematoid ringworm, a dermatitis venenata from something in the environment, or an eczema. In any of these cases the improvement consequent to the endocrine therapy may have had something to do with clearing up the skin. The recurrence may be due to the fact that the patient has again touched something to which she is sensitized, to some change in the relation between the ringworm and its environment, or to lowered resistance on her part. The roofs of some of the vesicles should be searched for a fungus in 10 per cent potassium hydroxide solution, the slide being kept in a humidor and examined repeatedly for seventy-two hours before the search is given up. If a fungus is found, treatment should be given with mild Whitfield ointment, 2 or 3 per cent salicylic acid, twice as much benzoic acid, and ointment of rose water to make 100 per cent, applied at night and as often as possible during the daytime. If no ringworm infection can be found in the fingers but it is present between the toes, the Whitfield ointment can be tried cautiously, being used at first for several hours before retiring, to guard against irritation while the patient is asleep. If no proof of fungous infection is found, crude coal tar and zinc oxide, 6 per cent of each in petrolatum, may be tried. This is applied at night, cotton gloves being worn over it. The ointment should be removed in the morning with oil or with ointment of rose water. Soap should be avoided as much as possible. As the eruption improves, zinc oxide ointment should be alternated with the tar ointment. If the latter gets on the clothing, the spot should be soaked in oil or kerosene before washing.

### POSSIBLE ANGINA PECTORIS FOLLOWING SHOCK OF EXPLOSION

*To the Editor:*—A man, aged 55, apparently well, was standing on the sidewalk when an explosion in the street some 25 feet distant occurred. He was knocked down by the force of the explosion and was not struck by any object. He was taken to the office of a physician, where a condition similar to, or identical with, angina pectoris developed. Five weeks later he died with this cardiac pain. Is angina pectoris ever of traumatic origin, and what is the probable cause of death when a patient dies under circumstances similar to those in this case, violence being produced by what may be termed indirection? Any assistance along this line would be appreciated.

Edwin B. Walston, M.D., Des Moines, Iowa.

Answer.—Anginal pain is considered by the majority of observers to be due to an ischemia of the heart muscle. This deficiency in blood supply could be due to a thrombosis or an embolus obstructing a coronary vessel, anatomic changes in the walls of the coronary vessels, or to vasoconstriction of the coronary vessels.

Information is lacking as to just what biochemical factors predispose to thrombosis. There is some reason to think that anatomic nervous impulses can change the ratio of the various salts and proteins of the blood. Any theory, however, explaining why the sudden shock should cause changes resulting in a coronary thrombosis would be more ingenious than scientific. The same applies to an embolus, which has also the law of probability against it.

A coronary vasoconstriction has been assumed to result reflexly from other pathologic conditions in the chest, as when anginal attacks have followed on a bullet wound of the mediastinum with a bullet embedded there, or mediastinal tumors. Here there was no actual trauma.

A fall in blood pressure might reduce the coronary flow sufficiently to cause pain, in cases predisposed by pathologic changes in the coronary vessels.

Reflex vasoconstriction from nervous or emotional causes has never been actually proved, but there is abundant clinical evidence suggesting that fright, excitement, anger, worry or any emotion can cause such a vasoconstriction. A vasoconstriction could supposedly result in sufficient ischemia to cause a ventricular fibrillation and death.

Any explanation cannot be more than theoretical and unsatisfactory in the light of present knowledge.

### SENSITIVITY TO PRIMROSE

*To the Editor:*—Many florists who handle or grow primrose develop a sensitiveness and marked swelling resembling urticaria. This becomes troublesome and some patients cannot enter the greenhouse without having this troublesome condition. I understand that the primrose (Primula obconica) is the only plant which causes this. Can you give me any data as to the treatment? Has a vaccine been prepared for this condition such as one for poison ivy?

Howard O. Smith, M.D., Marlin, Texas.

Answer.—Hypersensitiveness to primrose is common, especially among florists, and it has been conclusively demonstrated that the resultant dermatitis can come either from contact with primrose or by being close to it, without actual contact. The offending substance is in the air nearby. The primrose is not the only plant that can cause this type of dermatitis (contact dermatitis); it can also be caused by poison ivy (Toxicodendron radicans), sumach, poison oak, pollen oil (ragweeds, grasses), chrysanthemum and tulip. The best treatment for the condition is avoidance, and symptomatic lotions for the urticaria when it occurs. Wearing rubber gloves while handling primroses should help to some extent. There is apparently nothing in the literature regarding treatment by injections of primrose extract such as is used in poison ivy cases which ameliorates the effects but does not prevent them. Bloch (*Arch. f. Dermat. u. Syph.* **162**:349, 1930) has done more work on primrose sensitiveness than any one else and has shown that most human beings (and rats and guinea-pigs) can be made hypersensitive to primrose by repeated painting of an extract on the skin, and they seem to remain hypersensitive. The oily residue of all these plants is the offending factor.

### BLOOD PRESSURE DANGERS

*To the Editor:*—I recently read the statement, as an authoritative dictum, that a blood pressure above 160 at any age is dangerous. Is this generally accepted as a fact by the profession at present? My own observation has been that people with essential hypertension ranging from 160 to 200, especially when the diastolic pressure is in the nineties, frequently have years of comfortable and useful life ahead of them. Also, I have noted that 50 per cent of my cases of cerebral hemorrhage and angina occur in people with so-called normal blood pressure. Please enlighten me. Kindly omit name.

M.D., Illinois.

Answer.—Blood pressure levels above 160 systolic are abnormal but not strictly dangerous. Such patients should be studied at regular intervals, particularly from the standpoint of their cardiovascular renal system.

Repeated clinical observations extending over a period of twenty years corroborate the view that individuals with high systolic and relatively low diastolic pressures may go on symptom free for many years.

Cerebral accidents and angina pectoris occur in the absence of hypertension, and even when the blood pressure is below normal. This, however, is true in only about 25 per cent of the cases.

### NITROBENZENE

*To the Editor:*—What is the toxicity of nitrobenzene (oil of mirbane)? Would it be a hazard if used in open containers and agitated in a closed room? May an individual working with nitrobenzene be examined periodically in any way to determine any untoward effects? Please omit name.

M.D., Indiana.

Answer.—Nitrobenzene (nitrobenzol, oil of mirbane) acts on the human body much like aniline (aminobenzene). Entry into the body is more often through the skin, so that intoxications are likely to be regarded as accidents rather than as occupational diseases. Inhalation of the dust or fumes containing nitrobenzene may lead to poisoning; acute and chronic forms are recognized together with local burns of the skin.

In acute and severe cases, manifestations center about the formation of methemoglobin, cyanosis, collapse, and respiratory failure. The mildest degree of poisoning is characterized by gastro-intestinal upsets, headache, dizziness, malaise, and burning of the skin. Chronic involvements may disclose some or all of the following symptoms: anxiety states, disturbances in sensation and coordination, hyperreflexia, visual impairments, cyanosis, profound changes in the cellular elements of the blood, anemia, hematin in the urine, skin eruptions, respiratory embarrassment, and an odor of bitter almonds on the breath.

All workers in nitrobenzene should be given physical examinations at frequent intervals, but exclusive reliance should not be placed on specific tests such as for hematoporphyrin, hematin and methemoglobin, or on the odor of breath. Further information on this highly toxic agent may be found in the International Labour Office's Occupation and Health, and "Industrial Health," by Kober and Hayhurst.

### CROSS AGGLUTINATION TESTS BEFORE TRANSFUSION

*To the Editor:*—Could you kindly inform me whether in blood transfusion work cross agglutination is sufficient without typing? That is, if the cells of the blood of the prospective donor and the recipient do not cause agglutination with the serum of the other, is it perfectly safe to transfuse without preliminary typing? This would obviously make it unnecessary to keep known type serums on hand. Please omit name.

M.D., New York.

Answer.—In tests for blood transfusion, cross agglutination is sufficient without preliminary grouping of the bloods. For example, if the serum of the recipient (patient) does not agglutinate the red blood cells of the prospective donor, nor the serum of this donor agglutinate the red blood cells of the recipient, the two bloods are considered to be of the same group and compatible. It is considered comparatively safe to transfuse if the red blood cells of the prospective donor are not agglutinated by the serum of the recipient; hence the use of blood from universal donors by many operators. Preliminary typing, especially when the recipient's blood group is one of the less common, often makes it possible to locate a satisfactory donor more readily.

### THE SENSES OF MAN

*To the Editor:*—Will you kindly tell me whether more than five senses are considered? Also the order in which they come. Please omit name.

M.D., California.

Answer.—A greater number of sensations are now recognized than those enumerated in the stereotyped textbooks of a generation ago. Incidentally, it is not possible to evaluate their importance by stating that they should "come" in a specific "order" of significance and/or indispensability. For that reason, the various sensations will be mentioned as they might occur to one:

1. Sight: light and form; color.
2. Taste.
3. Touch: deformation of the skin, tickle and vibration sense, and the deep sensibility of muscle.
4. Temperature: heat and cold.
5. Smell.
6. Proprioceptive stimuli from the muscles, tendons, and joints informing the organism of location in space.
7. Changes in position in space through the functional activity of the semicircular canals, utricle and saccule.
8. Hearing.
9. Pain from skin, muscle and blood vessels.
10. Visceroceptive stimuli of which persons are usually unconscious but which probably affect vasomotor, respiratory and cardiac changes reflexly; e. g., the inhibition of respiration from distention of the lungs.

### BOTULISM AND RIPE OLIVES

*To the Editor:*—In 1919 Dr. Charles Armstrong (*Public Health Reports* **34:**2877 [Dec. 19] 1919) published an article on the subject of botulism from eating canned ripe olives. Can you tell me whether there has been a serious epidemic of botulism in the country since that time, and can you also give me any reason for the fact that ripe olives are generally considered to be much more dangerous in this regard than green olives? In addition, will you tell me what other foods than olives have been responsible for outbreaks of botulism?

G. Henry Knoll, M.D., Le Roy, N. Y.

Answer.—The last outbreak of botulism from commercially processed ripe olives occurred in August, 1924, in Los Angeles. The last outbreak of botulism from commercially canned foods of any character occurred in October, 1925, in Hanna, Wyo., from potted meats.

There have occurred, however, many outbreaks, some of serious character, involving a number of cases and a number of deaths from materials packed in the home by various unsafe processes.

Ripe olives are not more dangerous than other foods of like character; in fact, they are less dangerous. The spore of Bacillus botulinus is selective as to the medium in which it grows. Likewise it is sensitive to the chemical reaction of the food which it may have contaminated in the preparation of or in the process of canning. For instance, any vegetable that has a $p_H$ around neutral, which is classified on the $p_H$ scale as 7.2, should always be processed with heat high enough to kill the spore of B. botulinus, as this is the optimal reaction for its growth. Furthermore, the spores of B. botulinus do not ordinarily grow in material that is not packed under vacuum. Green olives not being so packed and with a high salt content, and therefore decidedly alkaline, have always been regarded as safe.

Of course, any canned food that has not been processed at sufficient temperature, and this holds true for home canned foods of all character, except those preserved with sugar or with salt, should be heated for a number of minutes before being served, since the poison produced by B. botulinus in its growth is easily killed at boiling temperatures at sea level. Paradoxically, the spore of the organism is difficult to destroy at boiling temperature.

### PERNICIOUS ANEMIA

*To the Editor:*—I should like to know whether the statistics as to the permanence of cure in pernicious anemia are available. If they are, I should like to know where I might find them.

J. L. Garey, M.D., Catonsville, Md.

Answer.—Since there is no such thing as cure in pernicious anemia so far as is known, there could hardly be any statistics available.

If the question means the relief of symptoms to a greater or lesser extent, the facts are also difficult to obtain at this time since efficient treatment of the disease has been available for only about six years. It seems likely that the vast majority of individuals can be maintained in good health by the adequate treatment of the disease. The most serious complication, usually the result of taking inadequate amounts of potent material, is the development of symptoms referable to the central nervous system. Of course, patients with pernicious anemia have died during adequate treatment from unrelated causes. The use of liver extract in pernicious anemia is somewhat analogous to the use of insulin in diabetes and is not to be regarded any more than is insulin as a specific cure for the condition.

The paper by Beebe and Lewis on the maintenance dose of potent material in pernicious anemia (*Am. J. M. Sc.* **181:**796 [June] 1931) will perhaps serve to answer the question as well as any single contribution to this subject could, in the absence of available statistics.

### SUSCEPTIBILITY TO FRACTURE

*To the Editor:*—Can you suggest treatment for a case showing abnormal susceptibility to fractures? The patient is a boy, aged 15 years, who has had seven fractures in the past six years, five of them fractures of the femur. The last occurred a few days ago when he stepped off of a low porch. The fractures always heal readily and always occur at different points.

C. S. Neer, M.D., Vinita, Okla.

Answer.—For fragitalis osseum and osteogenesis imperfecta, the following references are apropos:

Corshner, R. G.: *Am. J. Roentgenol.* **16:**405 (March) 1926.
Key, J. A.: *Arch. Surg.* **13:**523 (Oct.) 1926.
Scott, C. R.: *Am. J. Roentgenol.* **12:**237 (Sept.) 1924.

Concerning the treatment, the following should be beneficial:

1. Cod liver oil.
2. Calcium in any of the recognized forms.
3. Ultraviolet radiation.
4. Foods such as are given to prevent and correct nutritional disturbances exemplified by rickets.
5. Special exercises both on land and under water, and massage of the muscles generally in order to improve their tonicity.

### SUPERSTITIONS REGARDING THE HAIR

*To the Editor:*—Will you please give me some information regarding the cutting of children's hair. I am occasionally asked whether scanty hair in a girl will grow thicker and more healthy if it is regularly cut; also whether the cutting of a good growth of long hair will injure it so that subsequently it will not be so good as before. I know of no scientific answers to such questions, and should be glad to have your opinion. Kindly omit name.

M.D., Michigan.

Answer.—These two popular notions check each other admirably. One is as true as the other. Hair is composed of a horny substance, has no circulation, and grows only from the papilla at its base, a separate structure. Cutting the hair at any point has no effect whatever, good or bad, on its growth. Brushing is the best method of stimulating the circulation of the scalp and therefore the growth of hair.

### TREATMENT OF PROSTATITIS

*To the Editor:*—A man, aged 64, in good physical condition, with a history of prostatitis, noticed about eight months ago blood in his semen (following coitus). I started to treat him three months ago. There was no nycturia, the stream was good, the prostate was tender and not enlarged, and the seminal vesicles were somewhat enlarged and tender. In prostatic secretion on expression there were leukocytes and bacilli but no blood. He took about fifteen treatments consisting of diathermy plus intravenous injection of sodium iodide (20:200), also six injections intramuscularly of a milk protein preparation plus diathermy, each treatment followed by massage of the prostate. The pains in the back and over the bladder disappeared after a few treatments; also the visible blood from the semen. But the latter is still rosy colored, showing erythrocytes under the microscope. The urine is normal. The Wassermann reaction is negative. I am figuring on giving him mercurochrome-220 soluble intravenously. What do you suggest to clear up this condition? Please omit name.

M.D., Indiana.

Answer.—The improvement following the treatments reported points to a chronic inflammation apparently excluding a malignant condition. Autohemotherapy will often succeed in cleaning up the remaining symptoms. The routine is to aspirate about 10 cc. out of a superficial vein and immediately inject this quantity of blood into the gluteus muscle. These injections are repeated at short intervals until a definite result occurs. It is not quite evident what mercurochrome should accomplish in such instances. However, *it must be kept in mind* that intravenous injections of mercurochrome solutions always involve the danger of severe renal disturbances, such an occurrence probably outweighing any possible benefit that could be derived from such medication. Conditions as reported always call for an extensive period of combined treatments.

### EFFECT OF FALL IN CASE OF PLACENTA PRAEVIA

*To the Editor:*—Could you send me information on the effects that a fall might have on mother and baby in a case of central placenta praevia, the fall occurring three weeks before delivery, the mother going one week over her term? A woman with central placenta praevia died an hour after delivery through the placenta by version. It is claimed that a fall which she had three weeks prior to her death probably caused her death. I did not know about the fall until the morning of delivery.

M.D., Ohio.

Answer.—There is no available literature on the problem as stated. A parous woman who has a placenta praevia may bleed profusely following a fall. This is due to a loosening of the insecurely attached placenta. If, however, no bleeding resulted following the fall, and the patient went three weeks further until delivery, the maternal or fetal death can hardly be ascribed to the fall. Any trauma sustained by the fall would result in bleeding and immediate injury to mother and fetus through loss of blood.

### PATHOLOGY OF INJURY TO HAND

*To the Editor.*—A man, aged 48, was cranking an automobile when a backfire caused the right hand to be thrown against the fender, striking the middle of the posterior surface of the proximal phalanx of the fifth finger. The skin was broken and there was moderate hemorrhage. The bone was not broken and prompt healing of the skin wound occurred; but a few days after the accident it was noted that the distal phalanx of the fifth finger could not be extended. Six weeks later this condition remains the same. There is no pain or soreness and all other motion is normal, but voluntary extension of the distal phalanx is still impossible. There is loss of tactile sensation in the skin over the posterior portion of the distal and second phalanges. Sensation over the flexor surface is normal. Please discuss pathology. Please omit name.

M.D., Oregon.

Answer.—The patient doubtless sustained a cutting injury with division of the extensor tendons of the fifth finger—the extensor communis digitorum and extensor digiti quinti. The two dorsal digital branches of the ulnar nerve, one of which lies on each side of the dorsum of the fifth finger, may have been divided or crushed. In either case there would be loss of sensation on the dorsum of the finger distal to the site of injury.

### TROPICAL AMNESIA OR "COAST MEMORY"

*To the Editor:*—In Queries and Minor Notes (The Journal, March 19, p. 1019), I believe that you have not fully answered the question asked by M.D., East Africa; therefore I take the liberty of adding my opinion. The condition to which your inquirer refers is said to occur in Africa, mainly on the west coast, and is known as tropical amnesia, or coast memory. It is occasionally found in white persons after sojourning in the tropics several years without being able to make proper adjustments to conditions of living or to the climate. There is reason to believe that the circumscribed amnesia is hysterical in nature, but I do not know whether it actually is. The description of the case given in the query fits in with what little I know of tropical amnesia. Treatment consists of removal from the tropics.

I. S. Wechsler, M.D., New York.

# Council on Medical Education and Hospitals

## COMING EXAMINATIONS

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

California: *Reciprocity.* Los Angeles and San Francisco, June 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

Connecticut: *Basic Science.* New Haven, June 11. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

Delaware: Wilmington, June 14-16. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

District of Columbia: *Basic Science.* Washington, June 29-30. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

Florida: Tampa, June 13-14. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

Illinois: Chicago, June 28-July 1. Supt., Mr. Paul B. Johnson, Springfield.

Indiana: Indianapolis, June 21-23. Sec., Dr. William R. Davidson, 413 State House, Indianapolis.

Iowa: Iowa City, June 7-9. Dir., Mr. H. W. Grefe, Capitol Building, Des Moines.

Kansas: Kansas City, June 21-22. Sec., Dr. C. H. Ewing, Larned.

Kentucky: Louisville, June 8-10. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

Maryland: *Homeopathic.* Baltimore, June 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore. *Regular.* Baltimore, June 21-24. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

Michigan: Ann Arbor and Detroit, June 7-9. Sec., Dr. Nelson McLaughlin, 1010 Maccabee Bldg., Detroit.

Missouri: St. Louis, June 14-16. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City.

National Board of Medical Examiners: Examinations in Parts I and II will be held at all centers where there are five or more candidates, but not at Durham, Minneapolis, nor New Haven, June 27-29. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

Nebraska: *Regular.* Omaha, June 9-11. Dir., Mrs. Clark Perkins, Lincoln.

New Jersey: Trenton, June 21-22. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

New York: Albany, Buffalo, New York, Syracuse, June 27-30. Chief, Professional Examinations Bureau, Room 315, State Education Bldg., Albany.

North Carolina: Raleigh, June 20. Sec., Dr. John W. MacConnell, Davidson.

Ohio: Columbus, June 7-10. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

Oklahoma: Oklahoma City, June 8-10. Sec., Dr. J. M. Byrum, Shawnee.

South Carolina: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Texas: Marlin, June 21-23. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

Vermont: Burlington, June 22-24. Sec., Dr. W. Scott Nay, Underhill.

Virginia: Richmond, June 15-18. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

Wisconsin: Milwaukee, June 28-30. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

Wyoming: Cheyenne, June 6. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

## District of Columbia January Report

Dr. W. C. Fowler, secretary, Commission on Licensure, reports the written examination held at Washington, Jan. 11-12, 1932. The examination covered 6 subjects and included 70 questions. An average of 75 per cent was required to pass. Fifteen candidates were examined, all of whom passed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent |
|---|---|---|
| University of Arkansas School of Medicine | (1930) | 83.5 |
| Georgetown University School of Medicine | (1929) | 83.1, (1930) 79.3, 81.5, 83.9 |
| George Washington University School of Medicine | (1930) | 77.8, 86.4 |
| Howard University College of Medicine | (1930) | 79.6 |
| Northwestern University Medical School | (1929) | 86.8 |
| Indiana University School of Medicine | (1927) | 81.1 |
| Columbia University College of Phys. and Surgs. | (1921) | 83.3, (1930) 86.1 |
| Medical College of Virginia | (1930) | 85.6 |
| University of Virginia Department of Medicine | (1929) | 83.4, 88.4 |

## Ohio Reciprocity Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 15 physicians licensed by reciprocity with other states and two physicians licensed by endorsement, Jan. 5, 1932. The following colleges were represented:

LICENSED BY RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| University of Colorado School of Medicine | (1928) | Colorado |
| Loyola University School of Medicine | (1928), (1931) | Illinois |
| Rush Medical College | (1924) (Illinois, (1931) | Michigan |
| Indiana University School of Medicine | (1909) | Indiana |

| | | |
|---|---|---|
| University of Michigan Medical School | (1925)<br>(1926), (1930) | Penna.,<br>Michigan |
| St. Louis University School of Medicine | (1928), (1930) | Missouri |
| University of Buffalo School of Medicine | (1911) | New York |
| Jefferson Medical College of Philadelphia | (1923) | Penna. |
| Meharry Medical College | (1928) | Tennessee |
| University of Tennessee College of Medicine | (1928) | Tennessee |

LICENSED BY ENDORSEMENT

| College | Year Grad. | Endorsement of |
|---|---|---|
| Boston University School of Medicine | (1922) | N. B. M. Ex. |
| American University of Beirut School of Med., Syria | (1926) | N. B. M. Ex. |

## Territory of Hawaii January Report

Dr. James A. Morgan, secretary, Territory of Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, Jan. 11-14, 1932. Five candidates were examined, 4 of whom passed and 1 failed. One physician was licensed by endorsement. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent |
|---|---|---|
| University of Nebraska College of Medicine | (1928) | 81.7 |
| Ohio State University College of Medicine | (1923) | 83.2 |
| University of Oregon Medical School | (1929) | 85.2 |
| Jefferson Medical College of Philadelphia | (1930) | 83.3 |

FAILED

| College | Year Grad. |
|---|---|
| Rush Medical College | (1931) |

LICENSED BY ENDORSEMENT

| College | Year Grad. | Endorsement of |
|---|---|---|
| Jefferson Medical College of Philadelphia | (1929) | N. B. M. Ex. |

# Book Notices

**The Practice of Dentistry and the Incomes of Dentists in Twenty States: 1929.** By Maurice Leven, Ph.D., of the Research Staff of the Committee on the Costs of Medical Care based upon data collected under the direction of Dorothy Fahs Beck, of the Research Staff of the Committee on the Study of Dental Practice of the American Dental Association. Publications of the Committee on the Study of Dental Practice of the American Dental Association, No. 1. Cloth. Price, $2. Pp. 224. Chicago: University of Chicago Press, 1932.

In this volume the author has assembled and analyzed a mass of data relative to dental practice not heretofore available. The study, which is the report of a questionnaire survey conducted by the American Dental Association, includes chapters dealing with professional aspects of practice, economic features of practice, the dentist's working year and the number of patients treated, charges for dental services, business practice, incomes by states and types of practice, location and income, year of graduation and income, salaried personnel and income, income as related to working time, and dental incomes and dental expenses.

From the study of the 5,544 reports received, it appears that fully 96 per cent of the dentists practicing at the time of the survey had had at least three years of training in a dental school. This includes about 38 per cent whose formal training extended over a period of four years. Three per cent of the dentists regard themselves as complete or limited specialists, while 8 per cent are partial specialists. In the chapter dealing with the economic features of dental practice, it appears that 53 per cent of all dentists employ salaried personnel of some kind. Approximately 70 per cent of all dentists have practiced in their respective communities throughout their entire professional career.

In 1929 the working year for more than two thirds of the dentists was forty-eight weeks, while about one fourth worked fifty weeks and 10 per cent practiced throughout the entire year. The normal week of the typical dentist consists of thirty hours at the chair, six hours in the laboratory, and ten hours at other office duties; the average dentist treated approximately eight patients daily in 1929 and came in contact with 430 different patients during the year. More than 80 per cent of dentists attempt to maintain an hourly charge of $5, but the great majority vary their fees for the same services.

Dentists' incomes are correlated with the degree of specialization, the 1929 arithmetical average for complete specialists being $15,000, for partial specialists $10,700, and for general practitioners $7,800. The corresponding averages for net income are approximately $8,600, $6,100 and $4,800.

Those who use the data contained in this study must constantly bear in mind that the figures represent incomes and volume of practice for 1929. Since that time, general economic conditions have appreciably affected both the dental and the medical profession, and while certain relative values may remain fairly constant, others must be corrected for the change in economic conditions in order to make them applicable to the present.

The study appears to have been carefully conducted and the text is ample to explain all statistical deductions. The volume should be useful not only to practicing dentists but also as a reference work in libraries, from which students contemplating the study of dentistry may derive many facts concerning the profession.

**Blood Sugar in Normal and Sick Children with Special Reference to Coeliac Disease.** By Elisabeth Svensgaard Acta Pædiatrica, Volume XII, Supplementum IV. Paper. Pp. 245. Copenhagen: Levin & Munksgaard, 1931.

Using the Hagedorn-Jensen method, the author first investigated the blood sugar in normal infants and children. In normal infants up to the first year of life she found that fasting blood sugar values were lower than the normal values for adults. After ingestion of dextrose, the duration of hyperglycemia in normal infants under a year of age is as a rule less than two and one-half hours. In normal older children the fasting blood sugar values approach closely the normal adult figures, although occasionally a great variation in an individual child may be found. Likewise the results obtained in older children after the ingestion of dextrose approximate the adult normals. Following these blood sugar investigations on normal infants and children, the author reports her results on the blood sugar determinations in children suffering with celiac disease, cretinism, eczema, rickets and tetany. In celiac disease she obtained only a slight degree of hyperglycemia after ingestion of dextrose in doses of from 1 to 2 Gm. per kilogram. This small rise in blood sugar after the ingestion of dextrose she considers a valuable diagnostic sign in celiac disease. In cretins she obtained a greater degree of hyperglycemia after the ingestion of dextrose after thyroid treatment was instituted. The thyroid treatment seems to have a marked effect on blood sugar regulation in cretins. Blood sugar determinations in infants and children suffering with eczema, rickets and tetany showed only slight variations from the normal values. These interesting observations on blood sugar determinations in normal and sick children should serve as a valuable guide to any one making similar or related studies. A complete bibliography and detailed protocol are attached at the end of the volume.

**Health and Hospital Survey, Kansas City, Missouri.** Made for the Chamber of Commerce of Kansas City under the direction of the Committee on Public Health and Welfare. Prepared by the Committee on Administrative Practice of the American Public Health Association and the Kansas City Public Service Institute. Paper. Price, $2. Pp. 328. Kansas City: Chamber of Commerce, 1931.

This survey was undertaken at the behest of the Public Health and Welfare Committee of the Chamber of Commerce of Kansas City, Mo., to determine in what respects the health work of the city might be adequate or inadequate and what steps should be taken to improve the service for the money expended. Fourteen different volunteer groups were carrying on health work in addition to various official agencies, resulting in duplication of efforts in some places and leaving gaps in others. The reported number of 127 cases of tuberculosis in 1929 is a record of which any city might be proud were it not for the fact that 306 residents died from that disease during the year, indicating that there existed from 1,500 to 2,700 cases of tuberculosis at the time. Other inconsistencies picture a rather confused state of public health activities—for instance under food control is grouped the control of rabies and under the guise of sanitation is found the cutting of weeds, a procedure that has a doubtful place in a health program. The report is divided into two parts. Part I is devoted to various health activities, such as vital statistics, communicable disease control, child hygiene, school hygiene, public health nursing, milk and food control, sanitation and laboratory service. Each item is discussed in the light of conditions as they actually exist as against the ideal, and at the end of the chapter practical suggestions are made. Every municipal health official will be interested because he will find parallels with recommended remedies to many of his problems. Part II, devoted to hospitals, is a study in medical economics. The twenty-one hospitals in Kansas City, Missouri, and five in Kansas City, Kansas, are surveyed in detail as to bed capacity, bed occupancy, types of cases admitted, financial data and medical, nursing, laboratory, occupational therapy, dental and social services connected with the hospitals, together with studies of outpatient and clinic facilities. Special chapters are devoted to the tax-supported hospitals which come under the supervision of the director of health.

**An Introduction to the Literature of Vertebrate Zoology Based Chiefly on the Titles in the Blacker Library of Zoology, the Emma Shearer Wood Library of Ornithology, the Bibliotheca Osleriana and Other Libraries of McGill University, Montreal.** Compiled and edited by Casey A. Wood, M.D., LL.D., Collaborator, Division of Birds, Smithsonian Institution. Cloth. Price, $15. Pp. 643. London: Oxford University Press, 1931.

This is a work by a bibliophile for fellow enthusiasts, and the printer has cooperated nobly. It is primarily a catalogue, but in a series of introductory chapters the compiler, as he modestly calls himself, takes a group of friends through the McGill libraries, shows them the greatest treasures, and incidentally reviews the history of vertebrate zoology by saying a few words about preeminent authors and remarkable books. His emphasis is on natural history and faunistic and systemic studies, but he touches on comparative anatomy and paleontology. The oriental literature referred to will be new to most zoologists. Attention is called to important periodicals and serials. There are two convenient classified indexes in which certain authors are grouped according to the classes of vertebrates they have considered and the areas they have covered.

**Protection of Women and Children in Soviet Russia.** By Alice Withrow Field. Cloth. Price, $3. Pp. 241. New York: E. P. Dutton & Company, Inc., 1932.

The author of this volume went to Russia to study the system used under the five year plan for the care of women and children. She presents the story of a government planned by men but leading essentially to a matriarchal empire. Beginning with a discussion of the program for the protection of women and children in Russia, she discusses the legal phases of women's rights, the customs regarding abortion and birth control, the consultation rooms established for women, prenatal examinations, maternity care and similar subjects. Of especial interest are the plans for the handling of children, which, obviously, have come under the greatest criticism because of their tendency to make the home secondary in family life. If plans continue as now in effect, the author believes all children will eventually come under complete control of the state. However, at present it seems unlikely, largely because of the present condition of finance, that the children will be taken from their parents except during the period when parents are at work. The final chapters of the book present various bulletins, pamphlets, charts and sheets of instruction for the control of women and children under the five year plan.

**Chirurgische Indikationen für Ärzte und Studierende.** Von Professor Dr. Karl Reschke, Oberarzt der chirurgischen Universitätsklinik Greifswald. 1. (Allgemeiner) Teil. Paper. Price, 22 marks. Pp. 357. Berlin: F. C. W. Vogel, 1932.

Textbooks of surgical technic are available in comparatively large numbers in various languages. To date there have been none pertaining to surgical indications. The answer to questions that arise in the presence of certain conditions may be found scattered through various textbooks on surgery and in special monographs but has never before been compiled in one volume. This the author attempts and accomplishes quite successfully. Based on personal experience as well as on an extensive review of the literature, this volume deals with the indications for conditions in general surgery. A section dealing with special surgery will appear at a later date. In this volume the author discusses at length and in detail such subjects as the different forms of anesthesia, treatment of wounds, acute and chronic infections, diseases of blood vessels and lymphatics, the various disorders of bones and joints, and tumors. The ideas expressed are adequate, detailed, and in keeping with the best modern thought. Although it contains nothing original or particularly new, this work is of distinct value to the student and young man in surgery and, being complete, may occasionally prove useful to the more experienced in the specialty.

**Orthopädische Therapie in der Allgemeinpraxis: Angeborene Deformitäten.** Von Hofrat Professor Dr. Hans Spitzy, Direktor und Primararzt des Orthopädischen Spitales in Wien. Therapie in Einzeldarstellungen: Wissenschaftliche Grundlagen und praktische Anwendung. Herausgegeben von Prof. Dr. R. von den Velden und Priv.-Doz. Dr. P. Wolff. Boards. Price, 7 marks. Pp. 115, with 77 illustrations. Leipzig: Georg Thieme, 1932.

The author of this small book is one of the two greatest orthopedic surgeons of Austria. He discusses congenital deformities. Practically every illustration is from his own observation. Torticollis, congenital elevation of the scapula and other deformities of the upper extremity are considered; also deformities of the lower extremity, including dislocation of the hip and other defects of the hip, knee, foot and vertebrae. There are short discussions on osteogenesis imperfecta, cartilaginous exostoses, pseudarthrosis, birth paralysis and spastic paralysis. The illustrations, which include photographs, line drawings and roentgenograms, are clear and effective. The book has been neatly published and is well worth the time spent in reading it.

**Gould's Medical Dictionary Containing the Words and Phrases Generally Used in Medicine and the Allied Sciences, with Their Definition, Pronunciation and Derivation.** By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D. Third edition. Fabrikoid. Price, $7.50. Pp. 1538, with illustrations and tables. Philadelphia: P. Blakiston's Son & Company, Inc., 1931.

This is a praiseworthy addition to the others of its kind now on the market. It has retained, for the most part, the salient features of the first two editions. Some changes are, however, immediately noticeable, as, for example, the inclusion of a large number of words which have only recently been incorporated into medical usage; the enlargement of the table of micro-organisms, for which this dictionary has always been justly noted, and the appended table of protozoa and metazoa and the infections that they cause. The striking feature of this dictionary is, as it has always been, the simplicity of its arrangement. Each item is defined in its proper place, instead of being carried over to some other place and being defined under a general group heading. In this way the editors avoid a burdensome system of cross-references, which generally serve only to confuse the average user. There are 173 tables in this edition, as against 170 in the last one. Mention should be made of the excellent quality of the paper used in this dictionary, as well as of the admirable printing and illustrations and the new stiff fabrikoid cover, a decided improvement over the old flexible one.

**Some Radium Cases at the Middlesex Hospital: A Photographic Record.** By A. Cameron MacLeod, M.B., B.S., F.R.C.S. Boards Price, 7/6. Pp. 154, with 122 illustrations. London: John Murray, 1931.

The purpose of this book is primarily to present a photographic record of a series of neoplasms treated with radium in the Middlesex Hospital. Only cases that lend themselves to photographic record are described and depicted. Photographs of epithelioma of the skin, lip and tongue are shown before and after radium treatments. The technic is described and the dose stated. The photographs clearly indicate effective irradiation of this group of tumors. Carcinoma of the breast was treated according to the method first described by Geoffrey Keynes. The photographs constitute a clear and effective demonstration of the results of radiation on surface cancer. The dosage may also serve as a general guide in interstitial irradiation of this group of neoplasms. The author has been more partial to interstitial irradiation, as for example in the treatment of cancer of the lip, which is best treated by the application of radium on the surface by means of a mold.

**Mental Healers: Franz Anton Mesmer, Mary Baker Eddy, Sigmund Freud.** By Stefan Zweig. Translated by Eden and Cedar Paul. Cloth. Price, $3.50. Pp. 363. New York: Viking Press, 1932.

The mental healers included in this extraordinary volume are Franz Mesmer, Mary Baker Eddy and Sigmund Freud. The life of Mesmer reveals the beginning of magnetic healing and the opening of the temple in Paris. It credits Puysegur for his fundamental observations as to the effects of the mind on the body. The life of Mrs. Eddy is a burning analysis of her career which follows the Dakin and Milmine contributions for fact and which shows the manner in which the Christian science group have exploited financially the followers of the high priestess of the Christian science cult. In this section of his book, Stefan Zweig ventures numerous aphorisms as to the features of the American character that directed the extraordinary development of Mrs. Eddy's group.

For the work of Signund Freud, Zweig has great admiration. He does not, of course, concern himself with the manner in which the freudian doctrines have been so terribly exploited by the disciples and imitators of the great psychologic master. He presents the personality of Freud in a vital manner and reveals the background of freudian philosophy. The concluding sentence is enlightening: "And while the experts are still disconcerted because his teaching cannot be satisfactorily pigeonholed and docketed as 'medicine' or 'natural science' or 'philosophy' but partakes of the nature of all, while professors and pundits and privy councilors are still wrangling about its details and its ultimate value, the teaching itself has long since made good and been established as irrefutable—as true in that creative sense which Goethe has made immortal in the words: 'The fruitful, that alone is true.'"

**The Lancet Commission on Nursing Appointed in December, 1930, to Inquire Into the Reasons for the Shortage of Candidates, Trained and Untrained, for Nursing the Sick in General and Special Hospitals Throughout the Country, and to Offer Suggestions for Making the Service More Attractive to Women Suitable for This Necessary Work.** Final Report. Paper. Price, 2s. 6d. Pp. 256. London: The Lancet, Ltd., 1932.

This is the final report of the committee appointed by the *Lancet* in 1930 "to inquire into the reasons for the shortage of candidates, trained and untrained, for nursing the sick in general and special hospitals throughout the country, and to offer suggestions for making the service more attractive to women suitable for this necessary work." The report includes the reasons which the committee found for the shortage of candidates. It offers suggestions as to how the number of desirable candidates might be increased. The report is based on a large amount of pertinent information, is well edited, and contains a number of tables and charts. It is valuable for all who are interested in the proper supply of nurses, whether in Great Britain or elsewhere.

**The Foundations of Medical History.** By Sir D'Arcy Power, K.B.E., F.R.C.S., Consulting Surgeon to St. Bartholomew's Hospital. Johns Hopkins University, Institute of the History of Medicine. Cloth. Price, $3. Pp. 182, with 3 illustrations. Baltimore: Williams & Wilkins Company, 1931.

This volume contains the six lectures delivered by the author at the Institute of the History of Medicine in Johns Hopkins University. The writings of Sir D'Arcy in the field of medical history are numerous and invariably interesting. The present series includes an account of St. Bartholomew's Hospital; also some studies of biography, bibliography and iconography. The final essay is entitled Aristotle's Masterpiece.

**La maladie de Hodgkin: Lymphadénie aleucémique. Lymphosarcome. Pseudo-leucémie de Bonfils. Morbus Hodgkini de Wilks. Adénie de Trousseau. Granulome malin de Benda. Lymphogranulome malin. Lymphogranulomatose maligne, etc.** Par Paul Chevallier, professeur agrégé à la Faculté de médecine de Paris, et Jean Bernard, intern des Hôpitaux de Paris. Paper. Price, 75 francs. Pp. 293, with 69 illustrations. Paris: Masson & Cie, 1932.

This volume considers the typical forms of Hodgkin's disease and will be followed by a volume dealing with variations. The available knowledge about Hodgkin's disease is presented in an interesting, orderly form, nothing original being presented. The controversial matter of etiology is discussed. There is some repetition in subject matter, but the book is well outlined and indexed. The bibliography is especially valuable for its reference to the French and the Italian literature.

**Kolloidreaktionen der Rückenmarkflüssigkeit (Technik, Klinik und Theorie).** Von Dr. med. Willy Schmitt, Privatdozent und Oberarzt der Medizin, Universitäts-Poliklinik, Leipzig. Paper. Price, 12.50 marks. Pp. 181, with 72 illustrations. Dresden: Theodor Steinkopff, 1932.

The study of cerebrospinal fluid has become so extensive in recent years that entire monographs have been written on a single phase of the subject. In this monograph the author reviews the colloidal reactions on cerebrospinal fluid, including Lange, mastic, benzoin, paraffin, shellac and sublimate fuchsin. A detailed description of the technic and an interpretation of every test is given. The author has added nothing original, but he has covered the subject in all its phases. His familiarity with the minutest details shows that he has had a great deal of experience with the various tests. This is not a book for the general practitioner, but it will be found of distinct value to the laboratory worker.

**The Genius of Louis Pasteur.** By Piers Compton. Cloth. Price, $4.50. Pp 361, with 8 illustrations. New York: Macmillan Company, 1932.

This biography of the great chemist who founded modern bacteriology is written simply and with understanding. It has not the brilliance of the book by Vallery-Radot nor is it as scientific as the contribution of Duclaux. It depends on these works for its facts, but neither in the preface nor in any prominent manner elsewhere does the author give credit to these source books. The book is by no means brief.

**Spontaneous Pneumothorax in the Apparently Healthy.** By Hans Kjærgaard. Paper. Pp. 252, with 29 illustrations. Copenhagen: Levin & Munksgaard, 1932.

This monograph is based on a study of the case records of fifty-one patients who had a total of sixty-one attacks of spontaneous pneumothorax resulting from rupture of a vesicle with a valve on the surface of the lung. It includes three cases of such unruptured vesicles found incidentally at necropsy and studied by the author. The case histories are given in detail. There is a comprehensive bibliography. The volume is an exhaustive and authoritative contribution to the subject.

***L'année thérapeutique: Médication et procédés nouveaux.*** Par le Dr. A. Ravina. Sixième année, 1931. Paper. Price, 16 francs. Pp. 182. Paris: Masson & Cie, 1932.

This little volume on new medicines and therapeutic procedures resumes the series interrupted in 1924 by the death of Dr. Cheinisse. It should be particularly welcome in this country as a help in the more general diffusion of knowledge concerning the newer therapeutic measures developed in Europe and especially among the French.

# Medicolegal

## Compensability of Sarcoma Following Trauma

*(Hertz v. Watab Pulp & Paper Co. (Minn.), 237 N. W. 610)*

Hertz fell in the course of his employment and was injured in the pelvic region. The fall did not immediately disable him, and he continued at work for some two months. All the while, however, he complained of the injury. Eventually he consulted a local practitioner, who told him that he had hernia. This diagnosis proved to be incorrect; it was found that he was suffering from a cancerous growth. Hertz applied for compensation under the workmen's compensation act, but his claim was rejected by the industrial commission, because it could find no causal relation between his fall and the admittedly malignant growth. On appeal, however, the Supreme Court of Minnesota remanded the proceeding to the commission, to consider such further evidence as might be offered.[1] The commission heard such evidence, but before it rendered a decision Hertz died. An autopsy showed that death was due to a "fibro sarcoma arising in the right pubic bone of a type which might be called primary sarcoma of the bone or osteogenic sarcoma." The industrial commission then found that the accidental injury that Hertz sustained was the cause of his death. From an award in favor of his widow, who had been substituted as the claimant, the employer appealed to the Supreme Court of Minnesota. That court affirmed the award of the industrial commission.

The opinion of the expert witnesses who testified, said the Supreme Court, differed as to whether the sarcoma from which Hertz died was or was not caused by his injury. Considering interested because he will find parallels with recommended remedies to many of his problems. Part II, devoted to hospitals, is a study in medical economics. The twenty-one hospitals in Kansas City, Missouri, and five in Kansas City, Kansas, are surveyed in detail as to bed capacity, bed occupancy, types of cases admitted, financial data and medical, nursing, laboratory, occupational therapy, dental and social services connected with the hospitals, together with studies of outpatient and clinic facilities. Special chapters are devoted to the tax-supported hospitals which come under the supervision of the director of health.

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[1] Hertz v. Watab Pulp & Paper Co. (Minn.), 230 N. W. 481, J. A. M. A. **96**: 1257 (April 11) 1931.

**An Introduction to the Literature of Vertebrate Zoology Based Chiefly on the Titles in the Blacker Library of Zoology, the Emma Shearer Wood Library of Ornithology, the Bibliotheca Osleriana and Other Libraries of McGill University, Montreal.** Compiled and edited by Casey A. Wood, M.D., LL.D., *Collaborator, Division of Birds, Smithsonian Institution.* Cloth. Price, $15. Pp. 643. London: Oxford University Press, 1931.

This is a work by a bibliophile for fellow enthusiasts, and the printer has cooperated nobly. It is primarily a catalogue, but in a series of introductory chapters the compiler, as he modestly calls himself, takes a group of friends through the McGill libraries, shows them the greatest treasures, and incidentally reviews the history of vertebrate zoology by saying a few words about preeminent authors and remarkable books. His emphasis is on natural history and faunistic and systemic studies, but he touches on comparative anatomy and paleontology. The oriental literature referred to will be new to most zoologists. Attention is called to important periodicals and serials. There are two convenient classified indexes in which certain authors are grouped according to the classes of vertebrates they have considered and the areas they have covered.

**Protection of Women and Children in Soviet Russia.** By Alice Withrow Field. Cloth. Price, $3. Pp. 241. New York: E. P. Dutton & Company, Inc., 1932.

The author of this volume went to Russia to study the system used under the five year plan for the care of women and children. She presents the story of a government planned by men but leading essentially to a matriarchal empire. Beginning with a discussion of the program for the protection of women and children in Russia, she discusses the legal phases of women's rights, the customs regarding abortion and birth control, the consultation rooms established for women, prenatal examinations, maternity care and similar subjects. Of especial interest are the plans for the handling of children, which, obviously, have come under the greatest criticism because of their tendency to make the home secondary in family life. If plans continue as now in effect, the author believes all children will eventually come under complete control of the state. However, at present it seems unlikely, largely because of the present condition of finance, that the children will be taken from their parents except during the period when parents are at work. The final chapters of the book present various bulletins, pamphlets, charts and sheets of instruction for the control of women and children under the five year plan.

**Chirurgische Indikationen für Ärzte und Studierende.** Von Professor Dr. Karl Reschke, Oberarzt der chirurgischen Universitätsklinik Greifswald. 1. (Allgemeiner) Teil. Paper. Price, 22 marks. Pp. 357. Berlin: F. C. W. Vogel, 1932.

Textbooks of surgical technic are available in comparatively large numbers in various languages. To date there have been none pertaining to surgical indications. The answer to questions that arise in the presence of certain conditions may be found scattered through various textbooks on surgery and in special monographs but has never before been compiled in one volume. This the author attempts and accomplishes quite successfully. Based on personal experience as well as on an extensive review of the literature, this volume deals with the indications for conditions in general surgery. A section dealing with special surgery will appear at a later date. In this volume the author discusses at length and in detail such subjects as the different forms of anesthesia, treatment of wounds, acute and chronic infections, diseases of blood vessels and lymphatics, the various disorders of bones and joints, and tumors. The ideas expressed are adequate, detailed, and in keeping with the best modern thought. Although it contains nothing original or particularly new, this work is of distinct value to the student and young man in surgery and, being complete, may occasionally prove useful to the more experienced in the specialty.

**Orthopädische Therapie in der Allgemeinpraxis: Angeborene Deformitäten.** Von Hofrat Professor Dr. Hans Spitzy, Direktor und Primararzt des Orthopädischen Spitales in Wien. Therapie in Einzeldarstellungen: Wissenschaftliche Grundlagen und praktische Anwendung. Herausgegeben von Prof. Dr. R. von den Velden und Priv.-Doz. Dr. P. Wolff. Boards. Price, 7 marks. Pp. 115, with 77 illustrations. Leipzig: *Georg Thieme,* 1932.

The author of this small book is one of the two greatest orthopedic surgeons of Austria. He discusses congenital deformities. Practically every illustration is from his own observation. Torticollis, congenital elevation of the scapula and other deformities of the upper extremity are considered; also deformities of the lower extremity, including dislocation of the hip and other defects of the hip, knee, foot and vertebrae. There are short discussions on osteogenesis imperfecta, cartilaginous exostoses, pseudarthrosis, birth paralysis and spastic paralysis. The illustrations, which include photographs, line drawings and roentgenograms, are clear and effective. The book has been neatly published and is well worth the time spent in reading it.

**Gould's Medical Dictionary Containing the Words and Phrases Generally Used in Medicine and the Allied Sciences, with Their Definition, Pronunciation and Derivation.** By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D. Third edition. Fabrikoid. Price, $7.50. Pp. 1538, with illustrations and tables. Philadelphia: P. Blakiston's Son & Company, Inc., 1931.

This is a praiseworthy addition to the others of its kind now on the market. It has retained, for the most part, the salient features of the first two editions. Some changes are, however, immediately noticeable, as, for example, the inclusion of a large number of words which have only recently been incorporated into medical usage; the enlargement of the table of microorganisms, for which this dictionary has always been justly noted, and the appended table of protozoa and metazoa and the infections that they cause. The striking feature of this dictionary is, as it has always been, the simplicity of its arrangement. Each item is defined in its proper place, instead of being carried over to some other place and being defined under a general group heading. In this way the editors avoid a burdensome system of cross-references, which generally serve only t confuse the average user. There are 173 tables in this edition as against 170 in the last one. Mention should be made of th excellent quality of the paper used in this dictionary, as well a of the admirable printing and illustrations and the new stif fabrikoid cover, a decided improvement over the old flexible one

**Some Radium Cases at the Middlesex Hospital: A Photographic Record** By A. Cameron MacLeod, M.B., B.S., F.R.C.S. Boards Price, 7/6. Pp 154, with 122 illustrations. London: John Murray, 1931.

The purpose of this book is primarily to present a photographic record of a series of neoplasms treated with radium in the Middlesex Hospital. Only cases that lend themselves to photographic record are described and depicted. Photographs of epithelioma of the skin, lip and tongue are shown before and after radium treatments. The technic is described and the dose stated. The photographs clearly indicate effective irradiation of this group of tumors. Carcinoma of the breast was treated according to the method first described by Geoffrey Keynes. The photographs constitute a clear and effective demonstration of the results of radiation on surface cancer. The dosage may also serve as a general guide in interstitial irradiation of this group of neoplasms. The author has been more partial to interstitial irradiation, as for example in the treatment of cancer of the lip, which is best treated by the application of radium on the surface by means of a mold.

**Mental Healers: Franz Anton Mesmer, Mary Baker Eddy, Sigmund Freud.** By Stefan Zweig. Translated by Eden and Cedar Paul. Cloth. Price, $3.50. Pp. 363. New York: Viking Press, 1932.

The mental healers included in this extraordinary volume are Franz Mesmer, Mary Baker Eddy and Sigmund Freud. The life of Mesmer reveals the beginning of magnetic healing and the opening of the temple in Paris. It credits *Puysegur* for his fundamental observations as to the effects of the mind on the body. The life of Mrs. Eddy is a burning analysis of her career which follows the Dakin and Milmine contributions for fact and which shows the manner in which the Christian science group have exploited financially the followers of the high priestess of the Christian science cult. In this section of his book, Stefan Zweig ventures numerous aphorisms as to the features of the American character that directed the extraordinary development of Mrs. Eddy's group.

For the work of Sigmund Freud, Zweig has great admiration. He does not, of course, concern himself with the manner in which the freudian doctrines have been so terribly exploited by the disciples and imitators of the great psychologic master. He presents the personality of Freud in a vital manner and reveals the background of freudian philosophy. The concluding sentence is enlightening: "And while the experts are still disconcerted because his teaching cannot be satisfactorily pigeonholed and docketed as 'medicine' or 'natural science' or 'philosophy' but partakes of the nature of all, while professors and pundits and privy councilors are still wrangling about its details and its ultimate value, the teaching itself has long since made good and been established as irrefutable—as true in that creative sense which Goethe has made immortal in the words: 'The fruitful, that alone is true.'"

**The Lancet Commission on Nursing Appointed in December, 1930, to Inquire Into the Reasons for the Shortage of Candidates, Trained and Untrained, for Nursing the Sick in General and Special Hospitals Throughout the Country, and to Offer Suggestions for Making the Service More Attractive to Women Suitable for This Necessary Work.** Final Report. Paper. Price, 2s. 6d. Pp. 256. London: The Lancet, Ltd., 1932.

This is the final report of the committee appointed by the *Lancet* in 1930 "to inquire into the reasons for the shortage of candidates, trained and untrained, for nursing the sick in general and special hospitals throughout the country, and to offer suggestions for making the service more attractive to women suitable for this necessary work." The report includes the reasons which the committee found for the shortage of candidates. It offers suggestions as to how the number of desirable candidates might be increased. The report is based on a large amount of pertinent information, is well edited, and contains a number of tables and charts. It is valuable for all who are interested in the proper supply of nurses, whether in Great Britain or elsewhere.

**The Foundations of Medical History.** By Sir D'Arcy Power, K.B.E., F.R.C.S., Consulting Surgeon to St. Bartholomew's Hospital. Johns Hopkins University, Institute of the History of Medicine. Cloth. Price, $3. Pp. 182, with 3 illustrations. Baltimore: Williams & Wilkins Company, 1931.

This volume contains the six lectures delivered by the author at the Institute of the History of Medicine in Johns Hopkins University. The writings of Sir D'Arcy in the field of medical history are numerous and invariably interesting. The present series includes an account of St. Bartholomew's Hospital; also some studies of biography, bibliography and iconography. The final essay is entitled Aristotle's Masterpiece.

**La maladie de Hodgkin: Lymphadénie aleucémique. Lymphosarcome. Pseudo-leucémie de Bonfils. Morbus Hodgkini de Wilks. Adénie de Trousseau. Granulome malin de Benda. Lymphogranulome malin. Lymphogranulomatose maligne, etc.** Par Paul Chevallier, professeur agrégé à la Faculté de médecine de Paris, et Jean Bernard, intern des Hôpitaux de Paris. Paper. Price, 75 francs. Pp. 293, with 69 illustrations. Paris: Masson & Cie, 1932.

This volume considers the typical forms of Hodgkin's disease and will be followed by a volume dealing with variations. The available knowledge about Hodgkin's disease is presented in an interesting, orderly form, nothing original being presented. The controversial matter of etiology is discussed. There is some repetition in subject matter, but the book is well outlined and indexed. The bibliography is especially valuable for its reference to the French and the Italian literature.

**Kolloidreaktionen der Rückenmarkflüssigkeit (Technik, Klinik und Theorie).** Von Dr. med. Willy Schmitt, Privatdozent und Oberarzt der Medizin, Universitäts-Poliklinik, Leipzig. Paper. Price, 12.50 marks. Pp. 181, with 72 illustrations. Dresden: Theodor Steinkopff, 1932.

The study of cerebrospinal fluid has become so extensive in recent years that entire monographs have been written on a single phase of the subject. In this monograph the author reviews the colloidal reactions on cerebrospinal fluid, including Lange, mastic, benzoin, paraffin, shellac and sublimate fuchsin. A detailed description of the technic and an interpretation of every test is given. The author has added nothing original, but he has covered the subject in all its phases. His familiarity with the minutest details shows that he has had a great deal of experience with the various tests. This is not a book for the general practitioner, but it will be found of distinct value to the laboratory worker.

**The Genius of Louis Pasteur.** By Piers Compton. Cloth. Price, $4.50. Pp. 361, with 8 illustrations. New York: Macmillan Company, 1932.

This biography of the great chemist who founded modern bacteriology is written simply and with understanding. It has not the brilliance of the book by Vallery-Radot nor is it as scientific as the contribution of Duclaux. It depends on these works for its facts, but neither in the preface nor in any prominent manner elsewhere does the author give credit to these source books. The book is by no means brief.

**Spontaneous Pneumothorax in the Apparently Healthy.** By Hans Kjærgaard. Paper. Pp. 252, with 29 illustrations. Copenhagen: Levin & Munksgaard, 1932.

This monograph is based on a study of the case records of fifty-one patients who had a total of sixty-one attacks of spontaneous pneumothorax resulting from rupture of a vesicle with a valve on the surface of the lung. It includes three cases of such unruptured vesicles found incidentally at necropsy and studied by the author. The case histories are given in detail. There is a comprehensive bibliography. The volume is an exhaustive and authoritative contribution to the subject.

**L'année thérapeutique: Médication et procédés nouveaux.** Par le Dr. A. Ravina. Sixième année, 1931. Paper. Price, 16 francs. Pp. 182. Paris: Masson & Cie, 1932.

This little volume on new medicines and therapeutic procedures resumes the series interrupted in 1924 by the death of Dr. Cheinisse. It should be particularly welcome in this country as a help in the more general diffusion of knowledge concerning the newer therapeutic measures developed in Europe and especially among the French.

# Medicolegal

## Compensability of Sarcoma Following Trauma

*(Hertz v. Watab Pulp & Paper Co. (Minn.), 237 N. W. 610)*

Hertz fell in the course of his employment and was injured in the pelvic region. The fall did not immediately disable him, and he continued at work for some two months. All the while, however, he complained of the injury. Eventually he consulted a local practitioner, who told him that he had hernia. This diagnosis proved to be incorrect; it was found that he was suffering from a cancerous growth. Hertz applied for compensation under the workmen's compensation act, but his claim was rejected by the industrial commission, because it could find no causal relation between his fall and the admittedly malignant growth. On appeal, however, the Supreme Court of Minnesota remanded the proceeding to the commission, to consider such further evidence as might be offered.[1] The commission heard such evidence, but before it rendered a decision Hertz died. An autopsy showed that death was due to a "fibro sarcoma arising in the right pubic bone of a type which might be called primary sarcoma of the bone or osteogenic sarcoma." The industrial commission then found that the accidental injury that Hertz sustained was the cause of his death. From an award in favor of his widow, who had been substituted as the claimant, the employer appealed to the Supreme Court of Minnesota. That court affirmed the award of the industrial commission.

The opinion of the expert witnesses who testified, said the Supreme Court, differed as to whether the sarcoma from which Hertz died was or was not caused by his injury. Considering their views in connection with other facts in evidence, however, the commission was justified in finding, as it did, that the injury to Hertz, though slight, either originated the sarcoma or exaggerated and excited it, so as to make the injury, within the view of the law, when administering the compensation act, the cause of the fatal growth.

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[1] Hertz v. Watab Pulp & Paper Co. (Minn.), 230 N. W. 481, J. A. M. A. **96:** 1257 (April 11) 1931.

This court, said the court, has sustained awards of the industrial commission for compensation for sarcoma or cancer of traumatic origin in *Austin* v. *Red Wing Sewer Pipe Co.*, 163 Minn. 397, 204 N. W. 323; *Gaetz* v. *City of Melrose*, 155 Minn. 330, 193 N. W. 691; and *Halper* v. *The Golden Rule*, 180 Minn. 477, 231 N. W. 195. In *Storing* v. *Hotel Radisson Co.*, 177 Minn. 519, 225 N. W. 652, however, it sustained a finding of the commission against the occurrence of cancer as the result of an accident. In *Winchester Milling Corp.* v. *Sencindiver*, 148 Va. 388, 138 S. E. 479, a case similar to the one now before the court, the Supreme Court of Appeals of Virginia, in sustaining a finding that held that an injury had resulted in a sarcoma, said:

> Taking a common sense, practical view, as courts and commissions must take of the ordinary happenings of life, boiled down to its last analysis the medical theory is that there is a relationship between the receipt of injury and origin of sarcoma, and that the degree of injury plays no important part. With this in mind we find a perfectly healthy, strong man, who has never lost any time from work or complained of any illness, suffers an injury and from that time on is incapacitated, grows worse and worse, sarcoma develops at the point of injury, from which he dies. The lay mind, under such circumstances, can reach no other conclusion than that reached by the commission, viz., that the sarcoma was either caused by the injury or was aggravated by it.

A similar conclusion was reached in *Lewis* v. *Port of London Authority*, 7 B. W. C. C. 577, 111 L. T. Rep. 776.

In the present case, said the court, taking the lay testimony and the medical testimony into account, the commission was well justified in finding a causal connection between the injury and the sarcoma that resulted in the employee's death. The award in favor of the widow was ordered affirmed.

### Liability of Employer of Examining Physician

*(New York Central Railroad Co. v. Wiler (Ohio), 177 N. E. 205)*

Wiler, employed as a locomotive fireman by the New York Central Railroad Company, was directed to submit to an examination by the company's physician, so that the company might know his physical condition. He complied. Later he sued the company, alleging that its physician, while he was feeling with his fingers under and around Wiler's left groin, used unusual and unnecessary force and thereby caused a hernia. To Wiler's petition, the company filed a demurrer, which the trial court sustained. On appeal, however, the court of appeals, Lucas County, reversed that judgment and remanded the cause for further proceedings. Thereupon, the company appealed to the Supreme Court of Ohio.

On behalf of the company, it was contended that when a railroad company employs a physician to render any service for it and for its own purpose, which service that physician in his professional capacity might render to a patient for the patient's own purpose, the duty of the railroad company ends with the exercise of reasonable care in the selection of the physician. In support of this contention, the company relied on a decision by the Supreme Court of Ohio, in *Youngstown Park & Falls Street Ry. Co.* v. *Kessler*, 84 Ohio St. 74, 95 N. E. 509, which arose out of the treatment of Kessler by the company's physician for an injury received by Kessler in alighting from one of the company's cars. The purpose of the treatment in that case, however, said the Supreme Court, was to cure Kessler's injury. It was directly for the benefit of Kessler. If it was for the benefit of the company at all, it was only indirectly so, in mitigation of the damages it might be required to pay for causing the injury. That situation, the court held, created the relationship of physician and patient between Kessler and the company's physician. The fact that the company assumed the obligation to compensate the physician for the service he rendered did not alter that relation.

But in the present case, said the Supreme Court, the purpose of the examination was not to treat or cure Wiler, an employee of the appellant railroad company. It was to inform the company of his physical condition, so as to enable it intelligently to determine whether it could safely and profitably continue him as one of its employees. The examination was for the benefit of the company, and not for the benefit of the employee. Under such circumstances, the relationship between the company and its examining physician was that of master and servant, unqualified by the circumstance that the servant was as a matter of fact a physician. The action, therefore, was not an action for malpractice and subject to the statute governing the limitation of actions for malpractice. It was an action for bodily injury and the time within which action might be brought was determinable by the statute relating to actions for bodily injuries.

The judgment for the court of appeals remanding the cause to the trial court for further proceedings was affirmed.

## Society Proceedings

### COMING MEETINGS

American Association for the Study of Goiter, Hamilton, Ontario, June 14-16. Dr. J. R. Yung, 670 Cherry St., Terre Haute, Ind., Secretary.

American Association for the Study of the Feeble-Minded, Philadelphia, May 26-29. Dr. Groves B. Smith, Godfrey, Illinois, Secretary.

American Association of Genito-Urinary Surgeons, Niagara Falls, Ontario, Canada, May 26-28. Dr. Henry L. Sanford, 1621 Euclid Avenue, Cleveland, Secretary.

American Association of Medical Milk Commissions, Washington, D. C., May 20-21. Dr. Harris Moak, 360 Park Place, Brooklyn, N. Y., Sec'y.

American Bronchoscopic Society, Atlantic City, May 21. Dr. Richmond McKinney, 899 Madison Avenue, Memphis, Tennessee, Secretary.

American Gynecological Society, Quebec, May 30-June 1. Dr. Otto H. Schwarz, 630 South Kingshighway, St. Louis, Secretary.

American Laryngological Association, Atlantic City, May 19-21. Dr. George M. Coates, 1721 Pine Street, Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, May 23-25. Dr. Robert L. Loughran, 33 East 63d Street, New York, Secretary.

American Neurological Association, Atlantic City, June 6-8. Dr. Henry Alsop Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

American Orthopedic Association, Toronto, Canada, June 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.

American Otological Society, Atlantic City, May 17-19. Dr. Thomas J. Harris, 104 East 40th Street, New York, Secretary.

American Pediatric Society, Rochester, Minnesota, May 26-28. Dr. Hugh McCulloch, 500 South Kingshighway, St. Louis, Secretary.

American Psychiatric Association, Philadelphia, May 30-June 3. Dr. Clarence O. Cheney, 722 West 168th Street, New York, Secretary.

American Surgical Association, New Haven, Conn., May 16-18. Dr. Vernon C. David, 59 East Madison Street, Chicago, Secretary.

American Therapeutic Society, Baltimore, May 16-17. Dr. Grafton Tyler Brown, 1801 I Street N.W., Washington, D. C., Secretary.

American Urological Association, Toronto, May 30-June 2. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Charles W. Comfort, Jr., 27 Elm Street, New Haven, Secretary.

Georgia, Medical Association of, Savannah, May 17-20. Dr. Allen H. Bunce, 139 Forrest Avenue N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 17-19. Dr. Harold M. Camp, 203 Lahl Building, Monmouth, Secretary.

Maine Medical Association, Rangeley, June 16-18. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Boston, June 8-10. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Minnesota State Medical Association, St. Paul, May 23-25. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.

Missouri State Medical Association, Jefferson City, May 23-26. Dr. E. J. Goodwin, 634 North Grand Boulevard, St. Louis, Secretary.

National Tuberculosis Association, Colorado Springs, June 6-9. Dr. Charles J. Hatfield, 7th and Lombard Streets, Philadelphia, Secretary.

Nebraska State Medical Association, Lincoln, May 24-26. Dr. R. B. Adams, Center McKinley Building, Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 17-18. Dr. D. E. Sullivan, 7 North State Street, Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 15-17. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

New Mexico Medical Society, Santa Fe, May 19-21. Dr. L. B. Cohenour, 219 West Central Avenue, Albuquerque, Secretary.

New York, Medical Society of the State of, Buffalo, May 23-25. Dr. Daniel S. Dougherty, 2 East 103d Street, New York, Secretary.

North Dakota State Medical Association, Grand Forks, June 1-2. Dr. Albert W. Skelsey, 18 Broadway, Fargo, Secretary.

Oklahoma State Medical Association, Tulsa, May 24-26. Dr. Claude A. Thompson, Manhattan Building, Muskogee, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

Rhode Island Medical Society, Providence, June 2. Dr. J. W. Leech, 369 Broad Street, Providence, Secretary.

South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.

# *Current Medical Literature*

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## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Heart Journal, St. Louis

7: 279-414 (Feb.) 1932

Some Cardinal Circulatory Syndromes. A. M. Fishberg, New York.—p. 279.
Clinical Aspects of Arteriosclerosis. R. W. Scott, Cleveland.—p. 292.
Order of Ventricular Excitation in Human Bundle-Branch Block. F. N. Wilson, A. G. Macleod and P. S. Barker, Ann Arbor, Mich.—p. 305.
*Transverse Diameter of Heart. J. H. Bainton, New York.—p. 331.
*Diuretic Effect of Digitalis. E. L. Kellum, Rochester, Minn.—p. 342.
Gonococcus Endocarditis: Report of Case. H. B. Kirkland, New York.—p. 360.
*Diagnostic Value of Epinephrine in Angina Pectoris. L. N. Katz, W. W. Hamburger and M. Lev, Chicago.—p. 371.
Chart for Differential Diagnosis of Cardiac Enlargement by Means of Roentgen Ray. G. Levene and W. D. Reid, Boston.—p. 380.
*An Instrument to Determine Direction of Electrical Axis of Human Electrocardiogram: Based on Graphic Method of Carter, Richter and Green. M. Goodman, New York.—p. 383.
Coronary Thrombosis with Temporary Complete Heart Block: Case. Olga S. Hansen, Minneapolis.—p. 386.
*Left-Sided Displacement of Heart: Unusual Case. L. H. Sigler, Brooklyn.—p. 388.

**Transverse Diameter of Heart.**—Bainton considers the prediction table of Hodges and Eyster a fairly satisfactory guide in enabling an examiner to judge abnormality in the size of the male heart and to estimate the degree of enlargement. The adjusted standard for females in which the figures for males is reduced by 0.8 cm. is equally satisfactory. One half the internal diameter of the chest in the orthodiagram is a measurement which does not approximate the actual transverse diameter of the normal heart often enough to have much value as a standard guide.

**Diuretic Effect of Digitalis.**—Kellum studied the diuretic effect of digitalis on three healthy human subjects, and on twelve patients with congestive heart failure and considerable edema. One patient was observed and treated on two different occasions. None of the patients exhibited evidence of serious impairment of renal function. The study was made on one of the healthy human subjects three times, the diet and doses of digitalis being varied with each experiment. To insure standard experimental conditions, all the subjects were given a diet of weighed food, as constant as possible from day to day, of known low salt, water and protein content, the same as that employed by Keith, Smith and Whelan. The weighed food both of the healthy subjects and of those with myocardial failure is shown in a table. The total caloric values of the diet given to normal, healthy subjects were adequate, but the food given to patients with cardiac failure was low in total calories. This food was given to the patients with cardiac failure because they were at constant rest in bed, which reduced their caloric requirements, and because it was essential that all food should be eaten. The content of sodium chloride was low in all of the diets with two exceptions, and varied between 1 and 1.5 Gm. daily. The diets of patient 4 and healthy subject 1, experiment 2, contained approximately twice the amount of sodium chloride that was present in the others. Attention is also called to the low water content of all the diets except that of healthy subject 1, experiment 2, and that of patient 4, which contained approximately 300 cc. of water in excess of the others. The importance of the diet of weighed food, which was kept as constant as possible, is emphasized because there have been relatively few standardized experimental studies of digitalis in which such a diet has been employed. On the basis of his observations the author concludes that digitalis, when given to the healthy human subject in therapeutic doses and under the experimental conditions laid down in his study, seems to exert slight, if any, diuretic effect. The diuretic effect of digitalis in cases of cardiac failure with edema is uncertain; such effect may be marked, slight or absent. It is suggested that in the treatment of congestive heart failure and edema digitalis be employed for its beneficial cardiac effect, and that other substances be also employed for their superior and more certain diuretic action.

**Diagnostic Value of Epinephrine in Angina Pectoris.**—Katz and his associates reinvestigated the subject of the diagnostic value of epinephrine in angina pectoris on a group of six cases of known angina pectoris, on a group of six normal interns and in a case of "irritable heart" with precordial distress, and one of syphilitic aortitis with precordial distress. In every case the patient was put to rest in the decubitus position for half an hour before the observations were started. Serial electrocardiograms were made; the blood pressure, heart rate and in some cases the respiratory rate were followed and the subjective symptoms of the patient recorded. As a check, in suitable instances, the patient was subjected to a mild exercise to bring on his symptoms. The results are assembled in tabular form and characteristic curves are shown. In the normal cases, precordial distress was noted in two of the six subjects following epinephrine. In the angina cases, three of the six patients had no pain, although in one of them a typical pain attack was produced by exercise. Of the two abnormal cases (not anginal), an attack of pain over the precordium occurred in one but not in the other. It would seem from these results that the production of pain by epinephrine is not a reliable sign of angina pectoris. Furthermore, the pain when produced in two of three angina cases was long lasting and upset the patients greatly, and in one was not checked by glyceryl trinitrate. Even in the normal cases, one of the subjects had a severe symptomatic reaction presumably because of a susceptibility to epinephrine. On the basis of their observations, the authors conclude that epinephrine as a test for angina pectoris is unreliable in regard to both the symptoms produced and the electrocardiographic changes. This unreliability makes the test of little value, particularly in view of the severe reactions sometimes encountered.

**Instrument to Determine Direction of Electrical Axis of Electrocardiogram.**—By a slight modification of a graphic method for determining the direction and "manifest value" of the electrical axis of the human electrocardiogram described by Carter, Richter and Green and its application in the form of a handy instrument (of which an illustrated description is given), Goodman has found the method of considerable utility. The angle and manifest potential of an electrical axis can be estimated in a few seconds. The instrument is particularly valuable for teaching purposes, because it makes possible the visualization of the changes of the electrical axis in a cardiac cycle.

**Left-Sided Displacement of Heart.**—Sigler reports a case of sinistrocardia, most likely congenital, which from perusal of the literature he considers to be the only one of its kind on record. It was observed in a healthy man, aged 50, who had gone through life without any circulatory or respiratory embarrassment; the heart with its basal vessels was entirely displaced to the left of the spinal column and other mediastinal contents, such as the esophagus, trachea and bronchi, were likewise displaced. Although a history of injury was given, it seemed to be a mere coincidence, as there was no definite evidence of a pathologic condition the nature of which might be considered to be the cause of the displacement.

### Archives of Pathology, Chicago

13: 193-365 (Feb.) 1932

*Elliptical Human Erythrocytes: Report of Two Cases. M. C. Terry, E. W. Hollingsworth and V. Eugenio, Hines, Ill.—p. 193.
*Lesions of Nervous System Resulting from Deficiency of Vitamin B Complex. H. M. Zimmerman and Ethel Burack, New Haven, Conn.—p. 207.
*Renal Denervation: Effect of Snake Venom and Chilling on Renal Vascularization. G. Milles, E. F. Müller and W. F. Petersen, Chicago.—p. 233.
Experimental Infarction of Glomeruli in Dogs: II. Blood Pressure in Chronic Renal Insufficiency. C. R. Jensen and C. W. Apfelbach, Chicago.—p. 255.

**Elliptic Human Erythrocytes.**—Terry and his associates collected fifty-two instances of elliptic human erythrocytes, including two of their own. An analysis of the cases establishes the condition as an hereditary anomaly not incompatible with health and without any proved relation to disease, occurring in white persons, Negroes and mulattoes, and about equally divided between males and females. Both sexes may transmit it. A generation may be skipped. All four blood groups are represented. A necropsy is reported showing that oval cells were present in the smallest vessels of the cardiac muscle, spleen and suprarenals. An occasional oval erythrocyte was found in the marrow of the femur, and the marrow there, instead of having the usual yellow color and thick consistency, was reddish purple and semifluid or lymphoid. In other respects the necropsy disclosed nothing more than was anticipated from the patient's clinical condition, which was chiefly that of severe nephritis. Certain experiments are presented and discussed. Some of them were merely such as were necessary to establish the validity of the cases reported. Others yielded the following observations: 1. When the blood of one of the patients was subjected to the action of hypotonic solution of sodium chloride the oval cells resembled in their behavior normal erythrocytes rather than the poikilocytes of a patient with anemia. 2. Both round and oval cells were shown to exist together in the peripheral circulation, and the oval shape was shown to depend on structure and not on environment. 3. It was found possible to separate the two kinds of cells and to do certain experiments that showed that the oval cells were heavier than the round cells, and that they were more resistant than the round cells to the hemolytic action of hypotonic solution of sodium chloride. A speculation is offered as to the possible atavistic significance of the occurrence of elliptic erythrocytes in man.

**Lesions of Nervous System Resulting from Vitamin B Deficiency.**—Zimmerman and Burack found extensive demyelination in the sciatic, median, ulnar and vagus nerves and in the brachial plexuses of dogs deprived of the water-soluble B vitamins. This myelin destruction was most severe in the sciatic and least severe in the vagus nerves of all the animals subsisting on vitamin B-deficient ration. The extent of the anatomic alterations in the peripheral nerves varied in direct proportion to the severity and duration of the paralytic symptoms. Peripheral polyneuritis of the same type, but of a less degree, was present in the control animals, which were entirely deprived of food but supplied with an adequate amount of the B complex. Ganglion cell changes and disseminated foci of myelin destruction in the brain or spinal cord could not be held responsible for the clinical symptoms of this nutritional disorder. Dogs deprived wholly or in part of the thermostable $B_2$ factor showed large zones of degeneration and vascular proliferation in the vermis of the cerebellum and in the region of the substantia gelatinosa rolandi. A dog that had subsisted throughout the entire experimental period on a highly purified ration deficient only in the heat-stable factor ($B_2$) evidenced degeneration in the fasciculus gracilis of the spinal cord.

**Renal Denervation.**—By roentgenologic study of the vascular bed of the kidney in dogs, Milles and his associates demonstrated that renal denervation is followed by a long persisting dilatation of the cortical blood vessels. Chilling of the animal for a short time causes a definite vasoconstriction of the intact kidney as compared with the denervated organ; with prolonged and fatal chilling, this difference is no longer apparent. Daily chilling over long periods results in marked change of the vascular bed of the normal kidney, while the denervated kidney remains unaltered. A relation of the chill to the onset of acute nephritis, as well as of the effect of repeated spasm of the renal vessels (as with repeated chilling) to the pathogenesis of nephritic changes is made probable. A vascular poison, such as snake venom, causes greater injury to the denervated kidney, the normal kidney presumably protecting itself through vasoconstriction. The effect appears to be true for infectious diseases as well (distemper). No change in the vascular bed was observed with single doses of mercuric chloride or with repeated doses of uranium acetate.

## Colorado Medicine, Denver

**29:** 101-144 (March) 1932

Addison's Disease and Hormone of Suprarenal Cortex. C. F. Kemper and P. A. Dickman, Denver.—p. 105.
Alimentary Anemia. G. M. Blickensderfer, Denver.—p. 113.
Osteochondritis. N. L. Beebe, Fort Collins.—p. 118.
Amebiasis in Colorado: Its Symptomatology. A. J. Chisholm, Denver.—p. 124.

## Journal of Comparative Psychology, Baltimore

**13:** *1-141 (Feb.) 1932*

Age and Intelligence in Rats. N. R. F. Maier, Ann Arbor, Mich.—p. 1.
Effect of Continuous Rotation on Albino Rat. R. M. Dorcus, Baltimore.—p. 7.
Establishing Backward Associations in Forward Learning of Maze by Albino Rats. Mildred Day Dorcus.—p. 11.
Study of Configuration Learning. H. Taylor, Oklahoma City.—p. 19.
Time Discrimination in White Rat. A. C. Anderson, Cincinnati.—p. 27.
Response of White Rat to Tonal Stimuli. B. D. Thuma, Ann Arbor, Mich.—p. 57.
Effect of Rickets-Producing Diet on Learning Ability of White Rats. Margaret Frank, Chicago.—p. 87.
Controlled Observations on Behavior of Kittens Toward Rats from Birth to Five Months of Age. W. W. Rogers, New York.—p. 107.
Gregariousness of Pigeons. W. S. Taylor.—p. 127.
Effects of Periodicity on Learning to Walk a Tight Wire. G. B. Johnson, Denver.—p. 133.

## Journal of Infectious Diseases, Chicago

**50:** 89-184 (Feb.) 1932

Persistence of Pasteurella Avicida in Blood and Organs of Fowls with Spontaneous Fowl Cholera. J. M. Hendrickson and K. F. Hilbert, Farmingdale, N. Y.—p. 89.
**Comparative Study of Antibody Response After Various Methods of* Administration of Mixed Typhoid Vaccine, with Particular Reference to Intradermal and Oral Methods. L. Tuft, Elizabeth M. Yagle and S. Rogers, Philadelphia.—p. 98.
Prevention of Brucella Abortus Infection in Guinea-Pigs: Effect of Convalescent and of Hyperimmune Serum. R. Gwatkin, Toronto, Canada.—p. 111.
Immunity to Vaccination Produced in Rabbits by Repeated Injection of Testicular Vaccine Virus Filtered Through a Basic Filter. S. P. Kramer, Cincinnati.—p. 119.
**Effect of Typhoid Fever and Previous Typhoid* Vaccination on Antibody Response to Inoculation with Typhoid Vaccine. R. F. Feemster, New Orleans.—p. 121.
Metabolic Studies of Streptococci. M. A. Farrell and S. Thomas, Bethlehem, Pa.—p. 134.
Staphylococcus Aureus Agglutinins in Tuberculous Effusions. M. Pinner, Tucson, Ariz., and Marie Voldrich, Northville, Mich.—p. 143.
Variants of Salmonella Pullorum. W. N. Plastridge and L. F. Rettger, Storrs, Conn.—p. 146.
Intranuclear Inclusions in Submaxillary Gland of Rat. M. Juanita Thompson, Toronto, Canada.—p. 162.
Precipitinogenic Action of Minute Quantities of Ovalbumin. L. Hektoen and A. G. Cole, Chicago.—p. 171.
Study of Carbohydrate and Protein Fractions of Meningococci. J. Zozaya and J. E. Wood, Glen Olden, Pa.—p. 177.

**Antibody Response to Typhoid Vaccine.**—A comparison made by Tuft and his associates of the titers of agglutinins and complement-fixing antibodies after intradermal, subcutaneous, intramuscular, intravenous and oral methods of administration of mixed typhoid vaccine revealed a uniformly better and more persistent response after local injection, particularly after intradermal injection. Such results may be explainable on the basis of local stimulation of the formation of antibodies by the reticulo-endothelial cells, which are particularly abundant in the skin and subcutaneous tissues, or possibly by slow absorption of the antigen. The antibody response after any of the methods showed definite dependence on the antigenic potency or the age of the vaccine—the older the vaccine, the less the response. The general observations of others as to time of appearance of the agglutinins and complement-fixing antibodies, the variability in titer and the tendency to early disappearance were corroborated. A complete lack of uniformity in the titers of agglutination and complement fixation was observed in many serums; an adequate explanation for this is not apparent. The antibody response after oral administration of the vaccine was completely negative, in spite of the use of different strains of vaccine and different groups of persons. From a therapeutic standpoint, the intradermal injection of small doses of a freshly prepared and antigenically potent mixed typhoid vaccine receives experimental justification and has in the authors' hands proved satisfactory.

**Antibody Response to Inoculation with Typhoid Vaccine.**—According to Feemster, persons who have had typhoid or who have had inoculations with typhoid vaccine produce larger amounts of antibodies in response to subsequent inoculations with typhoid vaccine than those who have not had typhoid or been vaccinated against the disease. The routine injection of three doses of typhoid vaccine may not give as high a degree of immunity as has been believed. A second or third injection some weeks or months after the first would seem to be indicated. The Widal reaction is less reliable in the case of a person who has been vaccinated two or more times than in that of a person who has been vaccinated only once. The complement fixation reaction is no more reliable than the agglutination reaction in diagnosing infection with the typhoid bacillus. The difficulties and uncertainties encountered in carrying out and interpreting bactericidal tests render the procedure unsatisfactory for the routine diagnosis of typhoid. The severity of the reaction to the injection of typhoid vaccine is in no way related to the immunity that is formed in response to the injection.

## Journal of Nervous and Mental Disease, New York

**75:** 217-360 (March) 1932

Neurovascular Cardiac Disorders: Possibilities in Field of Management. F. J. Farnell, Providence, R. I.—p. 217.
Marked Self-Mutilation Presenting Dorsal Root Syndrome: Case. J. H. Conn, Boston.—p. 251.
Lead Encephalopathy with Recovery: Case. K. Rothschild, New Brunswick, N. J.—p. 263.
Multiple Sclerosis, Associated with Diabetes Insipidus, Which Was Relieved by Lumbar Puncture. E. Q. King, Chicago.—p. 267.

## Journal of Pharmacology & Exper. Therap., Baltimore

**44:** 123-267 (Feb.) 1932

*Contribution to Pharmacology of Pseudomorphine. Janet Travell, New York.—p. 123.
Thio and Thiomethyl-Ammonium Compounds. R. Hunt and R. R. Renshaw, Boston.—p. 151.
Action of Arsenic on Leaves. I. A. Parfentjev and W. K. Devrient, St. Louis.—p. 171.
*Experimental Investigation on Treatment of Toxemia. Part I. G. N. Myers, Boston.—p. 191.
Study of Cardiovascular Responses in Man to Intravenous and Intra-Arterial Injection of Acetylcholine. L. B. Ellis and Soma Weiss, Boston.—p. 235.
Claude Bernard's Theory of Narcosis. V. E. Henderson and G. H. W. Lucas, Toronto, Canada.—p. 253.

**Pharmacology of Dehydromorphine.**—Travell made observations on frogs, rabbits, cats and dogs after oral, subcutaneous, intramuscular and intravenous administration of dehydromorphine acid tartrate in doses varying from 0.1 to 150 mg. per kilogram. Dehydromorphine, administered orally and subcutaneously in large doses, is inactive; injected intramuscularly and intravenously, it produces characteristic effects in the rabbit, cat and dog. The difference in the results obtained after various methods of administration explains some of the discrepancies in the literature regarding the activity of the drug. Dehydromorphine resembles morphine in many of the effects produced by its intravenous administration. It induces, in suitable dosage, prompt nausea, salivation and defecation (rabbit, cat and dog); marked fall in blood pressure after small initial doses, and often no change in blood pressure after continued larger doses (cat, dog); stimulation of respiration with subsequent depression, and death from respiratory paralysis (rabbit, cat and dog); convulsions (rabbits); hypnosis, somnolence and muscular depression (rabbit, dog). It differs from morphine in that it usually causes depression in the cat; it induces acceleration of the cardiac rate in the dog; it does not produce complete narcosis in any of the species studied. The probable seat of some of the actions of dehydromorphine is discussed, and it is suggested that the drug may act directly on the respiratory, defecation and vomiting centers in the medulla. It is demonstrated that dehydromorphine does not exert a curare-like action. A tentative hypothesis is advanced to explain its paradoxical effect on the blood pressure. The characteristic effects of the intravenous injection of dehydromorphine may be partially masked by the previous administration of morphine. The author concludes that her experiments afford no basis for the assertion that certain of the phenomena of chronic morphine poisoning are due to the formation of dehydromorphine from morphine in the body.

**Experimental Investigation on Treatment of Toxemia.**—Myers describes experiments in which he noted that digitalis when administered in a correct manner during the earliest stages of toxemia has a definite life-saving action. Early digitalization is necessary and must be slow and progressive. Animals so treated are able to tolerate several lethal doses of diphtheria toxin without succumbing. Digitalis and strophanthus prevent myocardial degeneration, which is a constant feature of the controls. Digitalized animals always respond by an immediate and profound leukocytosis to an injection of a lethal or a sublethal dose of diphtheria toxin. This increase in leukocytes is much greater than that obtained by injecting toxin into normal animals. Electrocardiographic records taken in these experiments showed no gross changes in cardiac rhythm or conduction.

## Medical Journal and Record, New York

**135:** 209-260 (March 2) 1932

Suprarenal Hemorrhage in Adult: Especial Reference to Hyperpyrexia. B. Seligman, Brooklyn.—p. 209.
Electrocoagulation of Tonsils. W. A. Gross, Chicago.—p. 214.
Injection Treatment of Hemorrhoids. R. V. Gorsch, New York.—p. 216.
Management of Acute Hemorrhages in Peptic Ulcers. M. Einhorn, New York.—p. 219.
Tonsillectomy Under Spinal Anesthesia: Report of Case. H. Cohen, New York.—p. 220.
Value of Epidural Block in Sciatica. L. F. Miller, Chicago.—p. 221.
Nocturnal Head Jerk. W. Moser, Brooklyn.—p. 222.
Psychoanalytic Interpretation of Mental Arrest. L. P. Clark, New York.—p. 223.

## Military Surgeon, Washington, D. C.

**70:** 203-312 (March) 1932

Medical Department in the First Cavalry Division Maneuvers. E. King and R. P. Williams.—p. 203.
Typhoid Fever in Vaccinated. T. J. Burrage.—p. 231.
Streptococcic Stomatitis. S. V. Mead.—p. 238.
Application of Physiologic Chemistry to Pancreatitis. A. M. Hanson.—p. 244.
Recollections of Zamboanga. C. A. Stammel—p. 250.
Service with the Caduceus. R. U. Patterson.—p. 256.

## Minnesota Medicine, St. Paul

**15:** 141-216 (March) 1932

*Operative Treatment of Joint Tuberculosis. M. S. Henderson, Rochester.—p. 141.
*Observations in the Diagnosis of Gallbladder Disease. M. H. Hoffman, St. Paul.—p. 144.
*Diagnosis and Management of Coronary Arterial Disease. M. H. Nathanson, Minneapolis.—p. 150.
Remote Effects of Head Injury. W. H. Hengstler, St. Paul.—p. 163.
Tuberculosis in Rural Community. E. J. Simons, Swanville.—p. 168.
Varicose Veins: Some Special Considerations in Treatment. R. C. Logefeil, Minneapolis.—p. 172.
Postoperative Care of Rectal and Anal Cases. H. F. Bayard, Minneapolis.—p. 180.

**Operative Treatment of Joint Tuberculosis.**—Henderson believes that in joint tuberculosis conservative treatment has its greatest field of usefulness in the treatment of children; operative treatment has its greatest field in the treatment of adults. If the adult patient is in good general condition, and there are no draining sinuses, fusion should be produced when practical. The knee, spinal column, shoulder and hip are anatomically suited to a fusion operation. Each patient constitutes an individual study, and generalities that may be true in the main may not be applicable to the individual.

**Diagnosis of Gallbladder Disease.**—Hoffman presents an analysis of 155 patients who presented symptoms that warranted the removal of their gallbladders. The diagnosis was correct in slightly over 90 per cent. Stones were found in 77 per cent of cases. Pain was considered to be the most reliable symptom. Night pains occurred in 38 per cent of the pathologic cases, and, in the absence of a definite peptic ulcer history, is thought definitely to indicate the presence of gallbladder disease. Digestive symptoms, although suggestive of gallbladder disease, are not of great diagnostic value. The Graham-Cole test is of unquestionable value if the gallbladder fails to fill or if stones are visualized. The other observations are not considered to be very reliable. Eleven normal cases were studied and were found to present about the same symptoms as the pathologic cases. Four patients were completely relieved of their symptoms by the removal of their gallbladders.

**Coronary Arterial Disease.**—Nathanson states that there are two distinct clinical pictures associated with coronary disease: (1) the anginal syndrome, consisting of attacks of pain or acute dyspnea, and (2) the manifestations of congestive heart failure. Coronary disease with congestive heart failure is usually associated with hypertension and presents practically the same problems in diagnosis and treatment as congestive failure from other causes. The diagnosis of the anginal type is frequently of great difficulty, as the clinical picture may be atypical and variable. The diagnostic features of the anginal type are enumerated and discussed and an evaluation is made of the various diagnostic criteria. Significant physical sign are usually absent. The electrocardiogram is of great aid in diagnosis and shows some abnormality in about 70 per cent of the cases. There are two chief indications in treatment: (1) the treatment of the attack and (2) therapy directed toward the underlying pathologic changes and the prevention of attacks. The anginal pain is most favorably treated by the sublingual administration of hypodermic tablets of glyceryl trinitrate and usually requires morphine. Many cases respond satisfactorily to ephedrine. The therapy aiming at the prevention of attacks includes (1) the readjustment of the patient's activities and habits, (2) the use of coronary dilating drugs, and (3) surgical methods for interrupting the sensory impulses from the heart.

## New England Journal of Medicine, Boston

**206:** 315-370 (Feb. 18) 1932

Resection of Right Colon and Anastomosis of Ileum to Transverse Colon After Mikulicz Plan. F. H. Lahey, Boston.—p. 315.
Annual Oration of Boston Medical Library: Haller and the Humanization of Bibliography. J. F. Fulton, New Haven, Conn.—p. 323.
Massachusetts Pneumonia Program. R. Heffron, Boston.—p. 328.
Progress in Study of Cardiovascular Disease in 1930. P. D. Camp, London, England, and H. B. Sprague, Boston.—p. 330.

**206:** 371-428 (Feb. 25) 1932

Umbilical Hernia. R. H. Miller, Boston.—p. 389.
Plan for Management of Arthritis in Large Communities. F. R. Ober, Boston.—p. 392.
End-Results in Series of Sixteen Cases of Fibrosarcoma. R. W. French, Fall River, Mass.—p. 393.
Atypical Familial Dystrophy: Two Cases. G. de N. Hough, Springfield, Mass.—p. 396.
Chance Infections from Typhoid Carriers. G. W. Anderson and C. B. Mack, Boston.—p. 398.

## New York State Journal of Medicine, New York

**32:** 251-308 (March 1) 1932

Acute Glanders in Man: Case Report. L. I. Ross and R. L. Wells, New York.—p. 251.
Plastic Surgery, Its Uses and Limitations. C. R. Straatsma, New York.—p. 253.
Recorded and Resident Death Rates in New York State. J. V. de Porte, Albany.—p. 257.
*What Every Member of Medical Profession Should Know About Protecting Women from Death from Cancer of Breast. J. C. Bloodgood, Baltimore.—p. 259.
Cervical Cancer: Its 1926-1929 Incidence in Five New York State Cities: Its Prevention: Its Future. G. A. Wood, Syracuse.—p. 265.
Vincent's Otitis Media in Infancy. I. N. Kugelmass, New York. —p. 272.

**Cancer of Breast.**—Bloodgood calls attention to the fact that thousands of women who have read the correct information in the daily press or who have learned it from their family physician, or have acquired the modern habit of annual examinations, have shown that the greatest risk a women runs today, if the lump in her breast proves to be cancer, is about 25 per cent, while the ignorant woman who delays largely because of her ignorance and not of fear has less than 10 per cent chance of a cure. Women need no instructions in what the warnings are. They will recognize them in time. But every woman needs special instruction how to act when warned. Recent figures show that when a woman seeks an examination the moment she observes anything unusual in one or both breasts, the chances are that 85 per cent of the warnings will be of such a character and the examination of such a decided observation that no operation or irradiation with roentgen rays or radium is necessary. In about 15 per cent of the cases of a lump of such distinct character it will be discovered by the finger of the physician or the transilluminating light that the lump must be removed, and the lump only. The lump is immediately subjected to microscopic study. In less than half of the cases, cancer or a condition suggesting malignancy will be discovered by the microscope, and the complete operation with removal of the breast must follow. In more than half of the cases, only the lump will have to be removed and the breast will be saved. Therefore the woman who seeks an examination at once runs the risk of cancer in less than 10 per cent of the cases and increases her chances of a cure from less than 10 to more than 70 per cent. Those who delay increase the incidence of malignancy and decrease the chances of a cure. Without doubt annual examinations of all women and semiannual pelvic examinations of mothers, during which the breast will be carefully surveyed, should increase the protection of women from death by cancer of the breast. As yet it is impossible to prevent the development of cancer in a woman's breast, but she can be taught and influenced to have the cancerous lump discovered and properly removed early, so that the chances of a permanent cure are best.

## Philippine Islands M. Assn. Journal, Manila

**12:** 1-52 (Jan.) 1932

Modern Trend of Health Administration. H. Velarde, Manila.—p. 1.
Pulmonary Nocardiosis: Report of Case. C. Monserrat, Manila.—p. 11.
Preventive Medicine. P. F. Russell, Manila.—p. 25.
Foreign Bodies in Esophagus. V. C. Alcantara and C. D. Ayuyao, Manila.—p. 31.

## Physical Therapeutics, Elmira, N. Y.

**50:** 1-40 (Jan.) 1932

Physical and Physiologic Actions and Therapeutics of Static Electricity. C. R. Brooke, Newark, N. J.—p. 1.
Present Status of Hospital Use of Physical Therapy. R. Kovacs, New York.—p. 8.
Recent Developments in Electrosurgery. E. N. Kime, Indianapolis. —p. 9.
Retrospective View of Physical Therapy in Urology. W. S. Pugh, New York.—p. 11.
Some Recent Literature in Dietetics. J. W. Torbett, Marlin, Texas. —p. 13.
*Coagulation of Cervical Canal for Chronic Follicular Cervicitis. G. A. Remington, Chicago.—p. 16.

**Coagulation of Cervical Canal for Chronic Follicular Cervicitis.**—Remington states that by using the proper electrodes or applicators, active and indifferent, with the right amount of milliamperage, one can do an excellent surgical diathermy trachelorrhaphy and curettage. The applicators or electrodes, as he has designed them for his own use, are well adapted to the anatomic structure of the operative field and facilitate rapid effective treatment. With the patient placed on the table in the dorsal recumbent position, the feet elevated in stirrups, the buttocks well down to the edge of the table, a large bivalve vaginal speculum is inserted and adjusted to bring the cervix into good position and good vision. A disk applicator is inserted laterally and slid under the anterior lip, thus elevating the cervix. A ball-tipped electrode is then inserted within the cervical canal up to the internal os, both electrodes are connected to the terminals of the fixed point coagulating unit, and the current selector switch is placed at point 3 for fairly high milliamperage (2,000) to provide a long hot spark. The operator now steps on the foot switch and at the same time slowly withdraws the applicator with a light upward pressure so as completely to cover the roof of the canal; he allows a few seconds for the withdrawal, or just enough time to prevent any unnecessary cramping within the uterine cavity. He repeats this operation four times, making light pressure each time in four different areas, first on the roof or superior wall of the canal, second on the right lateral wall, third on the floor or inferior wall, and fourth on the left lateral wall, or vice versa, also placing the different disk electrode each time on the same side of the cervix on which pressure is made, so that he is always pressing toward the disk. After coagulation of the canal has been completed, the disk is withdrawn and the ring applicator is inserted by holding the shaft straight up over the mons veneris, moving the hand to the patient's left inguinal region, then raising and at the same time pressing down the ring (as in passing a sound in the penis), when it will slide in and around the cervix and fit snugly. The sharp electrode is placed in the long handle, the switch is turned to point 1, the foot switch is stepped on, and all tissue within the ring is coagulated by sinking the sharp point of the active electrode into the tissue to a depth of from one-eighth to one-fourth inch, taking first the posterior lip and later the anterior lip. For the first treatment it would be best to coagulate first the canal and part of the posterior lip or as much as the patient can stand without great discomfort. The degree of sensitiveness varies with patients. The author does not use any local anesthetic in these cases. In the greater number of large boggy lacerated cervices the external os will be a large irregular opening—almost round—instead of a horizontal slit. This is where the ball-tipped electrode is best adapted, as it gets into the folds or rugae and no tissue escapes treatment. It is impossible to do a complete coagulation in one treatment. The average case requires from three to six treatments to assure a good, clean, cervix.

## Public Health Reports, Washington, D. C.

**47:** 479-533 (Feb. 26) 1932

*Tularemia: Occurrence in Sage Hen, Centrocercus Urophasianus. R. R. Parker, C. B. Philip and G. E. Davis.—p. 479.
Health Officer's Viewpoint of Child Hygiene. T. Clark.—p. 487.

**47:** 535-599 (March 4) 1932

The Chemistry of Cell Division: III. Inhibition of Cell Division of Amoeba Proteus by High Dilutions of Copper Salts: Antagonism of Copper and Glutathione. H. W. Chalkley and C. Voegtlin.—p. 535.

**47:** 601-649 (March 11) 1932

National Leper Home (United States Marine Hospital), Carville, Louisiana. O. E. Denney.—p. 601.

**Tularemia.**—Data secured by Parker and his associates from a small area near Roy, Fergus County, Montana, during a period of mortality among local sage hens, have furnished added evidence that gallinaceous game birds are a potential source of human infection. Bacterium tularense was recovered from the tissues of dead and killed sage hens, and also from ticks of the species Haemaphysalis cinnabarina, with which the sage hens were infested. It was not evident whether Bacterium tularense was the cause of the epizootic or a secondary or incidental factor. However, a comparison of data secured from both inside and outside the affected area has shown that sage hens from within were much more heavily tick infested; they were the only ones shown to be carrying infected ticks. The evidence secured suggests that Haemaphysalis cinnabarina, a tick not previously incriminated, is a natural carrier of tularemia. Reports are included of infection with tularemia from quail, of two cases in which there was a possibility that infection was from quail, and of a possible case from dressing a sage hen.

## Southwestern Medicine, Phoenix, Ariz.

**16:** 49-100 (Feb.) 1932

Influence of Heredity, Environment and Early Habits in Development of Personality. M. K. Wylder, Albuquerque, N. M.—p. 49.
Jaundice. F. H. Kruse, San Francisco.—p. 52.
Nephrosis. N. W. Barker and E. G. Bannick, Rochester, Minn.—p. 61.
Carcinoma of Prostate. D. M. Davis, Phoenix, Ariz.—p. 65.
General Consideration in Handling of Fractures, Taking Fracture of Femur as an Example. W. S. Sharp, McNary, Ariz.—p. 67.
Changing Pollen Picture. E. W. Phillips, Phoenix, Ariz.—p. 70.
Agranulocytic Angina. C. A. Eaton, Yuma, Ariz.—p. 74.
Rational Treatment of Pneumonia. H. T. Safford, Sr., El Paso, Texas—p. 77.
Impressions of and Suggestion for Staff Meetings. S. I. Bloomhardt, Phoenix, Ariz.—p. 79.
Dissecting Aneurysm of Aorta: Case. D. M. Davis, L. B. Baldwin and P. Guttman, Phoenix, Ariz.—p. 81.
Radiosensitive Tumors. H. P. Mills, J. M. Greer and W. W. Watkins, Phoenix, Ariz.—p. 83.
Public Health Notes. J. R. Earp, Santa Fe, N. M.—p. 86.

## Wisconsin Medical Journal, Madison

**31:** 146-219 (March) 1932

The Small Community Hospital. A. A. Axley, Washburn.—p. 155.
Spinal Anesthesia: Benefits Conferred on Patient and Surgeon. R. H. Jackson, Madison.—p. 158.
Two Years' Experience with Spinal Anesthesia. F. E. Butler, Menomonie.—p. 166.
*Epilepsy in Children. M. G. Peterman, Milwaukee.—p. 169.
Skull Fractures. A. V. DeNeveu, Milwaukee.—p. 174.
Gastroduodenal Ulcer; Factors That Determine Chronicity. E. H. Mensing, Milwaukee.—p. 177.

**Epilepsy in Children.**—Peterman considers it desirable at present to retain the designation "epilepsy" to describe a certain disease complex of which the most characteristic symptom is periodically recurring convulsions. The convulsions are apparently immediately due, as are most convulsions, to a cerebral edema. The cause of epilepsy and of the periodic recurrence of the convulsive state is not known. The most important problem in the study of a patient with convulsions is a differential diagnosis, and the final diagnosis of epilepsy is made by exclusion. The practical treatment of the epileptic child (if he cannot be placed in a hospital for fasting and the ketogenic diet) may be summarized as follows: (1) a definite daily regimen which includes a long nap and a long sleep, meals at regular hours and a daily bowel movement; (2) a restricted carbohydrate and protein and a high fat diet; (3) fluid restriction to a minimum, at least to 600 or 800 cc. daily and less if convulsions continue, and (4) phenobarbital in large enough doses to control any seizures that may occur after or until the foregoing procedures are established.

# FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Physical Medicine, London

**6:** 223-242 (Feb.) 1932

Types of Arthritis Amenable to Treatment of Pelvic Organs by Diathermy and Ionization. C. A. Robinson.—p. 225.
Mild Radium Therapy. V. Borland.—p. 226.
Electrical Potentials on Human Skin. W. E. Boyd and M. R. Gavin.—p. 228.
Treatment of Gout by Physical Methods. L. C. E. Calthrop.—p. 231.
Ultraviolet Irradiation in Treatment of Diseases of Children. H. H. Perlman.—p. 233.

## British Medical Journal, London

**1:** 317-362 (Feb. 20) 1932

Commemoration of Great Men. W. Trotter.—p. 317.
*High Blood Pressure as an Early Sign of Toxemia of Pregnancy. F. J. Browne.—p. 320.
Synthalin in Treatment of Diabetes. A. P. Thomson, R. J. Gittins and G. Thomas.—p. 322.
Activity of Commercial Preparations of Hog's Stomach. J. F. Wilkinson.—p. 325.
*Note on Aortic Valvular Disease with Reference to Etiology and Prognosis. M. Campbell and J. W. Shackle.—p. 328.
Simple Technic for Photography of Pathologic Specimens. C. J. C. Earl.—p. 330.

**High Blood Pressure as an Early Sign of Toxemia of Pregnancy.**—It is shown by Browne that in the toxemia of later pregnancy a rise of blood pressure often precedes by a prolonged period the onset of albuminuria. During the interval between the rise in blood pressure and the appearance of albuminuria (varying in the reported cases from eleven to eighty-nine days), there are usually no symptoms or signs to suggest that the patient is in any way abnormal. There is some evidence that there may be, in the earlier stages of the pregnancy of patients who later develop toxemia, a temporary elevation of the blood pressure, which soon subsides and which may be an expression of increased neuromuscular irritability and of a greater tendency to vasoconstriction in such patients. The importance, for the timely diagnosis of toxemias of pregnancy, of routine estimations of blood pressure is emphasized. When these are made, treatment can be commenced at a very early period, with the obvious advantage of minimizing the risk of eclampsia and of chronic nephritis. The author believes that the term "albuminuria of pregnancy" is a bad one and is no doubt responsible for much of the permanent kidney damage that has in the past been a sequel of the toxemia of late pregnancy. Its use has pushed unduly into the foreground the albuminuria, which is really a late symptom, and has therefore tended to obscure the early hyperpiesis, and has thus been the cause of dangerous delay in diagnosis and treatment.

**Aortic Valvular Disease.**—Campbell and Shackle report that in a series of cases with disease of the aortic valves, the condition was due to rheumatism in 200, to syphilis in 55, to atheroma in 20, and to all other causes in 21 cases. Out of every six rheumatic cases, roughly, three of the patients had aortic incompetence and mitral stenosis, one had both with aortic stenosis as well, one had aortic stenosis and incompetence, and one had aortic incompetence alone. When there was no mitral disease there were two men for each woman; when there was mitral disease there were two men for every three women. They came under first observation at all ages, least commonly before 10 or after 50. There was so little difference between the ages of those with and those without aortic stenosis that its presence must depend on the severity and nature of the attack rather than on the length of time that had elapsed. Pure aortic stenosis was rarely found, and, as far as could be judged from the pulse pressure, the stenosis was relatively unimportant compared with the regurgitation, even when the signs were well marked. Among the syphilitic cases there were three men for each woman, nearly four fifths being between 40 and 60. Aortic stenosis was rarely or never present, and the average pulse pressure was much greater than in the rheumatic cases (110 instead of 70). Nearly all the atheromatous cases were men, between 50 and 80. Aortic stenosis was more important and more frequently present, the signs of regurgitation being often absent. Auricular fibrillation was present in 30 per cent of those who also had mitral stenosis, in 8 per cent of the rheumatic cases without mitral stenosis, and only rarely in the nonrheumatic group. Left ventricular preponderance was found in about half the electrocardiograms of those with pure aortic disease, normal limits being found in the remainder. The T waves were inverted, most often in lead I, in about one fourth of the rheumatic cases and in about half of the others. The prognosis was enormously better in the rheumatic group. The average duration of life after the development of aortic incompetence was probably twenty years, excluding those who died quickly from active rheumatic carditis. In the syphilitic group, on the other hand, it was not much more than two years after the development of symptoms, few patients living for eight years.

## Irish Journal of Medical Science, Dublin

No. **74**: 49-96 (Feb.) 1932

Some Present Day Aspects of Preventive Medicine. M. H. O'Connor.—p. 53.
Methods of Obstetric Diagnosis and Treatment at Rotunda Hospital in 1909, Compared with 1929. B. Solomons.—p. 67.
Ruptured Interstitial Tubal Pregnancy. B. Solomons.—p. 75.
Various Aspects of Version. J. S. Quin.—p. 76.
Persistent Occipitoposterior Presentations. R. M. Corbet.—p. 81.
Double Abductor Paralysis of Vocal Cords Due to Malignant Growth. T. G. Wilson.—p. 83.
Case of Lung Abscess. G. Bewley.—p. 84.

## Journal of Tropical Medicine and Hygiene, London

**35**: 65-80 (March 1) 1932

*Blackwater Fever. M. Ghiron.—p. 65.
*Achlorhydria in Pellagra. J. B. Guthrie.—p. 71.
Note on Filarial Worm Found in Sections of Nasal Tumor Excised from Child, with Especial Reference to Embryo. A. J. Noronha.—p. 74.

**Blackwater Fever.**—Ghiron studied the serum of four individuals who had suffered from a severe attack of blackwater fever. Serum was taken three or five days after the attack for ascertaining its modifications. It possessed a marked hemolytic faculty in vitro toward blood corpuscles that had absorbed quinine. Of the red cells taken from various animal or diseased subjects, those that belonged to patients with benign and malignant tertian malaria, either treated or not with quinine, had the faculty of being more easily dissolved. Therefore, to obtain an evident hemolytic curve it is necessary to combine three factors: red cells of malarial subjects and quinine and hemoglobinuric serum. The significance of the hemolytic curve is estimated from three points of view; namely, (1) if it is compared with the curve of red cells in quinine solution, (2) if it is compared to the hemolysis of quininized red cells and serum of normal and diseased subjects, and (3) from the importance that has to be ascribed to corpuscles of malarial patients. Therefore it must be concluded that in hemoglobinuric subjects a hemolysin is present which becomes evident when the red cells have absorbed quinine, but principally if they are taken from a malarial subject. In every hemoglobinuric patient a hemolysin is present, even if only attenuated, that may be demonstrated by the method mentioned. This hemolysin acts at different concentration and may disappear after a certain time. Its specific reaction cannot then be demonstrated in vitro. The characteristic points of the reaction are the following: 1. A serum of a hemoglobinuric subject, possessing active hemolysins, can disclose the presence of malaria in the individual who provides the blood corpuscles. 2. The malarial blood corpuscles that have absorbed quinine can reveal the hemolytic properties of the serum of an individual who has had an evident or a latent, clinically incomplete, attack of blackwater fever. 3. The negative reaction in serum of individuals who have suffered from blackwater fever allows the administration of quinine.

**Achlorhydria in Pellagra.**—On the basis of his study of 336 cases of pellagra, Guthrie concludes that the occurrence of hydrochloric acid in the gastric juice in a case of pellagra gives a somewhat better prognosis than if this does not exist, although achlorhydria is no absolute criterion of severity in pellagra. Achlorhydria may constitute a factor in the diagnosis of a doubtful case and may point toward a positive diagnosis. Histamine excitation of gastric secretion gives no striking increase or decrease in the percentage of incidence of achlorhydria noted. It facilitates the test somewhat in the sore-mouthed pellagrin, because it can be used with one insertion of the small tube and without any act of mastication or swallowing. The high incidence of achlorhydria in pellagra would seem to indicate the need of further study of this syndrome in order to shed light on the possibility of a relationship to pernicious anemia, even in the face of unlike blood pictures in the two diseases.

## Lancet, London

**1**: 381-434 (Feb. 20) 1932

Commemoration of Great Men. W. Trotter.—p. 381.
*Arterial Atony and Arteriosclerosis. J. Plesch.—p. 385.
*Diagnosis of Amyloid Disease by Intravenous Injection of Congo Red. J. E. Wallace.—p. 391.
Blood Grouping of Mongolian Imbeciles. L. S. Penrose.—p. 394.

**Arterial Atony and Arteriosclerosis.**—Plesch sets out the thesis that arteriosclerosis is only one phenomenon in a constitutional systemic disease affecting more particularly unstriped muscle. The disease is by no means restricted to local areas; on the contrary, it attacks the whole vascular system simultaneously. The local changes, which are called atheroma, atherosclerosis, ossification of the arteries, and a number of other names, serve the purpose of strengthening the walls of excessively dilated blood vessels at points of greater strain. Arteriosclerosis is a disease that sets in at every age, that can be arrested, and that can be cured in the early stages and beneficially influenced in the later stages; it is not an ailment of old age which must of necessity be progressive and incurable. Even by purely local observation, it would be possible to distinguish between two forms of arteriosclerosis—namely, the arteriosclerosis of old age, due, in the strict sense of the words, to wear and tear, with its local atheromatous calcified areas as secondary mechanical hysteresis, and arteriosclerosis as a disease in itself, a constitutional systematic allergic primary condition of the smooth muscles, the sympathetic nerves, and the connective substance. These two types appear clinically quite independently of each other. Even though the pathologic anatomic alterations show no characteristic indications of the one or other type of the disease, and even if the histologic pictures are vague or very much alike, one is nevertheless compelled at the bedside to make a clear distinction between these two forms of the disease for a great number of reasons. The essential characteristic of arteriosclerosis cannot be the deposition of lime, for at every age, even in infancy, lime is found in the arterial walls in a surprisingly large number of cases. The primary cause of arteriosclerosis is the weakening both of the muscular and of the elastic elements of the walls of the blood vessels. If the weakened blood vessels are not able to offer sufficient resistance to the blood pressure, they become stretched and dilated. At points particularly exposed to dynamic pressure, alterations occur which in the end serve no other purpose than to raise the resistance of the walls. This process of alteration, which is completed by the deposition of lime plates, offers protection against rupture. Calcification and ossification are, therefore, not a disease but a healing process. The first local changes caused by excessive wear and tear in parts of the vascular walls are anatomically characterized by proliferation of the tunica intima at quite an early stage. The various layers and the specific elements of the arterial walls are involved to a varying degree in the disease process. Corresponding with the longitudinal and transverse tonicity of vascular walls, there must be longitudinal and transverse muscles that act independently of each other. The tone of the specific elastic elements must also be taken into account, because longitudinal extension narrows a blood vessel, and an excised blood vessel becomes shorter. The two muscular symptoms are functionally, and therefore also clinically, quite dissimilar in their behavior. The annular muscles counteract more particularly the internal pressure of the blood vessel, and the longitudinal muscles its longitudinal extension, while the elastic fibers of the artery regulate both strain and pressure.

**Diagnosis of Amyloid Disease.**—According to Wallace, the rationale of the diagnosis of amyloid disease by the intravenous injection of congo red depends on the essential fact that amyloid material absorbs congo red. An intravenous injection of an aqueous solution of this dye is made, and the percentage decrease of the dye content of the plasma (or serum) over a period of one hour is estimated colorimetrically. In the normal person an amount of from 10 to 30 per cent is found to have disappeared. In cases of amyloid disease there is a decided increase in the rapidity with which the dye leaves the blood, and a diminution at the end of one hour of anything between 30 and 100 per cent may be recorded.

## South African M. Assn. Journal, Cape Town

**6:** 1-32 (Jan. 9) 1932

Disorders of Sleep in Infancy and Childhood. G. K. Cross.—p. 3.
Disease and the Individual: Short Survey of Some Biochemical Aspects. F. W. Fox.—p. 8.
The New Somerset Hospital. C. C. Elliott.—p. 15.
Clinical Significance of Amebiasis. J. A. Macfadyen.—p. 16.
Analysis of Ninety-Two Fatal Heat-Stroke Cases on the Witwatersrand Gold Mines. E. H. Cluver.—p. 19.

## Gynécologie et Obstétrique, Paris

**25:** 97-176 (Feb.) 1932

Blood Platelets in Course of Menstruation, Pregnancy and Lochial Period. E. Benhamou and A. Nouchy.—p. 97.
*Lateral Pyocolpos. F. Papin.—p. 111.
Radical Treatment for Fixed Retroflexion of Uterus. V. Matveev.—p. 121.
Combined Action of Thymus and Posterior Lobe of Hypophysis in Uterine Inertia. W. Laubscher.—p. 132.

**Lateral Pyocolpos.**—Papin describes a personal case in which the patient at the beginning experienced a periodic loss of black blood (hematocolpos) between the menstrual periods and later had purulent discharges (pyocolpos). The malformation present was what is designated in the literature as pseudodidelphic uterus (the uterine bodies separated and the cervices joined). The author believes that in lateral hematocolpos there is no communication between the blind uterovaginal canal and the normal uterovaginal canal; but when a small lateral opening communicates with the normal uterovaginal canal, open at the base, infection sets in and a pyocolpos results. In the consideration of diagnosis, uterine or uterovaginal malformations should be considered as a possibility. In the surgical treatment of pyocolpos, the intervention can be by the vaginal route or laparotomy and the blind vagina extirpated or simply the septum separating it from the normal vagina destroyed. However, laparotomy and dissection of the vaginal pocket is dangerous when the discharge is purulent. If the lesions are discovered after the hysterectomy (as in the author's case) it is preferable to cut the septum between the two vaginas. However, it is better, if the diagnosis is made early, to use the vaginal route for the intervention.

## Journal Médical Français, Paris

**21:** 1-45 (Jan.) 1932

*Hyperparathyroidism and Osseous Syndromes. P. Sainton.—p. 3.
Osseous and Parathyroid Lesions of Recklinghausen's Disease; Osseous Lesions of Paget's Disease. P. Sainton and J. L. Millot.—p. 13.
*Surgical Anatomy of Parathyroids. B. Cunéo and S. Blondin.—p. 19.
*Infantile Tetany and Parathyroid Insufficiency. M. Lelong and R. Even.—p. 25.
*Chronaxia in Hypoparathyroidism and Hyperparathyroidism. G. Bourguignon.—p. 30.
Chronic Rheumatism and Parathyroids. A. Laporte.—p. 37.
Parathyroid Hormone. H. Simonnet.—p. 40.

**Hyperparathyroidism and Osseous Syndromes.**—According to Sainton, there is no doubt at present as to the relationship which exists between hyperparathyroidism and certain osseous syndromes. The metaplastic diseases, according to Recklinghausen's classification, comprise fibrous osteitis and nonparasitic osseous cysts: Paget's disease, leontiasis ossea, the hyperostosic and metaplastic diseases forming tumors of the maxilla and giant cell sarcomas. Fibrocystic osteitis of Recklinghausen in most cases is a result of a hypertrophy of the parathyroids, usually adenomatous, which mobilize the bone calcium. The author does not believe the syndromes of Recklinghausen and Paget can be dissociated and opposed; the lesions and certain clinical aspects seem to point to analogous processes in the two, while leontiasis ossea is included in the group by reason of analogous roentgen signs, and osteosclerosis fragilis (Albers-Schönberg's disease) by reason of signs pointing to hyperparathyroidism. The author reasons that in osteopathies such as osteomalacia and rickets the decalcification forces the parathyroids to secrete and compensate for the loss in calcium. Therefore, hypertrophy is not always related to hyperactivity of the gland. The parathyroids can be adenomatous and not have any disturbance in secretion, and the adenomatous condition may be concomitant with both hyperparathyroidism and hypoparathyroidism. It is similarly true that patients with parathyroid osteopathies can have only temporary phases of hyperparathyroidism. After a discussion of the clinical, anatomopathologic and therapeutic aspects, he draws the following conclusions: 1. In the presence of a chronic osteopathy localized in one bone, roentgen and clinical examination should also include the rest of the skeleton, including the cranium, and the scapular and the pelvic regions. 2. If there is a chance of the presence of the syndrome of Recklinghausen or of Paget, the parathyroid region should be explored and examined either by palpation or by roentgenography for a probable tumor. 3. The calcium and phosphorus balance should be determined and compared with the activity and the progression of the osseous process. 4. Chronaxia of the muscles should be compared with the biochemical observations. 5. If the investigations lead one to suspect a parathyroid lesion, a methodical surgical exploration should be made and the parathyroid tumor should be removed. 6. After the intervention the patient should be carefully watched for the slightest signs of parathyroid insufficiency, so that hypoparathyroidism can be immediately counteracted by calcium medication associated with parathyroid hormone therapy.

**Surgical Anatomy of Parathyroids.**—Cunéo and Blondin find that in almost all their anatomic observations (95 per cent) the two parathyroids lie in the thyroid space, on the posterior face of the lateral lobe, in the neighborhood of the branching of the inferior thyroid artery; but in a few cases the glands lie under the capsule of the thyroid (4 per cent) or even inside the gland (1 per cent). In certain difficult cases in which exploration is fruitless, the authors advise resection of the terminal segment of the inferior thyroid artery together with the excision of a posterior band of the thyroid parenchyma. But in the majority of cases the authors recommend the following technic: The patient is placed in a position habitual for thyroid surgery. Anesthesia may be general, local or regional, but the authors prefer general ether anesthesia in order to avoid any infiltration that may occur. The best incision is the necklace incision, passing along the lower flexion fold of the neck. In bilateral extirpations, the incision takes the form of a curve slightly concave above and posteriorly; it unites the anterior borders of the two sternocleidomastoid muscles and passes beyond them 5 or 6 mm. The incision ought to be low in order to be hidden by a necklace in women patients. It is sometimes possible to make the incision in the lowest flexion fold, but the position of these cutaneous folds vary. Before incising the skin and the subadjacent cellular and cutaneous bed, one should arrest the hemorrhage from the arterioles and especially the veins, then incise the superficial cervical aponeurosis, and practice a débridement on the sternocleidomastoid muscle, parallel to the muscular fibers, in order the better to isolate the body of the muscle and thus facilitate its separation. Then the medial aponeurosis is incised. To isolate the parathyroids, one must cut the omohyoid and the sternocleidohyoid muscles and reach the sternothyroid muscle. In incising the latter at the level of its external border, one opens the thyroid capsule and penetrates into the parathyroid space. The thyroid capsule can easily be cut vertically at the external border of the sternothyroid muscle in order to put in place two retractors. When one has discovered the parathyroid, it is seized with well controlled dissection forceps and cut at its vascular pedicle. It is well to note that the intervention may be bilateral. The presence of an adenoma on one side does not preclude the presence of one on the other side. The authors did not observe any accidents of tetany when the intervention was limited to the principal gland.

**Infantile Tetany and Parathyroid Insufficiency.**—Lelong and Even discuss the literature and the anatomic, physiologic and therapeutic arguments and conclude that tetany in the child can be conceived as a form of parathyroid insufficiency. The resulting nutritional disturbance can be studied biochemically. Disturbance in calcium metabolism is almost always accompanied by hypocalcemia in young patients. Perhaps the fact that hypocalcemia may be present without tetany, and tetany without hypocalcemia, may be explained by nutritional modifications that are more complex than a simple hypocalcemia. The metabolism of fats, carbohydrates and especially proteins may play a part; the part played by guanidine and its derivative, creatine, has been suggested. The essential factor may be a disequilibrium between the various metabolisms rather than a disturbance in a single metabolism.

**Chronaxia in Hypoparathyroidism and Hyperparathyroidism.**—Bourguignon's studies show that, in general, hypoparathyroidism produces an increased chronaxia and a marked tendency to attacks of tetany through voluntary hyperpnea. On the other hand, hyperparathyroidism involves decreased chronaxia and great resistance (greater than normal) to attacks of tetany by voluntary hyperpnea. In both instances the variations in the chronaxia of the nerves and the muscles are parallel, in contrast to the condition in repercussions in which the chronaxia of the nerve remains normal while that of the muscle varies. The author believes that the latter difference may be due to the fact that the variations of the chronaxia in hypoparathyroidism and in hyperparathyroidism are humoral, while in repercussions the phenomenon is purely nervous and reflex, to which the muscle is more sensitive than the motor nerve. Furthermore, hypocalcemia increases the chronaxia and hypercalcemia diminishes it; some osseous lesions can cause changes in the chronaxia by reflex repercussion; and in numerous diseases with vasomotor disturbances the chronaxia varies with changes in the local circulation. The author believes that the study of the chronaxia of muscles should be given a place in the study of parathyroid disturbances.

## Presse Médicale, Paris

**40:** 217-232 (Feb. 10) 1932

Eczema. R. Sabouraud.—p. 217.
Crushing of Fingers. M. Iselin and E. Berrocal Uribe.—p. 220.
Sea Sickness and Treatment. Gabriel and R. Leven.—p. 227.
Traction Sole for Fracture of Leg. P. Boever.—p. 228.

**40:** 273-296 (Feb. 20) 1932

Abscessed Bronchiectasis, Bronchiectasis-Forming Abscess and Bronchiectatic Abscess. E. Sergent.—p. 273.
*Rapid Form of Exophthalmic Goiter. P. Carnot, H. Bénard, M. Rudolf and P. Véran.—p. 276.
*Periarticular Infiltration with Procaine Hydrochloride in Sprains and Traumatic Arthritis. R. Leriche and R. Fontaine.—p. 280.
Bone Diseases and Disturbance in Calcium Metabolism: Two Cases. P. Delmas-Marsalet.—p. 282.
Angiography and Angiopneumography. A. Ravina, A. Sourice and L. Benzaquen.—p. 287.
Histologic Proof of Removal of Tonsillar Capsule. H. Proby.—p. 291.
Temporary Lowering of Clavicle in Exeresis of Malignant Tumors of Base of Neck. R. Peycelon.—p. 292.

**Rapid Form of Exophthalmic Goiter.**—Carnot and his co-workers report a case in which a woman, aged 29, in good health, suddenly experienced a painful thyroid congestion with considerable increase in the size of the gland, fever to 39 C. (102.2 F.) and extreme agitation. After a slight lull the fever, agitation and toxic signs increased. In one month the patient lost 20 Kg. (44 pounds) and registered a basal metabolism of 200 per cent. The aspect was impressive and the prognosis highly unfavorable: increased fever, exophthalmos, anguish, agitation, and tragic aspect. Death came on rapidly during coma (the disease lasted five weeks). The authors believe that clinically this case represents a remarkable example of a malignant, fulminating rapid form of exophthalmic goiter. The only histologic signs specific for the fulminating form of exophthalmic goiter consists in an extreme intensity and uniform diffusion of the primary or secondary glandular hyperactivity. The glandular hypertrophy is characterized by homogeneity of lesions, considerable epithelial hyperplasia with papilliferous proliferation and a pseudocancerous aspect, and an almost complete absence of colloid. One should hesitate in advising surgical interventions in such hyperacute cases. Medication by administration of iodine may help to place the patient in the best operative condition. Rapid ligation of the thyroid artery under local anesthesia is the best intervention.

**Periarticular Infiltration with Procaine Hydrochloride in Traumatic Arthritis.**—Leriche and Fontaine made this study subsequent to a previous observation of Leriche, who found that when injections of a local anesthetic were made at the level of ligaments and tendinous insertions in articular disturbances it was found possible to dissociate purely mechanical disorders from functional disorders that accompany them and sometimes exist practically alone. Furthermore, in certain instances, a therapeutic influence was noted. In instances in which the mechanical disturbances are reduced to a minimum and the impotence of the functional reflex dominates the scene, the functional disturbance either disappears or becomes less intense after local anesthesia. For sprains and traumatic arthritis the authors recommend repeated periarticular infiltrations, consisting of injections of from 10 to 25 cc. of a 1 per cent solution of procaine hydrochloride (without epinephrine); the injections can be made daily until recovery (sometimes four, five and six infiltrations are sufficient), and the patient experiences no inconvenience. Of course, the authors believe that the most favorable results obtained in their three cases of inveterate traumatic arthritis cannot always be guaranteed, but this therapeutic means should always be considered.

## Clinica Medica Italiana, Milan

**62:** 627-716 (July) 1931

*Regular Extrasystolic Bigeminal Rhythm Associated with Cardiac Insufficiency. R. Capo.—p. 627.
*Pathogenesis of Morgagni-Adams-Stokes Disease. M. Calabresi.—p. 646.
Anatomopathologic Study on Tuberculosis in Miners. G. Borsalino.—p. 659.
Kahn Test for Syphilis. A. Frates and E. Bossi.—p. 674.
*Infantilism and Hypo-Evolutism in Disorders of Hepatosplenic Apparatus. C. Fittipaldi.—p. 689.
Acidosis and Diabetic Coma. V. de Antoni.—p. 704.

**Regular Extrasystolic Bigeminal Rhythm Associated with Cardiac Insufficiency.**—Capo reports, and illustrates with several electrocardiographic records, four observations of bigeminal rhythm occurring in heart patients with grave signs of cardiac insufficiency, following administration of small doses of digitalis or of ouabain. He analyzes the various pathogenic theories of this disturbance of cardiac rhythm and states that the appearance of bigeminal rhythm in the course of cardiac insufficiency may be considered a sign of grave prognosis. The patients studied died within two or three months after the development of the bigeminal rhythm.

**Pathogenesis of Morgagni-Adams-Stokes Disease.**—Calabresi describes a case of Morgagni-Adams-Stokes disease in which, in addition to the ordinary attacks, he observed other attacks similar in their nervous symptomatology but in which the stoppage of the circulation was absent while the oxygen and carbon dioxide content of the arterial and venous blood showed normal values. He discusses the cause of these attacks and concludes that the inadequate supply of arterialized blood brought to the medulla oblongata and the asphyxia of the myocardium may combine to cause also the classic attacks.

**Infantilism and Hypo-Evolutism in Disorders of Hepatosplenic Apparatus.**—Fittipaldi describes two cases of underdevelopment of the body, associated with lesions of the liver and of the spleen, which constitutes a contribution to the study of the hormone relations between the endocrine glands and the hepatosplenic apparatus. He concludes that such relations are not sufficient to explain the syndrome, and that not only the hypo-evolutism but also the hepatosplenic lesions may be regarded as expressions of an abnormal constitution.

## Rivista Italiana di Ginecologia, Bologna

**13:** 1-124 (Nov.) 1931

Comparative Study of Biologic Test of Brouha and Simonnet and Aschheim-Zondek Test. N. Candela.—p. 1.
Changes in Vaginal Epithelium of Women During Menstrual Cycle. I. Davanzo.—p. 50.
*Malignant Tumors Appearing After Radium-Roentgen Therapy. G. Abruzzese.—p. 64.
Late Hemorrhages During Puerperium. F. D'Erchia.—p. 83.
Diagnosis of Pregnancy and Pupillary Reaction. T. Meneghini and C. Duc.—p. 113.

**Malignant Tumors Appearing After Radiation Therapy.**—Abruzzese suggests that it is well to watch carefully tumors not influenced, or only slightly influenced, by radium-roentgen treatment; to question the value of repeated application of such treatment, when the expected result is not secured, and to suspect irradiated tumors that show, following irradiation, an accelerated development, especially if there is a simultaneous appearance, persistence or accentuation of atypical blood losses. These, if they are isolated symptoms in women irradiated for any reason whatever, should be considered as recommending a meticulous diagnosis, with repeated biopsies and careful supervision of the patient, and if there is objective confirmation of the suspicion of a neoplasm not observed before the irradiation, it will be more prudent to exclude a new irradiation, and to resort rather to surgical treatment, which will more likely be complete, and hence definitively effective, the more carefully the operation is performed. This may prevent a diffusion beyond the limits of operability, which is, in such cases, rapid, as may be easily seen.

## Brasil-Medico, Rio de Janeiro

**46:** 169-192 (Feb. 20) 1932

Exanthematic Typhus in São Paulo: Investigation of Transmission by Arthropoda. J. Lemos Monteiro, F. da Fonseca and A. Prado.—p. 169.
*Coconut Milk in Nutritional Disturbances of Infants. M. Gesteira and A. Bahia.—p. 173.
Treatment of Trachoma by Surgical Diathermy. A. Fonseca.—p. 177.
Placental Polypus: Case. C. Fleury de Araujo.—p. 177.
Roentgenography of Maxillary Antra with Iodized Sesame Oil as Contrast *Medium. O. Lopes.—p. 180.*

**Coconut Milk in Nutritional Disturbances of Infants.**—Gesteira and Bahia, on the basis of their experience with fifty infants with acute nutritional disturbances, conclude that coconut milk (obtained by pressing out the juice of the fruit after maceration), has a medicamentous and nutritive value and gives better results than almond milk as a transitional diet in acute nutritional disturbance in infants. The preparation of coconut milk is easier than that of almond milk, and at the same time its price is lower and its caloric value higher than that of almond milk. Because of the high caloric value of coconut milk (620 calories, whereas almond milk varies from 550 to 600 calories), coconut milk, instead of pudding, should be given to infants above 3 months of age, with nutritional disturbances.

## Prensa Médica Argentina, Buenos Aires

**18:** 1129-1176 (Jan. 30) 1932. Partial Index

Histologic Structure of Congenital Xanthoma of Gingival Margin in New-Born Infants. J. M. Jorge and D. Brachetto-Brian.—p. 1129.
*Ligneous Thyroiditis: Two Cases. J. Diez.—p. 1144.
Diaphyseal Circulation of Long Bones: Its Importance in Etiology of Pseudo-Arthrosis. J. C. Caeiro and H. Mainetti.—p. 1156.
Hemolysis of Blood of Cancerous Patients from Effects of Erythrosin. A. H. Roffo.—p. 1167.

**Ligneous Thyroiditis.**—Diez reports two cases of ligneous thyroiditis with a detailed anatomicopathologic study of the excised pathologic portion of the gland. He objects to the opinion that simple thyroiditis is only an early stage of fibrosis of the thyroid. He believes that the recognition of ligneous thyroiditis as a condition well differentiated from simple thyroiditis will increase if the predominant characteristic of the disease, namely, the high degree of retractility of the pathologic tissues, is borne in mind. The disease, because of its sclerosing and atrophic nature, may cause a complete compression of the patient's trachea or esophagus with death of the patient by asphyxia in the first case or by inanition in the second case. The etiologic agent, which up to the present time is unknown (although it is believed that the disease has an infectious origin), is probably the cause of the sclerosis of the tissues. Most authors believe that a cuneiform resection of the pathologic portion of the thyroid is sufficient to cure the patient. Payr, in 1927, reported two cases without recurrences after sixteen years of a cuneiform resection of the pathologic portion of the gland. However, Diez advises wide resection (at least a lobectomy) to prevent recurrences. Wide resection of the thyroidal tissues was made in both cases of the author. No recurrences have been observed a year and a half after the operation was performed.

## Beiträge zur Klinik der Tuberkulose, Berlin

**79:** 113-256 (Jan. 20) 1932

*Roentgenogram of Tuberculosis of Larynx. A. Thost.—p. 113.
Usually Benign Form of Spontaneous Pneumothorax. H. Dorendorf.—p. 142.
Treatment of Pulmonary Tuberculosis by Means of Convalescent Serum. C. Zach.—p. 150.
*Action of Hormone of Parathyroids on Blood Coagulation with Especial Consideration of Tuberculous Hemoptysis. G. F. Bume and T. C. Liu.—p. 154.
Predispsition for Tuberculous Meningitis. D. Orosz.—p. 163.
Primary Tuberculosis and Tuberculous Meningitis: True Subprimary and Early Secondary Meningitis. D. Orosz.—p. 173.
*Involvement of Tonsils in Tuberculosis. J. Otto.—p. 187.
Pathologic Anatomic Investigations on Tuberculosis of Bone System. E. Randerath.—p. 201.

**Roentgenogram of Tuberculosis of Larynx.**—Thost points out that the former pathologico-anatomic investigations on the larynx have the disadvantage that the preparation of the specimens with strong acids causes considerable changes, especially in the calcium deposits. Since calcium has not only a physiologic but also a pathologic significance, the roentgenogram made of the living structure, which shows the distribution of the calcium, gives information about the pathologic processes not detectable by means of histologic examination. In tuberculosis the normal distribution of calcium and the ossification process is inhibited and replaced by a calcium infiltration. In older persons, in whom calcification has already taken place, the calcium decomposes; that is, in tuberculosis there is a decomposition of calcium. In syphilis the process is entirely different. Here osteophytes develop, and sharp, hard calcium bodies, star shaped or spherical, are noticeable on the laryngeal skeleton just as on other portions of the skeleton and corroborate the diagnosis of syphilis. Thus the roentgenogram has diagnostic and differential diagnostic value. If tuberculosis and syphilis concur, the tuberculosis, as the stronger component, supersedes the syphilitic processes. Occasionally, however, the calcium outlines characteristic for syphilis are still visible. The roentgenogram also shows all air spaces and accessory cavities of the upper respiratory tract, especially the small space of the sinus of Morgagni. If this space is absent in the roentgenogram, it is an indication that there is swelling and infiltration of the mucous membrane. Tuberculous processes frequently originate at this site and, although they cannot be detected with laryngoscopy, they can be recognized in the roentgenogram. Another advantage of laryngeal roentgenoscopy is that it reveals changes in the cervical vertebrae.

**Action of Hormone of Parathyroids in Tuberculous Hemoptysis.**—In experiments on fifteen rabbits, Bume and Liu found that following intravenous injection of the hormone of the parathyroids the coagulation time becomes reduced from 40 to 60 per cent. This reduction is manifest ten minutes after the injection, but after twenty-five minutes it begins to increase again, and in ninety minutes the initial value is reached again. Clinical observation of ten cases of tuberculous hemoptysis proved that, following administration of hormone of the parathyroids, the hemorrhage ceased in nine cases. In one case the parathyroidal hormone failed to check the hemorrhage, but in this instance all other hemostatics were likewise ineffective. The hemorrhage finally ceased following oral administration of a vitamin D preparation. In two other cases in which several other hemostatics had been employed without avail, the hemoptysis ceased after administration of the parathyroid hormone preparation. The results seem to be best if 1 cc. (20 units) of the hormone preparation is injected from two to three times daily.

**Involvement of Tonsils in Tuberculosis.**—Careful macroscopic and microscopic examination of the tonsils, especially the pharyngeal tonsils, of forty-five tuberculous cadavers, mostly of children, revealed to Otto that in about 74 per cent of the cases the tonsils were involved in the form of a secondary infection. A primary infection of the tonsils and of the intestine was observed only once. Studies on all the organs and the microscopic examination of the bones of the base of the skull make it appear probable that during childhood the secondary tuberculous infection of the tonsils usually develops by way of the blood stream. Studies in seven selected cases revealed no microscopic signs for the differentiation of a resorptive or of a hematogenic tonsillar tuberculosis. A differentiation is possible to some extent only in the beginning stages. A hematogenic origin is then indicated by the occurrence of numerous, similar tubercles in the subepithelial and in the perifollicular lymphatic tissue. An involvement of the follicles is only rarely observable. A *resorptive tuberculosis* can be assumed in cases of a pronounced involvement of the superficial subepithelial tissue layers. In somewhat advanced cases of resorptive as well as of hematogenic tuberculosis, the lymphatic tissue shows the most changes. The cases studied by the author gave no indications for the development of a tuberculous leptomeningitis by lymphogenic spreading from the tonsils. However, in spite of the frequent secondary involvement of the tonsils in tuberculosis during childhood, this complication has only in rare cases a certain significance for the course of the tuberculosis, for the tuberculous lesions of the tonsils usually heal by cicatrization, and extensive destructive processes are a rarity. The careful study of the hematogenic and resorptive tonsillar tuberculosis shows that it is difficult to determine the pathogenesis on the basis of the histologic observations.

## Deutsche medizinische Wochenschrift, Leipzig

**58:** 283-320 (Feb. 19) 1932

Pneumonoconiosis and Pulmonary Tuberculosis. W. Gerlach.—p. 283.
Asbestosis of Lung. Gerbis and Ucko.—p. 285.
Fate of Patients with Diabetes Mellitus. F. Umber.—p. 287.
Orthostatic Albuminuria and Its Psychophysical Aspects. J. Schreiber.—p. 291.
Myeloid Leukemia as Indication for Prevention of Pregnancy. H. O. Neumann.—p. 292.
*Nutritional Treatment of Diarrhea in Nurslings. S. Rosenbaum.—p. 293.
Artificial Production of Cardiac Sounds and Murmurs. L. Jacobsohn.—p. 295.
Peritonitis in Cirrhosis of Liver. G. Pitsoris.—p. 296.
*Technic of Drop Ether Narcosis. W. Sigwort.—p. 297.*
Effect of Single Excessive Dose of Viosterol. Wulfsohn.—p. 298.
Seasonal Fluctuations in Skin Diseases. F. Stern.—p. 298.
Hygienic Conditions in Barber Shops. Schrader.—p. 301.

**Nutritional Treatment of Diarrhea in Nurslings.**—Rosenbaum begins the treatment of diarrhea in nurslings with a fasting period of from six to twelve hours. Then he gives concentrated rice gruel (10 per cent), at first without the addition of carbohydrates, but on the second day he adds 3 per cent of carbohydrates in the form of sugar, and on the third day he adds 5 per cent. In order to increase the food value he later adds egg yolk to the rice gruel. Beginning with the fourth or fifth day, a milk mixture is gradually introduced into the diet by replacing first one and then two of the rice gruel feedings by milk. As the three kinds of milk that are most commonly used the author mentions protein milk, buttermilk and human milk. To counteract the dehydration he recommends oral administration of water. Only in cases in which the circulation fails is the parenteral administration of fluids advisable, in the form of subcutaneous injection of Ringer's solution. In order to prevent scurvy, fresh fruit juices should be given as early as possible. In severe cases, blood transfusion may prove helpful. Several transfusions of small quantities (20 cc.) are better than a single larger transfusion. As another important factor in the treatment of severe diarrhea the author mentions the permanent administration of oxygen. He describes a simple endonasal administration of oxygen, which he found helpful, especially in persistent intoxications.

## Klinische Wochenschrift, Berlin

**11:** 265-312 (Feb. 13) 1932

Epidemiology of Skin and Venereal Diseases. A. Buschke, A. Joseph and H. Ollendorff.—p. 265.
So-Called Constant Composition of Pure Gastric Juice. H. Kalk.—p. 270.
Malignant Tumors of Testis and Hormones of Anterior Lobe of Hypophysis: Hormonal Diagnosis from Urine, from Fluid of Hydrocele and from Tumor Tissue. B. Zondek.—p. 274.
Action of Various Fractions of Adonis-Bernalis on Heart of Frog. O. Lürmann and K. Lauer.—p. 279.
Animal Experiments and Clinical Experiences on Hormones of Suprarenal Cortex. S. Loewe, L. Marx, F. Rothschild, H. E. Voss and A. Buresch.—p. 281.
Nephelometric Microdetermination of Cholesterol According to Digitonin Method. O. Mühlbock and C. Kaufmann.—p. 284.
Use of "Apiol" as Cause of Characteristic Form of Polyneuritis. A. Reuter.—p. 286.
*Diathermy Treatment in Diseases of Liver. G. Goldgruber.—p. 286.
Differential Diagnosis of Multiple Myelomas and of Osteitis Fibrosa Generalisata. E. Ask-Upmark.—p. 288.
Occurrence in Blood Serum of Complement Fixing Antibodies for Egg and Cow's Milk. A. Strobl and A. Wasitzky.—p. 289.
Cancer Reaction According to Hirszfeld and Halber. J. Marzynski and L. Silberstrom.—p. 290.
Immunigenesis and Skin Reactivity in Earliest Childhood. I. Nasso.—p. 291.

**Diathermy Treatment in Diseases of Liver.**—Goldgruber employed heat by means of diathermy for the treatment of various disorders of the liver, such as in icterus catarrhalis, which may persist for weeks and even for months and may be a pathogenic factor in cirrhosis of the liver, also in cases of arsphenamine icterus that are refractory to other treatments, and in cases of chronic cholangeitis. His object in resorting to diathermy was to influence certain pathologic functions by active hyperemia and improvement of the circulation of the bile, also by resorption of inflammatory infiltrates and of metabolic waste products, further by the stimulation of secretion and of excretion, and by the regenerative action of heat on cells and tissues. By simultaneous application of the duodenal catheter, the author observed the therapeutic action of the diathermy treatment. He observed that whereas without the application of diathermy the bile was pale green, following the treatment it was darker and the flow was more profuse. The technic of the diathermy of the liver was simple. Plate electrodes 12 by 18 cm. were applied to the anterior and to the posterior region of the liver. The current strength was from 1 to 2.5 amperes, which was applied for two hours and was repeated daily or every other day. The total duration of the treatment varied individually. The method was employed in eighteen cases, three of which are reported in detail. Only in two cases did the diathermy treatment fail. Later the author tried diathermy treatment also in other hepatic disorders, such as cholecystitis, cholelithiasis and cholangeitis, and when pains were felt in the region of the liver following cholecystectomy. In conditions of this nature diathermy had been successfully employed by others, but the author was not able to duplicate these successes. On the contrary, he usually was obliged to discontinue the treatment on account of unbearable pains. He is unable to explain this paradoxical manifestation but thinks that the increasing biliary secretion may not have a proper discharge and thus lead to stasis and tension. Another problem that is yet to be investigated is whether the high frequency currents are active only by their resistance warmth or whether they also exert still unknown physical and chemical actions.

## Acta Medica Scandinavica, Stockholm

**43:** 1-93, 1932. Supplement

*Spontaneous Pneumothorax in the Apparently Healthy. H. Kjærgaard.—p. 17.

**Spontaneous Pneumothorax in the Apparently Healthy.**—Kjærgaard believes that "spontaneous pneumothorax in the apparently healthy" is a nosographic category of practical value. This term covers all cases of spontaneous pneumothorax that makes its appearance without any demonstrable cause in healthy persons, in whom no sign of tuberculosis may be demonstrated, either by auscultation and roentgen examination or by bacteriologic examination of the sputum, and in whom the disease takes an afebrile course, without pleural effusion. In this class are also included cases of this description with a slight rise of temperature in the first week of illness, and cases in which the roentgenograms show the presence of an insignificant pleural exudate, too small to be made out on auscultation. The disease is subject to great variation in clinical features and course, and there are all degrees of transitions between the various types. The disease is due to the rupture of a valve vesicle on the surface of the lung. There are two forms of valve vesicles. One form, the scar-tissue vesicles, develops especially in the apexes of the lungs, next to a scar that may originate from a small healed tuberculous process. These scar tissue vesicles are often multiple. The other form, the emphysematous valve vesicles, is produced alone through local emphysematous changes without scar tissue. These may be found as large solitary vesicles on the margins of the lungs. Probably the scar tissue vesicles constitute the more frequent form of valve vesicles. Systematic after-examinations of a large number of patients with long observation period have shown that in practice it may be taken for granted that this disease has nothing to do with active tuberculosis. So these patients should be spared the loss of time and the expense of a sanatorium treatment as well as the fear of pulmonary tuberculosis. The author suggests that spontaneous pneumothorax in the apparently healthy be called "pneumothorax simplex."

## Ugeskrift for Læger, Copenhagen

**94:** 187-214 (Feb. 25) 1932

*Application of Group Characteristics in Criminology with Especial Regard to Examinations of Stains. L. Christensen.—p. 187.
One Thousand One Hundred and Ninety-Eight Aschheim-Zondek Reactions: After-Examination. H. C. A. Lassen.—p. 198.

**Application of Group Characteristics in Criminology.**—Christensen reviews the results obtained by the University Medicolegal Institute by the absorption method of group determination of stains and says that the work is encouraging both from the scientific and from the criminologic standpoint. Fourteen cases are reported, in most of which the investigations of blood and semen stains, also one urine stain, done at the request of the police, gave valuable indications.

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## OBSERVATIONS ON THE EFFECTS OF OXYGEN THERAPY

### I. CLINICAL OBSERVATIONS IN HEART DISEASE

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The past few years have witnessed the introduction into clinical medicine of an elaboration and intensification of the methods of administering oxygen-rich atmospheres for the amelioration of various diseases. Many workers and investigators in this field have published reports of their observations with results, for the most part, indicating the good effects of this method.

There is, however, some difference of opinion as to the degree of improvement to be expected from the use of oxygen, just which physiologic mechanisms it alters or modifies, and in which clinical conditions it is indicated. Certain claims for the efficacy of oxygen therapy may be considered unduly enthusiastic, even bordering on the extravagant—as is, unfortunately, so frequent an occurrence in the introduction of new or modified methods of therapy in clinical medicine. Conversely, certain reports may be accused of minimizing or disparaging its good effects.

In the present series of papers, an endeavor will be made by us (collaborating as a group in which are represented an internist, a physiologist, a biochemist, and their associates) to present the results of a combined bedside and laboratory study of a series of clinical cases in which oxygen therapy was employed, and thus to evaluate the rôle of an oxygen-rich environment as a therapeutic agent. In order to make this evaluation more accurate, an attempt was made to avoid as many other variants as possible. The patients were hospitalized for a short period before they were exposed to oxygen, and their management was stabilized. Observations made during this period were used as controls. The clinical management of the patient was kept as constant as possible during the course of the observations, excepting when the condition was obviously getting worse in spite of oxygen.

### PREVIOUS WORK

The interest in anoxemia, or "oxygen want," was created to a large extent by the studies of Haldane[1] and Barcroft[2] and their associates on the effects of high altitude, which are summarized in reviews written by these authors. Following this work the conception developed, and is now generally accepted, that anoxemia is an important factor in many diseases. Barcroft[2] drew attention to the presence of several types of anoxemia, which shared a common symptomatology. The three major types are:

1. Anoxic anoxemia, in which the hemoglobin of the arterial blood is for one reason or another not saturated with oxygen; that is, the hemoglobin in the arteries does not have the full amount of oxygen it is capable of holding. This type of anoxemia occurs when the inspired air is low in oxygen, or the aeration of the alveoli is impaired, or the diffusion of oxygen from the lungs to the blood is interfered with, or when part of the venous blood is shunted into the arterial system without coming in contact with air-containing alveoli.
2. Stagnant anoxemia, in which the minute-flow of blood is diminished.
3. Anemic anoxemia, in which the concentration of hemoglobin capable of carrying oxygen is reduced, whether by loss of red blood cells, or by mutation of the hemoglobin; viz., into methemoglobin, carbon monoxide hemoglobin and the like.

Heart failure, as is well recognized, is accompanied by the stagnant type of anoxemia and many of its symptoms and effects are produced in this way. Shock and acute coronary thrombosis can be considered as causing acute forms of stagnant anoxemia. In heart disease, especially in subacute bacterial endocarditis and in the hypertensive type associated with chronic glomerulonephritis, a severe anemic anoxemia may be present.

As might be expected when the circulation through the capillaries is slowed, a greater reduction in the oxygen content of venous blood than is normal, that is, an increased venous unsaturation, was found in cases of heart failure by Means and Newburgh,[3] Lundsgaard,[4] Harrop,[5] Scott,[6] and Barach and Woodwell,[7] among others. In cardiac decompensation there also occurs an anoxic anoxemia, which was first demonstrated by Harrop,[5] who showed that the hemoglobin of arterial blood in heart failure was not completely saturated with oxygen, and this has been confirmed by Barach and Woodwell,[7] Campbell, Hunt and Poulton,[8] Rabinowitch[9] and others. Not all cases of heart failure have

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From the Medical Clinic and the Heart Station, Michael Reese Hospital.

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[1] Haldane, J. S.: The Therapeutic Administration of Oxygen, Brit. M. J. **1**: 181 (Feb. 10) 1917; Symptoms, Causes and Prevention of Anoxemia, and the Value of Oxygen in Its Treatment, ibid. **2**: 65 (July 19) 1919; Respiration, New Haven, Yale University Press, 1922.

[2] Barcroft, J.: Anoxemia, Lancet **2**: 485 (Sept. 4) 1920.

[3] Means, J. H., and Newburgh, L. H.: Studies of the Blood Flow by the Method of Krogh and Lindhard, Tr. Am. A. Physicians **30**: 51, 1915.

[4] Lundsgaard, C.: Studies of Oxygen in the Venous Blood, J. Exper. Med. **27**: 179 (Feb.) 1918.

[5] Harrop, G. A., Jr.: The $O_2$ and $CO_2$ Content of Arterial and Venous Blood on Normal Individuals and in Patients with Anemia and Heart Disease, J. Exper. Med. **30**: 241 (Sept.) 1919.

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[8] Campbell, J. M. H.; Hunt, G. H., and Poulton, E. P.: An Examination of the Blood Gases and Respiration in Disease, J. Path. & Bact. **26**: 234 (April) 1923.

[9] Rabinowitch, I. M.: The Output of the Heart per Beat in Heart Disease, Arch. Int. Med. **36**: 239 (Aug.) 1925.

this arterial oxygen unsaturation even when they have increased venous oxygen unsaturation, as was shown by Scott,[6] Meakins, D'Autrebande and Fetter,[10] Fraser, Harris, Hilton and Linder,[11] and Kininmonth.[12]

The usual clinical test for anoxemia is cyanosis. Presumably this is a measure particularly of the anoxemia in the capillaries of the skin or mucous membranes. As Lundsgaard and Van Slyke[13] have shown, the skin color is dependent on the concentration of reduced hemoglobin and not on the oxygen saturation of the blood. In other words, regardless of the oxygen saturation, cyanosis will occur when the reduced hemoglobin equals 30 Gm. per hundred cubic centimeters of blood instead of the normal 5 Gm. per hundred cubic centimeters. Naturally, as Wiggers[14] reemphasized, the skin is an imperfect colorimeter which is affected by the vascularity of the region examined and by the thickness and pigmentation of the layers overlying the vessels. Lundsgaard and Van Slyke[13] pointed out that it is primarily the reduced hemoglobin in the capillaries which gives rise to the cyanosis. They also showed that the reduced hemoglobin in the capillaries is roughly the average of that in the arterial and venous blood. Consequently, slowing of the circulation, local or general, will lead to cyanosis even without the presence of an appreciable amount of reduced hemoglobin in the arterial blood. Cyanosis is therefore an index of stagnant as well as anoxic anoxemia.

Severe anoxemia, whether produced by cardiac disease or otherwise, alters the action of the heart directly as well as in many indirect ways. The subject has recently been summarized by Wiggers[15] and only the most important facts will be repeated here. Anoxemia leads to an acceleration of the heart rate, an elevation of systolic pressure; a slight drop in diastolic pressure, and an increase in pulse pressure may or may not occur (Greene and Gilbert[16] and Schneider[17]). The minute volume of flow is decreased in advanced anoxemia (Schneider and Truesdell[18]), although milder degrees have apparently the reverse effect (Strughold[19]). This early stimulating effect and later depressant action is apparently a direct action on the heart and is accompanied by dilatation (Strughold[19] and Jarisch and Wastl[20]). In addition, Resnick[21] has recently shown that anoxemia influences the conduction system of the heart, mild grades improving and severe grades depressing auricular, intraventricular and auriculoventricular conduction. Fatty degeneration of the heart, according to Barach,[22] may result from severe anoxemia. Other effects are produced by the increase in organic acids, the changes in the carbon dioxide of the blood, and as a result of the dyspnea set up by the anoxemia (Wiggers[15] and Peters and Van Slyke[23]).

Apparently the first attempt to administer oxygen in the treatment of a patient with cardiac insufficiency was made in 1908 by Beddard and Pembrey,[24] who found that breathing was improved by inhalation of oxygen. This finding was confirmed by Barach and Woodwell[7] and by Campbell, Hunt and Poulton.[8] Barach and Woodwell[7] found that inhalation of from 40 to 60 per cent oxygen mixtures for two to four hours increased the arterial and venous oxygen saturation, in the former to almost normal values. The cyanosis decreased, the breathing became slower, the pulse rate decreased, the carbon dioxide of arterial and venous blood increased in some cases, slurring of the Q-R-S lessened in two cases with bundle branch block, and the amplitude of the deflection decreased. Benedict and Higgins[25] had already shown that the slowing of the pulse was an effect of increased oxygen environment in normal persons.

Campbell, Hunt and Poulton[8] found that with the decrease in ventilation following inhalation of oxygen the alveolar carbon dioxide content rose. Boothby and Haines[26] pointed out that oxygen treatment is valuable only in relieving the patient of the added load and danger of anoxemia and must be continued until the anoxemia is relieved.

An extensive series of studies on the effect of oxygen therapy in heart disease was made by Barach and his associates.[27] In one group of cases presenting congestive heart failure and cyanosis, four were on the basis of arteriosclerosis and myocardial degeneration; two were active rheumatic cases with arterial anoxemia, and one was of long standing rheumatic involvement with a small amount of arterial anoxemia. This last case was not improved by oxygen. After a stay in a chamber with between 40 and 50 per cent oxygen for a time up to five weeks, the degenerative and the active rheumatic cases showed the following:

1. Clinical improvement manifested by relief of dyspnea, orthopnea and cough, slower pulse rate and disappearance of cyanosis.
2. Increased arterial oxygen saturation.
3. Marked increase in the arterial carbon dioxide content, a tendency for the $p_H$ to become more alkaline, a decrease in one case of lactic acid of the blood and, occasionally, a decrease in hemoglobin or red blood cells.
4. Decrease in pulmonary ventilation, usually with slowing of breathing.
5. Decrease in basal metabolic rate in a case in which it was elevated prior to administration of oxygen.
6. Decrease and subsequent disappearance of edema dependent on residence in 50 per cent oxygen, coming on from three to five days after commencement of oxygen therapy and associated with diuresis.
7. Increased vital capacity.

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The active rheumatic cases showed less striking changes than the degenerative, especially less diuretic action. Two cases of heart failure on the basis of pulmonary fibrosis and one on the basis of emphysema were also found to have similar improvement.

In four cases with coronary occlusion, Levy and Barach [27] found that oxygen therapy caused subjective improvement shown by relief of restlessness and respiratory embarrassment. Cyanosis was diminished or abolished, respirations slowed, Cheyne-Stokes breathing when present disappeared and the heart rate slowed. Barach [27] found in three cases of coronary arteriosclerosis in men in the fifth or sixth decade of life, accompanied by chronic cardiac pain present even while at rest in bed, that residence in oxygen lessened the frequency and severity of the anginal pain attacks. Baker [28] recently reported improvement of bundle branch block on administering an oxygen-rich atmosphere.

While oxygen therapy in recent years has made a fairly secure place for itself in the treatment of the pneumonias, in certain postoperative complications and some other diseases associated with cyanosis and anoxic anoxemia, its rôle in the treatment of diseases of the heart and circulation is still *sub judice* despite the reports quoted. It is in this type of disease that the major emphasis of our investigation has centered because we have felt the desirability of adding to our armamentarium any real advance in methods of treatment of this difficult and at times hopeless disease. Other types of cases were also included to serve, in a way, as controls.

### METHODS

With only one exception, a patient with acute coronary thrombosis, each of the patients who served as a basis of this study was observed for varying length of time in the ward or in private rooms before being placed in the oxygen chambers or tents. A number of routine control observations were made and the patients' management and, if possible, the progress of the disease stabilized. The routine observations included the usual clinical history, complete physical examination, blood pressure determination, chemical examination of the blood, electrocardiogram and the following special examinations: arterial blood oxygen content and saturation, carbon dioxide content of arterial serum and $p_H$ of arterial serum, the blood being obtained by puncture of the radial artery. Venous blood pressure both by direct and indirect method, vital capacity, pulmonary ventilation rate and breath holding time were also noted. In addition, the water intake and output were recorded.

The patients after this preliminary study were then placed in oxygen chambers [29] (in a few instances in oxygen tents) maintained at constant temperature (70 F.) and low relative humidity (30 per cent) with the proportion of oxygen kept between 45 and 50 per cent. The time of residence within the chamber varied from three to twenty-seven days. Several patients were returned to atmospheric air and subsequently returned to oxygen a second time, depending on the progress of the case and the particular problem under consideration. On the permanent return to the ward, observations were continued. The present report will deal only with the general clinical impressions and conclusions. The special examinations referred to are reported elsewhere.[30]

### OBSERVATIONS

Six patients with various types of cardiac disease were studied: three, aged 38, 42 and 44 years, respectively, with the diagnosis of rheumatic heart disease; three others, aged 60, 61 and 73 years, respectively, of the group generally considered as the degenerative type of heart disease, associated with generalized arteriosclerosis, particularly of the coronary vessels.

We shall first present brief reports of these six cases and then discuss them with a view of analyzing the effects of oxygen therapy.

### REPORT OF CASES

Case 1.—Mrs. C. B., aged 42, a secundipara, admitted for the second time to the hospital, Feb. 25, 1931, had complained since September, 1930 of "heart trouble," pain and swelling of the abdomen, edema of the ankles and orthopnea. The condition became worse following a sore throat six weeks previous to admission. The diagnosis was made of rheumatic heart disease, mitral stenosis and insufficiency with cardiac hypertrophy, auricular fibrillation and advanced congestive heart failure (class III).

After two days in the ward she was placed in the oxygen room for a period of eleven days. She was removed from the oxygen room, March 10, and placed in an oxygen tent two days later in an apparently moribund condition. At the end of three days in a state of delirium she tore off the tent and it was not replaced. She was discharged thirteen days later.

It was the clinical impression that there was no improvement during the first oxygen-rich period but marked improvement during the second period, followed by subsequent further improvement until compensation was again established. The patient at present is completely compensated. Diuresis started sometime after leaving the oxygen tent and was apparently related to digitalization and not to oxygen therapy.

Case 2.—Mrs. L. G., aged 38, a nullipara, admitted to the hospital, Sept. 21, 1930, had complained of "heart trouble," indigestion, palpitation, irregular pulse, orthopnea and edema of the legs since August, 1930. The diagnosis was made of rheumatic (and postdiphtheritic) heart disease, mitral stenosis and insufficiency with cardiac hypertrophy, auricular fibrillation, advanced congestive heart failure (class III) and recent infarction of the base of the left lung.

After fifty-five days in a private room she was placed in the oxygen room without other change in management. After a twenty-seven day stay in the oxygen room she returned to her private room, and she was discharged nineteen days later.

It was the clinical impression that there was improvement during oxygen therapy with progressive disappearance of the residual condition at the left base of the lung. The patient at present is completely compensated.

Case 3.—Mrs. S. B., aged 44, a quadripara, admitted to the hospital for the fourth time, Aug. 13, 1930, had complained for the past twelve years, and especially during the past seven years, that following colds she had dyspnea, precordial pain, orthopnea, edema of the legs and swelling of the abdomen. Her previous hospital admissions were for recurrent congestive heart failure. The diagnosis was made of rheumatic (and postscarlatinal) heart disease, mitral stenosis and insufficiency, aortic and tricuspid insufficiency, cardiac hypertrophy, auricular fibrillation, recurrent advanced congestive heart failure (class III), and old and recent infarction at the base of the right lung.

After a stay of six months and fourteen days in the ward, she was placed in the oxygen room for eleven days. On removal she was kept in the ward for six days and again placed in oxygen for seven days. Three days after removal from the tent she died.

It was the clinical impression that no improvement occurred during oxygen therapy. Death occurred in spite of all methods of therapy, including oxygen. No diuretic action of oxygen was noted.

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[28] Baker, B. M., Jr.: The Effect of Cardiac Rate and the Inhalation of Oxygen on Transient Bundle Branch Block, Arch. Int. Med. 45: 814 (May) 1930.

[29] These chambers, constructed by a grant from the Louis Asher Fund, have been made available for this research by Dr. William Thalhimer, who has organized the procedure in using them.

[30] Katz, L. N.; Hamburger, W. W., and Rubinfeld, S. H.: Observations on the Effects of Oxygen Therapy: II. Changes in the Circulation and Respiration, Am. J. M. Sc., to be published. Cohn, D. J.; Katz, L. N.; Soskin, S., and Hamburger, W. W.: Observations on the Effects of Oxygen Therapy: III. Blood Chemical Changes, ibid., to be published.

Case 4.—Mrs. R. R., aged 60, an unipara, admitted to the hospital for the fourth time, July 15, 1930, complained of dyspnea, orthopnea, and severe agonizing precordial pain radiating to the left shoulder, lower jaw and left arm, two weeks before admission. Her previous admissions were also for heart failure. The diagnosis was made of arteriosclerotic heart disease, coronary sclerosis (with coronary occlusion), myocardial fibrosis with cardiac hypertrophy, angina pectoris, congestive heart failure (class III) and diabetes mellitus.

After four months in the ward the patient was placed in the oxygen room. On the sixth day of her stay in the oxygen room she died.

It was the clinical impression that the patient's course was progressively downhill. The patient was refractory to all forms of therapy, including oxygen. Oxygen had no diuretic effect.

Case 5.—H. B., a man, aged 73, admitted to the hospital, Feb. 23, 1931, complained of sudden acute dyspnea, with cyanosis, pallor and productive cough, three days prior to admission. The diagnosis was made of arteriosclerotic senile heart disease, coronary sclerosis with recent coronary occlusion, paroxysmal auricular fibrillation, emphysema, and congestive heart failure (class III).

The patient was placed immediately in the oxygen room and kept there sixteen days. He was discharged from the hospital twenty days later.

It was the clinical impression that during oxygen therapy there was marked improvement with relief of dyspnea, lessening of cyanosis and drop in pulse rate. The moisture at the lung bases continued, and weakness and cyanosis returned after withdrawal from oxygen. No diuretic effect of oxygen was noted.

Case 6.—Mrs. D. P., aged 65, a nullipara, admitted to the hospital, Jan. 2, 1931, suffered from vertigo, faintness and syncope, for ten days prior to admission. The diagnosis was made of arteriosclerotic heart disease, coronary sclerosis, myocardial fibrosis, partial auriculoventricular heart block and bundle branch block, Adams-Stokes syndrome, emphysema, no congestive heart failure (class II-b).

After three days in the ward she was placed in an oxygen tent for six days. After forty-four days more in the ward she was discharged.

It was the clinical impression that the patient's general condition improved during oxygen therapy, although no consistent change in the cardiac mechanism was observed. Oxygen had no diuretic effect.

## COMMENT

Patient 2, a woman, aged 38, one of the three rheumatic patients, had rheumatic and postdiphtheritic heart disease with mitral involvement and auricular fibrillation, and was resident in oxygen the longest time (twenty-seven days). She was the only one to secure what might be thought to be entirely satisfactory results clinically, with a complete return of compensation, and with the clearing up of an extensive residual pulmonary process at the base of the left lung, which was either an infarction or a pneumonic consolidation. The improvement in this lung complication seems particularly suggestive in view of the long duration of the process, persisting over a period of fifty-five days in ordinary room air in spite of all other methods of therapy used prior to oxygen therapy. The conclusion seems most probable that the disappearance of the lung process must be related in some fashion to the only variant in therapy; namely, oxygen.

The results in the other two rheumatic patients were not so promising. Patient 1, a woman, aged 42, with mitral stenosis and auricular fibrillation, showed no improvement during the first period of eleven days of oxygen-rich atmosphere. In fact, during this period—possibly because of the temporary postponement of digitalis therapy—her clinical course became progressively worse. However, after forty-eight hours' return to the ward, at which time digitalis was started—her condition being more critical—oxygen was again administered, this time in a tent, since she was too ill to be returned to the chamber. All observers at this time agreed that it was the clinical impression that oxygen was a life-saving measure and that without it the patient would have undoubtedly died. After three days of oxygen the patient objected vehemently to the enclosure and tore the tent off, and from this time on she slowly became compensated. Her recovery was obviously also related to the use of digitalis. This patient illustrates that oxygen therapy cannot be substituted for digitalis in a case presenting auricular fibrillation with rapid ventricular action.

Patient 3, a woman, aged 44, the final rheumatic patient, the mother of four children, had rheumatic and postscarlatinal heart disease, and aortic, mitral and tricuspid involvement with auricular fibrillation. She failed to show any improvement whatever, in spite of two trials with oxygen of eleven and seven days, respectively. Death occurred three days after the end of the second administration of oxygen. In scanning this patient's history, one sees that the recurrent periods of decompensation extended over a much longer time than the others—twelve years—and with particular severity and increasing frequency during the past six or seven years, as contrasted with a history of decompensation of only six months in case 1 and only six weeks in case 2. Likewise, the extent and degree of cardiac involvement was much greater in this fatal case than in the other two. One therefore concludes that, although in certain patients and under certain conditions oxygen appears to be a useful and active therapeutic agent, its usefulness and activity are subject to restrictions similar to those applicable to other therapeutic agents, such as digitalis, physiologic rest, diuretics and morphine; namely, if the integrity of the circulation, the reserve strength of heart muscle and the competence of the heart valves are too far spent, no therapeutic agent, oxygen included, is of avail in restoring the vital force to the circulation, and death ensues. In this connection it may also be of interest to observe that this patient, who died, was the oldest of our small series, and her damaged heart had already successfully withstood the strain of four successive pregnancies.

Turning now to the three patients with degenerative heart lesions, the first, patient 4, a woman, aged 60, with arteriosclerosis and diabetes, and with a previous history of recurrent (three) hospital admissions for heart muscle failure, entered the last time with a history of obvious acute coronary closure. After approximately four months of ward care, during which time the clinical course of her disease was progressively downward, she was placed in the oxygen chamber with no appreciable benefit, death ensuing six days later. One must conclude again that, in the face of widespread, chronic, progressive disease, oxygen, together with other therapeutic measures, has definite and sharp limitations. One point, however, should be emphasized in this case; namely, that oxygen therapy was not used until very late in the course of the disease, at least four months after the attack. It is conceivable that, had oxygen been instituted earlier, the result might have been quite different. The value and need of the early use of oxygen in the pneumonias has been quite convincingly demonstrated and in all likelihood applies to its use in cardiovascular disease as well.

The second patient with degenerative heart disease, patient 5, a man of 73, with an arteriosclerotic disease of the heart, with an acute coronary closure three days prior to admission, was placed in the oxygen chamber immediately on his entrance to the hospital. His subjective complaints of severe acute dyspnea, cough, restlessness and air hunger were immediately relieved, while objectively his cyanosis, pallor, pinched and anxious facies and mild tachycardia were measurably improved. After sixteen days of residence in the chamber he was removed to a private room, leaving the hospital three weeks later, apparently quite recovered except for the persistence of slight moisture at the bases of the lungs, some general weakness and pallor. His convalescence at home has been quite uneventful. While the patient might have recovered as promptly without oxygen, nevertheless one must be equally frank in definitely crediting oxygen with the prompt and effective relief of distressing subjective and objective conditions, thus possibly placing the heart and circulation in a most favorable situation for recovery. This alone, all would agree, is of great consequence and importance, both to the patient and to the physician, and of itself, in a given case, alone might justify the use of oxygen. Similar symptom controlling values are attributed to other therapeutic agents—morphine for controlling pain and dyspnea, digitalis for auricular fibrillation with rapid ventricular rates and diuretics for edema. While perhaps none of these are of themselves curative or crucial remedial agents, no physician, in his care of persons sick with heart disease, would care to get along without them.

The last arteriosclerotic patient, a woman, aged 65, with partial auriculoventricular block and an Adams-Stokes syndrome, was placed under oxygen to inquire particularly into its efficacy in improving intraventricular conduction as suggested by the work of Baker.[28] She remained in an oxygen tent for six days, during which time there was evident a general clinical improvement as evidenced by relief from the vertigo, the faintness and syncopal attacks from which she suffered, and a general impression of improvement in her restlessness, appetite and sleep. Careful and repeated electrocardiograms were taken before, during and after oxygen therapy, but without demonstrating consistent changes in the cardiac mechanism.

### SUMMARY

We may summarize our impressions and conclusions at the present time as to the value of oxygen therapy in diseases of the heart and circulation by the general statement that it has a definite, though possibly limited, rôle in the treatment of these conditions. We feel that this general statement, in the light of our experience, should be further amplified and qualified as follows: It appears that in those cases associated with pulmonary complications, such as congestion or consolidation, infarction, edema of the lungs and the like, oxygen may be of particular value. We feel further that oxygen in no sense should be considered a substitute for the older, well accepted method of therapy, namely, the proper use of digitalis, morphine and diuretics, but should be used in conjunction with them to serve as a useful and valuable adjunct. In critically ill or apparently moribund cardiac patients an oxygen-rich atmosphere may prolong life, add somewhat to the comfort of the patient, or stop the downward course of the disease and aid in the progressive return of compensation. Miracles cannot be expected, and in the presence of prolonged, advanced, progressive cardiac disease, as is true also of other available therapeutic measures, oxygen cannot achieve the impossible. Additional factors, adding to the burden of a probably poor prognosis, are the age of the patient, and, in a woman with a damaged heart, the history of repeated pregnancies. As in pneumonia, if oxygen is to be used it should be instituted early and promptly if the best results are to be obtained.

Symptom controlling values are attributed to other therapeutic measures, viz., morphine for controlling pain and dyspnea, diuretics for relief of edema, and digitalis for slowing the ventricular rate in auricular fibrillation with rapid ventricular rate. While none of these are of themselves crucial remedial agents, their use is justified even though they sometimes fail to act. In like manner, even if cure or improvement are not always to be expected, the relief of dyspnea, cyanosis, restlessness, tachycardia, the contribution to the sense of well being, and improvement in appetite, color and sleep may well repay the time, effort and expense of instituting oxygen treatment.

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# PSYCHOTHERAPY AND GENERAL PRACTICE

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A recent number of the *Pennsylvania Medical Journal* contained a comment to the effect that the readers of papers before different medical groups should use care in ascertaining where their presentation might be most appropriately presented. "The physician who first and usually sees the patient is the general or family physician." For this reason, I wish to present briefly a few points about some of the patients who have been seen at the Institute of the Pennsylvania Hospital. These patients are those who have been greatly troubled with what is called general nervousness, depression, or other emotional difficulties. During the course of the day's work, both in the outpatient department and with the resident patients of the institute, one is astounded not only by the psychiatric difficulties and the evident need for good mental hygiene but also by the close association of these problems with those of general medicine found in the history or in the physical condition of the patient. Most of these patients are referred to the psychiatrist by the general practitioner, and the very troubles with which the psychiatrist is now dealing have undoubtedly been handled, knowingly or blindly, by the family physician, who, unfortunately, seems to be less and less in evidence. Since most of these patients go to see their family physician, it seems important that the experience gained by the neuropsychiatric specialists should be passed on directly and purposely to the physician who is usually consulted first, the general practitioner. One gets the impression that to handle some of these patients successfully the physician needs to be present in at least three identities; namely, doctor, confessor and lawyer. The present-day success of the shady sisters in therapeutics, as well as the popularity of unorganized quackery and charlatanism, is a warning of how necessary it is to manage skilfully the mental and emotional side of the patient, as well as his physical welfare. Many of the complaints and discomforts heard in office practice and in convalescence from serious illness or surgical procedure are out of proportion to the physical weakness present. Examination and treatment of the emotional life of such a patient

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From the Consultation Clinic of the Institute of the Pennsylvania Hospital.

may result in great benefit to the physical illness as well as to the mental readjustment.

There are certain times during the progress of each individual from birth to death when stress and strain seem to make greater inroads. For brevity, I shall discuss briefly one case taken from each age period in which the stresses or strains may be particularly troublesome.

The first, childhood, is that period of childhood wherein the child becomes aware of his own identity as a person in relation to the human individuals about him. At this time, accentuated by the arrival of a baby brother, one child learned that the physical comforts and also the paternal and maternal love must be shared with the newcomer, or with other identities in the environment. A physical illness at this time placed the child in the center of the picture again and he emerged victor over the anxious parents, at the expense of the other associates in the environment. No matter how skilfully the medical regimen and treatment may be carried out, if the psychologic and emotional factors of illness are not carefully considered, difficulty may follow. This is particularly true of those patients who have epidemic encephalitis or any other of several generalized illnesses wherein there may be a high fever or a prolonged convalescence. In such an illness there is an organic nervous system undergoing unusual sensitiveness in its reactions and readjustment. Likewise, the mental or emotional impressions of the child are oversensitive, and their reactions are liable to be more extreme. No specific example is cited here, for not a day goes by that many cases are not seen. This is the type of case which is called "behavior problem" and the patients fill our child guidance clinics, juvenile courts, and children's institutions, although but a small percentage of them are criminal or deficient.

The second age period needing special consideration is that period of transition from childhood into early adolescence, ordinarily called puberty. At this time a great change is seen in boys and girls physically, but this change physically can never be as evident to the outsider as the change in feelings and interests which are entertained by the individual within. The points of view of the child become altered to those of an adolescent who is aware of new stirrings and a new consciousness. A great widening of mental aspirations and contact, as well as greater interest in physical accomplishment, takes place. If this transitional progress is made intelligently and without undue interference by environmental demands, it is usually not too difficult. If there is some physical disability, it may act detrimentally. One 12 year old boy was told by his parents, on advice of the family physician, that he had serious heart trouble and must never play outdoors with the other boys or he would die suddenly. From the age of 12 on he limited his activities more and more, until he was remaining indoors constantly, living only in day dreams and phantasy formation. This widened in extent until it began to undermine the normal working of his mind, and he was approaching a serious mental disease. A long continued reeducation of this boy's ideas and habits helped to correct the condition, but much irreversible damage was done to his personality. A second boy had trouble in adjusting to the awakening of sexual life within him and developed periods of depression because of nocturnal emissions and an impulse to masturbation. Therapy on the psychologic side desensitized him sufficiently to remove the frequency of his emissions and the intensity of his attention on his sexual stirrings.

A third age period, in some ways associated with the second, comes when the young adolescent finds the responsibilities of the economic world descending on him. The extreme ambitions of youth must be curbed because of economic necessity for family or self. Emotional conflicts often result, and this tendency to emotionalism may be displaced on some minor medical or surgical illness. A young woman of 20 had intense dysmenorrhea every menstrual period, and spells of vomiting. In addition there were frequent spells of diarrhea, intense headaches and sleeplessness. Detailed medical examination revealed undernourishment, considered to be secondary, and slight malposition of the uterus, which was easily corrected. The patient did not improve in any way, although she "was told there was nothing wrong with her by three professors in a medical school." Treatment from the psychiatric standpoint aided her in disposing of anxiety over economic limitations, worry over irregularities in conduct of other members of her family, as well as removing much concern over physical discomforts and sensations. The headaches, sleeplessness, vomiting, and diarrhea entirely disappeared following the psychotherapy, and the dysmenorrhea was greatly relieved, although no new or special physical treatments were given that had not been for some time ineffectual. The physical treatments were necessary and were the most important treatment points of the case, but they were ineffectual until the other factors were handled in conjunction.

The fourth age period might be called the turning point in life and comes as the menopause or involutional period. It is almost as active on the emotional side in men as it is in women, although one is not conscious, usually, of any physical manifestation of its presence. Perhaps it is correctly called "the dangerous age," but not in the usual sense ordinarily meant. Up to this time the individual sees himself progressing, looking forward. Now comes the time when certain phases of life are past and he must look both directions. Some take the view that they are on the downhill side of life and do not adjust skilfully, not realizing that this may be the most useful time of life for real accomplishment for themselves and others. Illness of any type at this time hits heavily if a good attitude of mind is not present. A patient having had a rather disappointing life as far as family and loved ones are concerned was working intensely hard, endeavoring to have her work make up for what she did not have in other ways. She became more and more exhausted, feeling more and more discouraged. Loss of weight developed, a neuritis began, and she finally had to stop work. Medical treatment succeeded in stopping her loss of weight and relieved the neuritis, but with this advance there developed constant regurgitation of food, crying spells, weakness and dizziness on exertion, and an internal sense of emotional tension which the patient said "made her feel as if she were going crazy." Months passed and no progress was made, and she was getting more and more depressed because of her unimproved condition and loss of time at work, as well as loss of money. Psychiatric treatment over a few weeks' time gave her a chance to pour out the worries, disappointments and unhappy thoughts she had had for years, and she began at last to make a slow but definite improvement to a recovery which placed her on a level of efficiency in work and happiness that she had not enjoyed before in the major part of her lifetime. As is true in so many patients at this particular age period, the glances she was taking at the "downhill side" of life had constituted a great item in contributing to the activation of her anxieties.

The fifth and last age period which may be outlined definitely may be the most indefinite of them all. This time may come when the physical infirmities of beginning old age seem to be greater than the enjoyable experiences of life at the same time. Some "do not grow old gracefully" and the physical difficulties of late life may prove to be a source of too great concern and anxiety. Therapy from the psychiatric standpoint is certainly as difficult as from the medical and the surgical standpoint but does make its contribution in giving relief. One man of 66, in good condition physically, was left very weak and depressed following a severe attack of influenza. He became worried over his weakened condition and feared a penniless old age. He developed extreme anxiety over a temporary digestive upset. A slight irregularity of the heart increased this anxiety until he was so worried that he was sleepless almost every night. One worry about his condition supplanted another, although none in themselves were of any significance. The vicious cycle served to develop one functional physical difficulty after another, and effective medical therapy accomplished its result only after intensive emotional psychotherapy was instituted. This patient is similar to many that we know of who have found readjustment successful after turning to Christian science. The emotional outlet they obtained under such a banner achieved its result. It is regrettable that it happens far too often under such circumstances, and as a result other patients strive for the same result and lose opportunity for health and happiness.

Our cases are by no means limited to these age periods, but those cited serve as examples for these special times. The variation of symptom combinations is no more limited than that seen in any medical clinic and office. One woman of 70 was unable to rid herself of terrific headaches due to cerebral arteriosclerosis until she had some emotional problems worked out, reducing the hypertension with resultant relief of the headache. Another woman of 50 got no result from repeated medical cures for her alcoholism, although she could quit easily for indefinite periods under a hospital regimen. With the help of her physician she worked out some feelings of inadequacy and inferiority she had had, and a recourse to alcohol did not seem necessary. Perhaps she had an organic makeup which made it easier for her to become alcoholic, but she became better acquainted with her mental makeup or attitudes, to the extent that she was able to adjust more satisfactorily without the alcohol as a refuge. A middle aged woman had been troubled with digestive upsets for years. They finally subsided for no known medical reason, and immediately she began to think people were talking about her, planning things against her, and she showed the signs of a definite paranoid mental picture. The connection between the two conditions is difficult to understand, but some relationship is certainly suggested.

Therapy, whether purely physical or purely mental, achieves results. Thyroid disturbances are nearly as common in the office of the psychiatrist as they are in that of the internist. It is striking how a basal metabolism can be reduced to normal limits by living a proper physical regimen and carrying out proper medical treatment. In a woman of 27, in whom an active thyroid disturbance had proved resistive to treatment by rest, compound solution of iodine and other medical measures, it was more striking to see what reduction in the basal metabolism took place with clinical improvement in classic symptoms when a great deal of emotional readjustment was made.

There is one type of case that seems to be fairly common in our present experience. I am thinking of several patients who have very similar complaints and symptoms, consisting of a feeling of great lassitude and weakness, lack of initiative, and a sense of physical and mental inferiority. In many of these cases there is a progressive loss of weight or a very marked undernourishment. Cartoonists seem to be aware of the frequency of these individuals in the community, and their essential characteristics, for we all are familiar with the lanky characters of the comics who are usually depressed or irritable, pepless or discouraged, and complaining of their health. This type of case has proved very resistive to our usual medical therapy, the patient not feeling any improvement that remained constant nor gaining or holding weight at any acceptable level.

Psychotherapeutic work with these people has proved to be of some assistance in getting them to a better level, both mentally and physically.

One side seems to help the other. In the office of the general practitioner, where we see so many people carrying the usual cares and troubles of life, it seems important to give consideration to that side of their personality. The individual is really an integrated whole, consisting of mental and physical aspects, each dependent on the other and influencing each other most profoundly. The effective prescription given for the best interests of the individual and patient should, in the ideal sense, contain therapeutic elements that will act as a specific for the mental side as well as for the physical.

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# TRAUMATIC INGUINAL HERNIA

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Ever since the word "rupture" was used to denote hernia, there has been a widespread opinion that trauma is the responsible factor in the causation of the condition. The supposed relationship between injury and hernia is still accepted almost universally by the public; but most surgeons and many physicians long ago abandoned this view, their disbelief being based largely on observations made at operation. In medicolegal cases this whole topic is a matter of controversial importance, often vexing and perplexing to all concerned.

Before the situation is considered in detail, one should familiarize oneself briefly with (1) the basic anatomy, (2) the surgical operative observations, and (3) the pathologic reports.

The anatomy of the inguinal region may be briefly said to consist of an avenue called the inguinal canal, the uptown end of which is the internal ring, and the downtown end the external ring. Marching along this avenue may be seen certain male habitués, the spermatic cord accompanied by nerves and blood vessels, which disappear from sight after they pass through the downtown ring. Normally, both of these rings are mere slits or holes, but in some persons they are perfectly definite

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openings existing since birth and thus these individuals are congenitally prepared to have these openings plugged by pouting peritoneum, which in turn forms a very definite protrusion, which is called a sac. Hence, a hernia starts by being born and thus, by a process of gradual growth, sooner or later becomes apparent to the possessor or to the examiner. In other words, a congenital or preformed sac is always the essential precursor, and in every respect it denotes an attempt to buttress a weak area with peritoneum. If this sac appears at the upper end of the avenue, it is called an oblique or indirect hernia; but if it appears lower down it is called a straight or direct hernia. It has been recognized, of course, that a direct hernia is more like a ventral hernia and that it represents a grade of muscle weakness far more marked than in indirect hernia. To this extent it can be said that an indirect hernia is always congenital and that a direct hernia may be congenital or acquired. If acquired, it is on the basis of the preexisting weakness. It is known that normally this region is well protected by an interlacing group of muscles and that these are covered by a strong fascia. It is also known that these muscles are sometimes flabby, that often their interlacing is defective, that the lower end of the canal (the inguinal triangle) is often left without any muscle barriers whatever. It is known, too, that the fascia is often quite thin and that many times it has slits and gaps without any apparent cause. The essentials of this anatomic foundation can be summed up by the statement that in every case of inguinal hernia there is a basic defect, a congenital anomaly, just as predestined as a patent foramen ovale, or a clubfoot, or six toes. Nobody disputes these fundamentals for they have been known for centuries, and each generation of mankind has been heir to them; hence this discussion relates not at all to the production of a hernia by a given injury but, on the contrary, revolves about the problem of the aggravation of a hernia by injury.

The question, then, is: What is the relationship of trauma to an already existing hernia? One can take the ground that the hernia is "congenital," that it is "incipient," that it is "potential," that either ring is "dilated" or "lax," and that the injury in question is the causative factor because it suddenly produced intra-abdominal pressure enough to make the hernia apparent to the patient or to the physician. Intra-abdominal pressure, *vis a tergo,* so to speak, is obviously the only possible source of the aggravation and hence the element of greatest importance.

I[1] have ventured to compare the birth of a hernia with the birth of a child. The inguinal canal can be said to represent the cervical canal, and the internal ring is like the internal os and the external ring like the external os. In the one case at "full term" the presenting part is a fetus and in the other case a hernia. But in each case there was previous impregnation, continued growth, gradual dilatation and *vis a tergo.*

If, then, there is no formation of a hernia due to injury, except in the presence of actual laceration (virtually incisional hernia), what are the essentials of aggravation? This can be summated by saying that adequacy is the basic factor. If the violence is sufficient to produce enough intra-abdominal pressure to make the hernia evident, then this sudden onset should give appropriate immediate symptoms. In other words, anatomic and surgical common sense tells one that any quiescent sac suddenly dilated must inevitably register symptoms. It is known that any tug or enlargement or twist of a sac composed of peritoneum always becomes manifest; that has been seen during an operation on a developed hernia under local anesthesia with the patient half asleep from morphine or barbital. If it registers thus in a patient supposedly inert, how much more should it register in a patient unprepared? It is also known how a patient under local anesthesia reacts to manipulation of the omentum, the intestine or the region of the vas or testicle. And yet, despite all this, there are some who maintain that a hernia can be assigned to a forgotten or distant injury, and that the presence of the lump itself is all that is necessary to connect the accident and the alleged sequel. They reason that there must be some overt act to make the hernial mass appear, that this "something" is strain registering as intra-abdominal tension. It is the "last drop" that fills the pitcher and causes it to overflow, and hence this "last drop" is the responsible factor. That sort of reasoning could also adequately answer the question: "Who won the war?" or "What caused the depression?" It is the same kind of reasoning that asserts that the last pain gave birth to the child. If there is to be a relationship between the accused injury and the resultant hernia, there should be certain demonstrable proofs. What are some of these?

1. *Adequate Violence.*—This presupposes intra-abdominal pressure. Hence the nearer and more direct the violence, the greater the probability. A blow on the back should be by far a less likely factor than a blow on the abdominal wall. A strain of the abdomen, as by lifting or pushing or pulling, is an adequate cause of intra-abdominal pressure; so is repeated coughing, vomiting, straining at stool.

2. *Adequate Effects.*—These should be immediate for the reasons already given. Pain is the chief sign and it often is of the testicular variety, sufficient to cause imminent syncope, nausea and sometimes vomiting. Swelling ensues promptly and often this is accompanied by edema or ecchymosis. Tenderness on pressure is present, and the patient should protect himself accordingly. Disability due to these three cardinal signs should be immediate and in duration is proportionate to the extent of the increase in the size of the original hernia.

If pain, swelling, tenderness and disability occur as the immediate result, what will the physician find on examination? Obviously these subjective signs will be made objective by palpation, and if ecchymosis is present, further corroboration is afforded. A sac suddenly dilated is painful, and any manipulation of it will be resented, even after the lapse of twenty-four hours or more.

If, then, the foregoing prevails, there is no question as to the relationship, as to the adequacy of the cause or the effect. These are the criteria that make the determination as between the ascribed or claimed, and the ascribable or actual, cause. The patient may honestly enough believe that his manifestations are due to a given source; but the physician can prove by the history and the examination whether or not his surmise is correct. The patient may believe that his attack of colic was due to green apples; but the physician knows that it is due to gallstones. The patient may think that his pain in the back was due to lumbago from sitting in a draft; the physician knows that it is due to a kidney calculus. Not many people now believe that typhoid comes from sewer gas, but twenty years ago that was a rampant etiologic assertion. Ten years from now the traumatic origin of hernia will be just as obsolete. The older textbooks, in listing etiologic factors, would acclaim as chiefest of all "alcohol, syphilis, gout and trauma." The "and trauma" is still present, but it also is on the way out as a scapegoat.

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[1] Moorhead, J. J.: Traumatic Surgery, Philadelphia, W. B. Saunders Company, 1917.

If, then, these essentials are necessary to link the hernia to the injury, what is to be said regarding the typical case, the vast majority of them, in which the patient finds the lump and then recalls some injury more or less remote? How can the pain be accounted for when the patient says: "I remember I had a sudden sharp twinge and I found a lump that night?"

My belief is that the sac is at times empty and at times filled. That is known, because of the many cases in which at one time a lump has been seen and felt and again no lump could be demonstrated, even after coaxing it to appear by all sorts of strains. If the sac is empty or filled, a puff of gas, a twirl of the omentum, a pinch of the neck of the sac, a contracture of overlying muscle, a wrench of the nerve—all or any of these can cause temporary pain. But pain itself, as previously stated, is not enough; there must be evidence of distention of the sac before the accusation is susceptible of surgical proof, and this registers by the signs already narrated.

Now, aside from these definite signs of aggravation, there are certain collateral clinical facts that make me say that aggravation of an already existing hernia is extremely rare as the outcome of any kind of trauma.

Statistics show that in the draft age (from 21 to 30 years) of approximately 2,754,000 men examined, 4 per cent of them had hernia well enough developed to be nonacceptable for full military service. If in that decade of 21 to 30, forty in each thousand had a hernia, how many in the decades beyond this must have hernia?

If this is so, a large proportion of male patients treated for other things must have hernia. Obviously, the greater the injury the greater the possibility of aggravation. Hence fracture of the pelvis, the hip, the spine should often be accompanied by signs of aggravation of a preexisting hernia. In my own experience with the injured I have never encountered hernia as a complication of trauma of any type, crushing abdominal and chest injuries included. This to me is one of the best proofs that isolated trauma is an exceptionally rare accelerating factor. It is pertinent to add that incarceration or strangulation occasioned by trauma is also exceeding rare. Most patients with strangulated hernia enter the hospital after working hours, usually in the early morning hours. My observation is that strangulated hernia is less common than formerly, and certainly I am now less often called out of bed to operate for this acute abdominal condition.

If thus far the improbability of an isolated or single trauma being responsible has been stressed and if hernia has failed to be found as an associate of severe adjacent injuries, is there still further proof? Yes, there are two more. One is the operating table proof, the biopsy. If the hernia is recent, a matter of hours or a few days, then certainly there should be demonstrable evidences such as edema, exudate, hematoma, recent adhesions and engorgement of vessels. I have never seen any such manifestation, and in a number of my cases the operation has followed the alleged onset by only a few hours. What are the manifestations? The classic situation is that the sac is hidden, that it has to be searched for and, when found, is detached only by dissection of adhesions that give every indication of long duration. Further, the size, texture or consistency of the sac is no index as to its age, for it is known that some old hernias have thin sacs and some new hernias have thick sacs. Likewise, the contents of the sac afford no clue as to the duration unless the group in which bands of adhesions bind the intestine or omentum to the sac is excepted. There is also that group in which the omentum is worn smooth and has assumed a conical or tapered contour from long residence in the sac. It is against every precept of abdominal surgery to expect recently traumatized intestine or omentum not to show appropriate evidences of irritation such as edema, exudate, hematoma, and fibrin flakes. All these are absent, even in recent cases, and the point is that at the operating table practically every case gives manifold evidences of ancient origin.

There is still another proof, namely, the pathologic observations. Some years ago Smith of Waterbury, Conn., called attention to the value of submitting the removed sac to the pathologist to determine whether or not there were signs of recent traumatic or inflammatory changes. Surely that should be a crucial proof, and, accordingly, there has been a pathologic report in practically all of the 232 cases used for the purpose of this review. The constant finding is chronic peritonitis, and the pathologists are of the opinion that it would require at least one year of irritation to convert the normal peritoneum of the sac into the state of chronic irritation usually encountered.

Here, then, are assembled a series of proofs to demonstrate that the assertion of the patient should not be accepted in view of the anatomic, surgical and pathologic proofs to the contrary. It is another example of the fallacy of accepting the assigned instead of the assignable cause. One is assertion; the other is demonstration. The vast majority of people believe that a blow on the breast is a precursor of that tumor which subsequently appeared. As medical men we know that this relationship is exceedingly rare and that in the vast majority of instances the blow was a mere coincidence.

Now, in the formation of hernia, in the development and inevitable progression of this condition, constant or repeated intra-abdominal strain is, of course, a factor in the march toward the external appearance of the "lump." But that is not the theme of my remarks, and I take no exception to the assertion that continued or repeated strain is an important element. As a matter of fact, I believe that every potential hernia grows, assuming that the individual subjects himself to repeated intra-abdominal strain, as represented by such every-day incidents as work, play, straining at stool, coughing, sneezing, vomiting and the like.

In passing, the question of recurrence after operation is of importance. Published statistics vary as between 2 per cent and 17 per cent, and obviously there is no such wide disparity if identical cases are subjected to review. The low rates of recurrence include children, women, and those in nonlaborious occupations; and in this group relapses naturally will not be numerous. If workmen alone are cited, then the recurrence rate will be higher, and, of course, recurrence will be greater in the direct than in the indirect varieties. A direct hernia, as stated, is virtually a ventral hernia and indicates that the possessor has weak abdominal supports to begin with and thus is not a good candidate for surgical repair. My own rate of recurrence among workmen is approximately 9 per cent, and to me the causes of operative failure are usually assignable to one of the following:

1. Incomplete closure of the external or internal ring.
2. Failure to recognize the coincident occurrence of indirect and direct hernia.
3. Postoperative complications such as coughing, vomiting or infection.
4. Excessive abdominal strain after leaving the hospital.

The majority recur within the first six months, but no final estimate of success or failure is worth much until five years has elapsed.

As to type of operation, I favor the Bassini method, with or without transplantation of the cord, and double suturing of the fascia. I have not used fascia lata except in that group in which the inguinal triangle has to be patched or protected because of inability to suture the muscle to the fascia, notably in the direct and recurrent varieties.

I use chromic catgut for the deeper layers and nonabsorbable material (cotton or silk) for the skin.

My former practice was to allow the patient to get out of bed on the twelfth day, but in the past two years I have modified this on the theory that early mobilization was just as good practice in hernia surgery as it is in fracture or joint surgery. Hence I now allow the patient out of bed on the eighth day, believing that in a selected group there will thus be less disuse atrophy and hence earlier return of normal support. By this plan I believe that the recurrence rate is lessening. I permit return to light work two weeks after leaving the hospital, and resumption of full work two weeks later. I caution all the men to bend forward when lifting or straining so that intra-abdominal pressure will thereby be lessened.

There is a group in which muscle and fascia are so firm that mere tying off of the sac is apparently all that is required. By contrast there is another group in which every resource appears inadequate for holding purposes. I am thereby reminded of my experience with other types of trauma, notable fractures. There is an inherent indeterminable healing factor in every individual, and until one tries, one does not know what this factor actually is. In hernia repair as in wound or fracture repair, there is the unknown "nonunion" element that cannot be appraised until success or failure announces itself by the lapse of time.

### STATISTICS

Statistics have been compiled by my assistant Dr. Walter D. Ludlum, Jr.

In two hundred and thirty-two consecutive adult male cases, 182 were unilateral and 50 were bilateral; there were 18 recurrent cases. Ninety-five per cent of the men were between the ages of 20 and 60 years; 52 per cent between 20 and 40. The average age was 37.5 years. The greatest proportion, 32 per cent, occurred in the fourth decade, from 30 to 40.

The duration in 12 per cent was less than one week; in 40 per cent, less than one month; in 75 per cent, less than one year.

The onset was sudden in 66 per cent, the result of a definite strain in 60 per cent, and of a gradual onset in 34 per cent.

It was direct in 25 per cent, indirect in 23 per cent, and direct and indirect in 36 per cent.

In the last five years, spinal anesthesia has been used in 86 per cent and gas ether in 14 per cent.

The Bassini operation was used in 47 per cent; the Bassini without a cord transplant in 40 per cent.

The recurrent group included eighteen cases, or 8 per cent. The time since prior operation averaged six and one-half years. The average duration of recurrence was twenty and one-half months; the average duration of symptoms, four and one-half months.

Complications included one death (0.4 per cent) from peritonitis due to bladder injury; pneumonia or pulmonary complications, 6.8 per cent, and suppuration, 3.8 per cent.

In 63 per cent of the series reported, fibrous thickening of the sac occurred in 52 per cent, inflammatory changes took place in 16 per cent, fibrous and inflammatory changes took place in 10 per cent, and no changes were found in 22 per cent.

The same figures pertain to the group with sudden or with gradual onset.

### CONCLUSIONS

1. The preformed sac is the essential factor, and this is the congenital element of greatest importance.
2. Every inguinal hernia in the adult male has an inherent and inevitable tendency to increase and, sooner or later, may become manifest to the possessor or to the examining physician.
3. Aggravation of the hernia by some form of intra-abdominal pressure can be accomplished if the violence is adequate and the symptoms are appropriate. These symptoms are immediate in onset and consist essentially of pain, nausea, swelling and local tenderness.
4. Aggravation in reality is less common than is suspected (*a*) because evidences of it are almost never seen in the presence of even severe contiguous injury, (*b*) because at operation there are no local signs of recent trauma, and (*c*) because the pathologic examination also fails to show evidences of recent trauma.
5. A postoperative recurrence rate of approximately 10 per cent occurs among workmen.
6. Prolonging the period of postoperative convalescence may hinder rather than benefit the patient by inducing muscular atrophy of disuse.
7. The relation of hernia to a given trauma can be proved only by (*a*) the history of intra-abdominal pressure followed by immediate symptoms, (*b*) the operative observations, and (*c*) the pathologic report.
8. An isolated or single injury is never the source of origin of inguinal hernia, and aggravation or acceleration by trauma is exceedingly rare.
9. Traumatic inguinal hernia is a myth that should be consigned to the museum of historical relics of a bygone era.

115 East Sixty-Fourth Street.

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**The Sun Today and Yesterday.**—The radiation from the sun is at the expense of its mass. No less than 360,000 million tons of matter is destroyed every day in order to maintain the present radiation of the sun. Poor old Sol weighs 360,000 million tons less today than he weighed at this time yesterday! By our human standards this prodigal expenditure cannot keep up for very long, but our human standards are not astronomical standards. Computation shows that the sun is not very much different today than it was when the planets were born. The weight of the sun is so inconceivably great that in order to show any material change in weight or radiation we must go back, not 2,000 million years, but five million million years. The sun weighed about twice as much then as it does now, and was correspondingly brighter and hotter.—Maxim, H. P.: What Is It All About? *Scientific American,* April, 1932, p. 199.

# MEDIASTINAL DERMOID CYST

## REPORT OF A CASE IN WHICH THERE WAS PANCREATIC TISSUE, SIMULATING INTRATHORACIC GOITER

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The mere addition of another case of mediastinal dermoid cyst to those already recorded in the literature would hardly seem to be justified. Our purpose in reporting the following case is to emphasize the possibility of the confusion of mediastinal dermoid cyst with intrathoracic goiter, and more particularly to record the occurrence, unique in this case so far as we have been able to determine, of pancreatic glandular and islet tissue in the cyst wall.

### REPORT OF CASE

A woman, aged 35, entering the Cleveland Clinic Hospital, Oct. 22, 1929, complained of marked dyspnea on exertion and of a tumor in the suprasternal notch.

The tumor, which was first noticed two years previously as a slight, tender swelling, had persisted for two days and then disappeared. At that time the roentgenographic examination of the teeth gave negative results; the tonsils were removed on account of chronic infection. Since its first appearance the swelling had recurred intermittently in the suprasternal notch and above the sternal end of the right clavicle, remaining for a few days and then subsiding.

At the time of admission the patient complained of shortness of breath, difficulty in swallowing, a slight nonproductive cough and hoarseness. There had been no increased nervousness, no loss of appetite or weight and no gastro-intestinal or genito-urinary symptoms. The patient was well developed and was not acutely ill. The past and the family history revealed nothing of importance.

Physical examination showed a tumor mass about the size of a hen's egg protruding into the suprasternal notch. During the act of swallowing, this mass followed the movement of the trachea. There was no thrill, bruit or pulsation. An area of upper mediastinal dulness extended 4 cm. to the right and 5 cm. to the left of the midsternal line. Examination of the heart, lungs, abdomen and extremities revealed no significant abnormality.

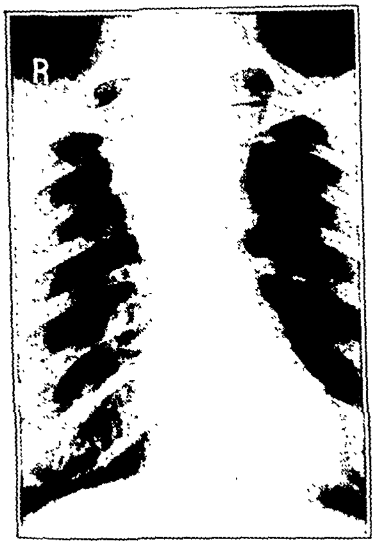

Fig. 1.—Appearance of the chest, showing the mediastinal tumor.

A roentgenogram of the chest (fig. 1) revealed a large tumor mass in the upper mediastinum, which was interpreted as a substernal goiter extending down to the third interspace anteriorly. The red blood cells numbered 4,000,000; white blood cells, 9,200; hemoglobin, 75 per cent. The basal metabolic rate was minus 7 per cent. The blood sugar before operation was 108 mg. per hundred cubic centimeters, one and one-half hours after eating. The blood sugar after operation was 75 mg. per hundred cubic centimeters fasting. The Wassermann and Kahn reactions were negative. The urine was essentially normal on four examinations.

A clinical diagnosis of substernal goiter was made, and the patient was operated on by Dr. G. W. Crile. Under nitrous oxide-oxygen anesthesia and procaine infiltration a low collar incision was made as for thyroidectomy The pretracheal fascia and muscles were separated in the median line, an apparently normal thyroid gland being exposed. Below the isthmus of the thyroid and bulging into the suprasternal notch could be seen a tumor mass which extended into the mediastinum and apparently had no connection with the thyroid. Early in the process of freeing the tumor, a cyst was ruptured and approximately 150 to 200 cc. of thin, brownish fluid escaped. The character of the fluid suggested that the lesion was a dermoid cyst. The partially collapsed cyst wall was removed with considerable difficulty, on account of its intimate relationship to surrounding mediastinal structures. After the removal of the cyst, a large cavity, measuring approximately 12.5 cm. vertically and 7.5 cm. transversely, remained, bounded below by the arch of the aorta, anteriorly by the sternum, on the right by the innominate artery and vena cava, and on the left by the carotid and subclavian vessels. Posteriorly, the cyst wall was in relation to the trachea and bronchi. After the cyst had been removed, the cavity was rinsed with saline solution and lightly packed with petrolatum acriflavine gauze. The operative wound was left open in order to allow free drainage. The patient was in excellent condition at the completion of the operation.

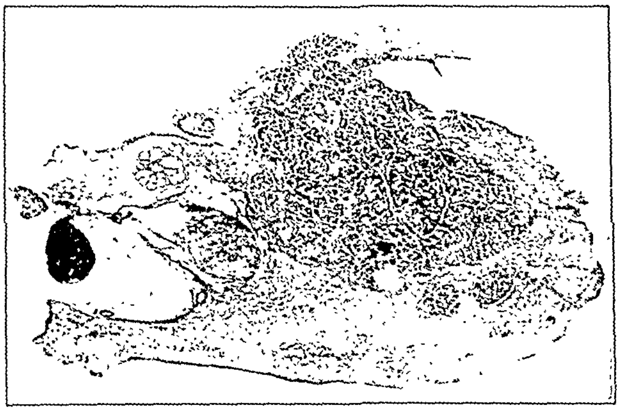

Fig. 2.—Section of the cyst wall showing the mass of lobulated pancreatic tissue; slightly reduced from a photomicrograph with a magnification of 6 diameters.

The postoperative reaction was slight, and on the second postoperative day the cervical wound was closed around a small rubber catheter. The wound healed satisfactorily and the patient was discharged on the eighteenth day after the operation. At the time of discharge, abductor paralysis of the right vocal cord was present.

One year following the operation, a letter from the patient stated that she was in excellent health, that there was no evidence of recurrence, and that she was not hoarse.

Macroscopically, the tissue received in the laboratory consisted of a ruptured, collapsed cyst wall, weighing 45 Gm. and measuring 12 by 6 by 1.5 cm. It was irregularly pear shaped. The cyst wall was fibrous and varied from 3 to 15 mm. in thickness. The inner surface was rough and somewhat trabeculated and had numerous small masses of yellowish-brown granular material adherent to the lining. There were numerous small outpouchings in the wall and several small, round, pouched-out areas, suggestive of ulceration, but without any plastic exudate. In several areas, irregular masses of yellowish tissue were present in the wall, limited chiefly to the inner half. No hairs and no cartilage or bone could be recognized on gross examination. The outer surface of the cyst consisted of irregular, shaggy, fibrofatty tissue on the posterior aspect and a comparatively smooth, shiny, membranous layer on the anterior aspect.

Microscopically, the inner lining of the cyst consisted largely of fibrous tissue devoid of epithelium, but in some areas, particularly the thicker portions of the cyst wall, were fragments

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From the Cleveland Clinic.

of stratified squamous epithelium, without keratohyaline material or hair shafts. Beneath this were a few lobules of sebaceous glands. No coil glands were recognized. In other areas, the inner lining consisted of simple, columnar mucus-secreting epithelium, and beneath this was a large mass of nonencapsulated, lobulated, glandular tissue and ducts lined with cuboidal epithelium (fig. 2). This tissue had the morphologic characteristics of pancreas (fig. 3). Scattered throughout this area were numerous small and large, solid masses of pale cells, morphologically similar to islet tissue In other areas, the inner lining of the cyst was made up of stratified, columnar, ciliated epithelium, beneath which were a few small mucous glands in the stroma, suggestive of pharyngeal mucosal structures. In this general neighborhood were several small islands of hyaline cartilage and fatty tissue in the cyst wall, but no bone or dental structures were observed.

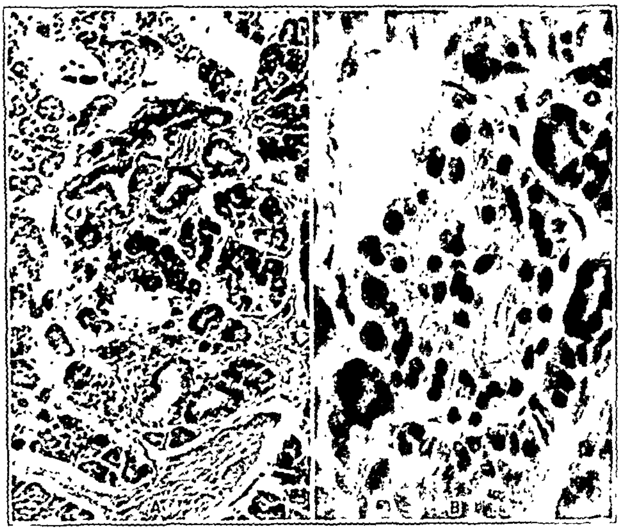

Fig. 3.—*A*, pancreatic glandular tissue and ducts; reduced from a photomicrograph with a magnification of 150 diameters. *B*, pancreatic islet and glandular tissue; reduced from a photomicrograph with a magnification of 500 diameters.

The middle zone of the cyst wall consisted of collagenous, fibrous tissue showing extensive hyalinization and areas of mucoid degeneration. In numerous areas there were irregular small and large collections of phagocytic cells containing yellowish-brown blood pigment and considerable lipoid material. A few scattered islands of perivascular lymphocytic infiltration were also found.

In the outer layers of the cyst wall, several centimeters from the site of the pancreatic tissue, there were small masses of lobulated, colloid thyroid tissue (fig. 4 *A*), with vesicles lined by flattened epithelium, and considerable thymic tissue containing Hassall's corpuscles (fig. 4 *B*). Some of the latter tissue extended well into the fibrous wall of the cyst and appeared to be somewhat compressed and atrophic. In such areas, Hassall's corpuscles were not present.

The most frequent location of intrathoracic dermoid cysts is the upper mediastinum. They are usually situated medially but may extend laterally so that the major portion of the mass appears to the right or left of the midline. Generally, they are entirely within the thorax, but in about 10 per cent of cases[1] a swelling is apparent in the neck. The tumors vary greatly in size and consist of simple epidermoidal components or complex teratomatous growths. The symptoms are chiefly those due to mechanical obstruction, to compression or to irritation of surrounding structures and are dependent largely on the size of the mass. The principal complication is infection, which may terminate in the formation of an abscess, with spontaneous rupture, mediastinitis, perforation of the trachea, emphysema, pneumonia or pulmonary abscess. Malignant neoplastic transformation occurs in about 15 per cent of cases.[2]

The literature concerning intrathoracic dermoid cysts has been reviewed by Kerr and Warfield,[1] Williams,[2] Hertzler,[3] Harris,[4] Hale[5] and others. These articles form a complete bibliography.

## COMMENT

The case reported illustrates how easily a mediastinal dermoid cyst may be mistaken for an intrathoracic goiter. The comparatively rare occurrence of the former as contrasted with the frequent occurrence of the latter lesion is probably one of the reasons why the differentiation is not made clinically more frequently. In cases of intrathoracic goiter, it is usually possible to detect a direct continuity between the thyroid itself and the mediastinal swelling. On the other hand, in 90 per cent of the cases reviewed in the literature, the mediastinal dermoid cyst is not in continuity with the thyroid. Therefore, demonstration of this continuity, or the absence of continuity, may prove to be a useful sign in making the correct diagnosis, although up to the present we have not had occasion to confirm this suggestion.

Misinterpretation of thyroidal and dermoidal lesions, at operation and on gross examination of the removed tissue in the laboratory, may occur also in another direction. A broken down, necrotic, cystic adenoma of the thyroid, whether cervical, partially or completely intrathoracic, may be mistaken for a dermoid cyst on account of the nature of the contents and the character of the cyst wall. Such tumors generally are a part of the thyroid, and microscopic examination after their removal suffices to make the distinction.

In the title the tumor is stated to be a dermoid cyst. Its very complexity, however, probably necessitates its being classified as a teratomatous cyst. Derivatives of three germ layers are represented, namely, stratified squamous epithelium and sebaceous glands; ciliated columnar epithelium and pharyngeal mucous glands; thyroid and thymus; pancreas; fat and cartilage.

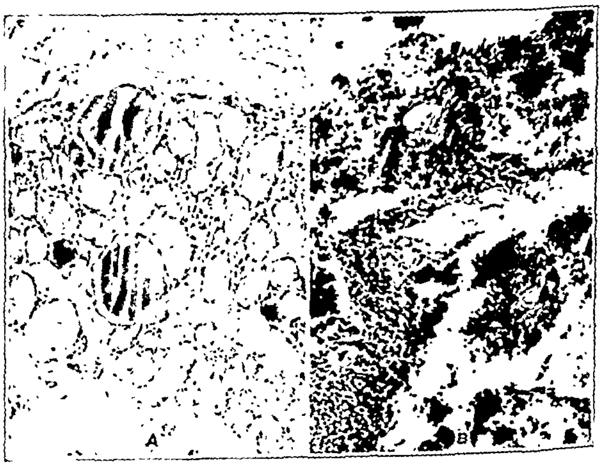

Fig. 4.—Section from the outer layer of the cyst wall: *A*, thyroid tissue; reduced from a photomicrograph with a magnification of 100 diameters. *B*, thymic tissue; reduced from a photomicrograph with a magnification of 150 diameters.

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[1] Kerr, H. H., and Warfield, J. O., Jr.: Intrathoracic Dermoids with Report of Case of Total Extirpation at One Sitting by a New Method of Thoractotomy, Tr. Am. S. A. **46**: 291-313, 1928.

[2] Williams, W. R.: Dermoids of the Thorax, M. J. & Rec. **128**: 618-622 (Dec. 19) 1928.

[3] Hertzler, A. E.: Dermoids of the Mediastinum, Am. J. M. Sc. **152**: 165 (Aug.) 1916.

[4] Harris, I. B.: Mediastinal Dermoid with Report of Case, Ohio State M. J. **15**: 547 (Sept.) 1919.

[5] Hale, H. E.: Dermoid Cyst of Mediastinum, with Transmitted Pulsation, Med. Rec. **98**: 1019 (Dec. 18) 1920.

The branchial apparatus would seem to be the most probable source for the particular combination of tissues present in the cyst wall and the tumor may be looked on as an inclusion cyst. In this sense, it is not exactly comparable to those ovarian dermoids in which a totipotential germ cell is capable of differentiation in all the tissues of the body.

The thyroid tissue in the cyst wall in our case is probably of lateral branchial rather than of median pharyngeal origin. Its intimate association with thymic tissue would seem to warrant this conclusion. The occurrence of tissue having morphologic characteristics identical with those of the pancreas is of interest and has not been reported heretofore as occurring in a mediastinal dermoid, as far as we know. The presence of this tissue as a pharyngeal derivative is not so readily explained without invoking the theory of metaplasia. The salivary glands and the pancreas are physiologically related organs but originate at widely separated points in the entodermal tract. If the primitive pharyngeal epithelium can differentiate into such diverse organs as the salivary glands, the thyroid and the thymus, it is not inconceivable that the pancreatic tissue in our case may likewise be of pharyngeal origin.

As was noted in the case report, no significant disturbance of sugar metabolism was detected.

### SUMMARY

A dermoid cyst of the anterior mediastinum, extending into the neck and simulating a substernal goiter, was removed through a low collar incision as in thyroidectomy. Recovery was complete and the patient reported that she was in excellent health, one year following the operation.

The presence of histologically normal pancreatic tissue in the cyst wall makes this case unique.

2050 East Ninety-Third Street.

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# THE REPAIR OF UNUNITED FRACTURE OF THE NECK OF THE FEMUR

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Probably no other common fracture has been so completely and consistently disabling as fracture of the neck of the femur, (1) because of the inability of bone to throw down sufficient callus to repair the fracture; (2) because most of the patients in whom the fracture occurs are in the latter part of adult life; (3) because it is apparently difficult to reduce the fracture and hold it in reduction; (4) because, owing to the age and weight of a great many of the patients, it is impossible at times to put on any fixation apparatus that is bearable. Therefore these fractures go to nonunion and deformity, with loss of carrying ability of the leg on the affected side and a serious and permanent disability which confines the patient to a limited area of activity.

Many operations have been advanced for the repair of these fractures. Murphy advocated the use of long spikes driven through the trochanter up into the neck of the femur after reduction. Later, an autogenous graft used in the same way was recommended by a number of surgeons, and, still later, Whitman and Brackett advanced operations that have not been sufficiently used. It seems incredible that one who is familiar with the pathology of old ununited fractures would choose to use a spike or autogenous bone graft as a spike to fasten the trochanter to the head through a mass of heavy fibrous tissue with the expectation of obtaining any considerable mechanical support. To begin with, the trochanter is pushed upward from three-fourths inch to 2 inches above the acetabulum; then there is more or less complete absorption of the neck so that the fixation appliance must bridge a considerable gap where there is no bone; the head is usually in a rotated position whereby the trochanter cannot be brought opposite the fractured surface; and, finally, after the displacement has occurred and contraction has taken place with the heavy fibrous tissue filling the gap between the trochanter and the head, it is impossible to pull the leg down far enough to bring the fractured surface on the trochanter and the fractured surface on the head opposite each other, to say nothing of bringing them into apposition. The ends of the fragments are covered with hard, smooth, fibrous tissue which has reached complete maturity, and to expect bone to grow from either end of the fracture is to expect the impossible: one might as well place two surfaces of skin together and expect them to unite without first abrading the surface.

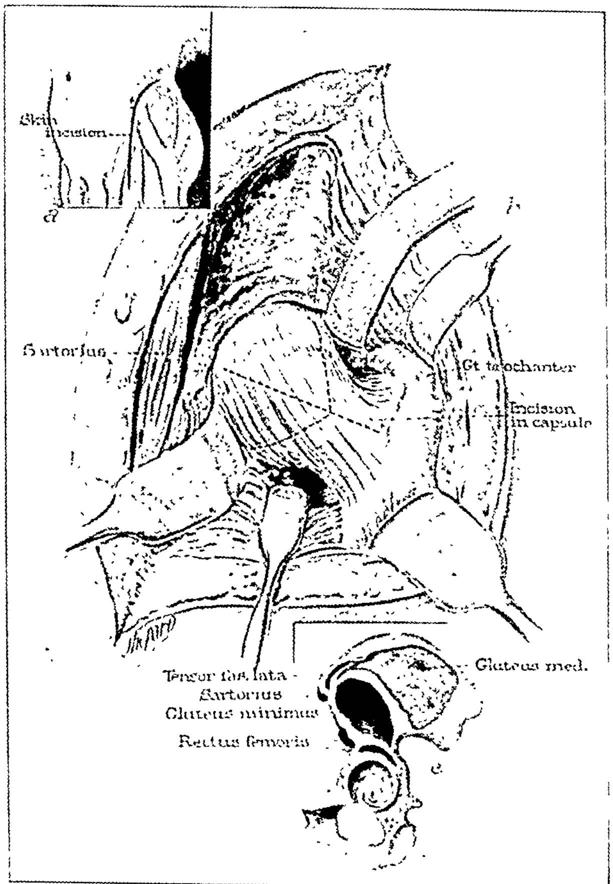

Fig. 1.—*a*, skin incision; *b*, exposure of joint capsule and lines of incision; *c*, origin of muscles around hip joint.

I have seen patients who have walked after such a nailing operation has been performed, but I have never seen anything in the roentgenogram following operation which would warrant the conclusion that there was a bridging by callus between the trochanter and the fractured surface of the head, and I believe that the patient's ability to walk occurs as the result of unusually heavy fibrous tissue formation between the trochanter and the acetabulum, forming a fibrous support which will hold more or less weight, depending on its density and the area over which it extends. I have never seen normal motion after such an operation, and it seems quite impossible, considering the shallowness of the head and the length of the gap to be bridged, plus the condition of the healed fractured surfaces, that any hope of a normal hip could be expected.

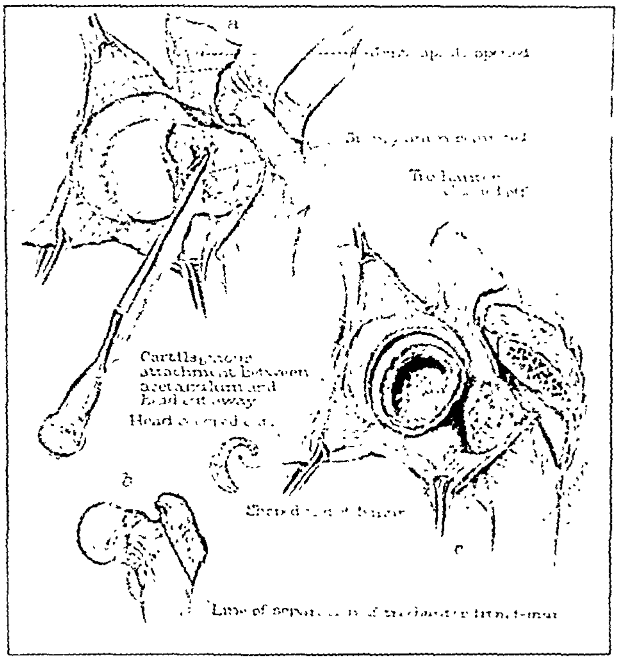
a
Cartilaginous attachment between acetabulum and head cut away
b
c

Fig. 2.—*a*, exposure of joint cavity and fibrous tissue, *b*, line of removal of trochanter; *c*, head and neck of femur shaped to fit each other.

Whitman recommended removal of the head, clearing of the scar tissue between the head and the trochanter, and the fitting of a remolded end of the shaft into the acetabulum. Brackett advocated an operation which in most cases, I believe, serves to reestablish anatomic relations better than any which have so far been advanced. The results have been so satisfactory to both patient and surgeon that it would seem that this operation should be more generally advocated.

Under this method I have done seventeen reconstructions of the hip joint, always with an open mind before the operation, making the decision between the Brackett and the Whitman operation after the condition of the head has been thoroughly investigated, as this decision is influenced by several important factors which come to view when the hip joint is exposed.

The incision follows a Smith-Petersen exposure along the anterior margin of the ilium, curving downward and forward along the inner border of the sartorius muscle; the muscle is split and the inner attachment of the quadriceps is cut transversely close to its attachment (fig. 1 *a*). The capsule of the joint is exposed and the fibers of this are seen to run, instead of downward and outward, either straight outward at right angles to the long axis of the body or sloping a little bit upward and outward (fig. 1 *b*). The capsule is split from the acetabulum to the trochanter with a scalpel, then cut crosswise near the edge of the acetabulum, as far around toward the posterior surface as possible (fig. 1 *b*). This gives thorough exposure of the mass of fibrous tissue contained within the capsule, which bridges the gap between the fractured surface on the head and the fractured surface on the trochanter. At this point it will be noted that there is more neck than the roentgenogram had disclosed, but in this series of cases the head did not protrude beyond the outer rim of the acetabulum, except in small jagged irregularities.

The fibrous tissue connecting the head and the trochanter was removed with heavy, slightly curved, round-pointed scissors, and this was one of the most difficult parts of the operation (fig. 2 *a*). After removal of the fibrous tissue, in ten of the seventeen cases the head was found to be tightly adherent to the edge of the acetabulum around this fractured rim and with difficulty was completely freed (fig. 2 *c*). By rotating the head in the acetabulum, all surfaces could then be inspected easily. The hardness of the head was tested by pressure with the point of a 6 inch hemostat. The fractured surface was rather soft in each case, but this softness extended only from one-eighth to one-fourth inch into the head, at which point rather compact bony tissue was encountered. In three cases the cartilage was yellowish; in all others it was the normal color of healthy hyaline cartilage. After thorough examination, the head was allowed to assume its normal position in the acetabulum, which is controlled under these circumstances by the ligamentum teres, so that an estimation could be made of the point at which the main weight-bearing of the shaft would occur in the reconstructed hip.

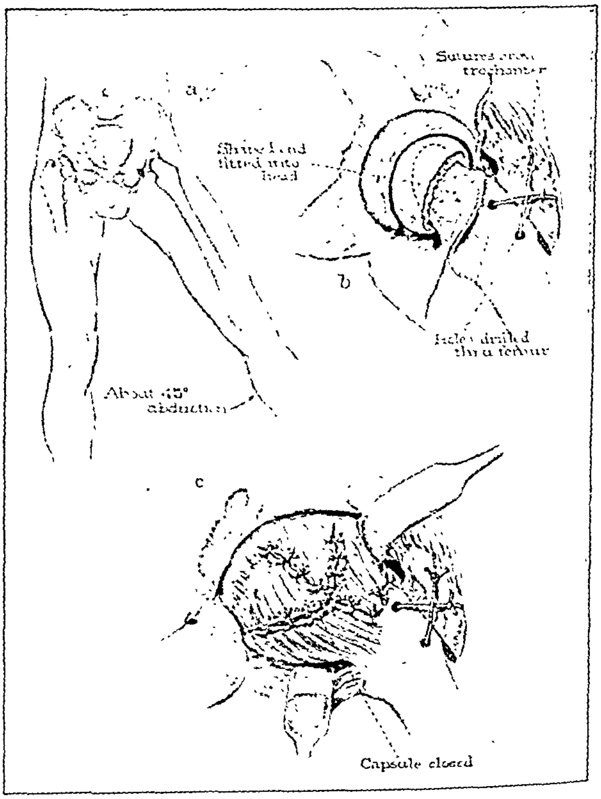

Fig. 3.—*a*, position in which leg is to be maintained after operation; *b*, normal relations of structures reestablished; *c*, completed operation.

With a large motor-driven burr the femoral head was hollowed out in the form of a truncated cone, the deepest portion of which was at the point where the greatest weight would fall with the patient in a standing position (fig. 2 *c*). This excavation was made down to a point where the bone of the head underlay the cartilage rather closely, and in all cases the bone was firm and hard at this point. This stage of the operation having been completed satisfactorily, the trochanter with attached muscles was cut off at an angle estimated to be the original angle of the neck; that is, the line of incision through the trochanter sloped downward and outward (figs. 2 *b* and *c*). A wide, thin-bladed chisel was found to be the best instrument; it was more adaptable than a Gigli saw, and, as free lateral approach was not possible because of the incision, it proved to be a better guide to the angle at which the trochanter was being cut.

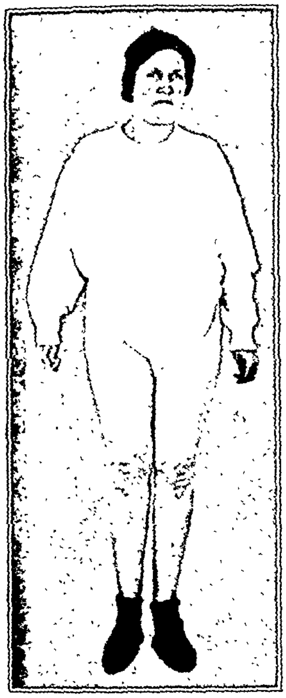
Fig. 4. — Woman, aged 49, operated on sixteen months after fracture because of nonunion; 1 inch shortening; no other disability. Appearance five years after operation.

This incision, at the upper end, was started exactly at the base of the neck of the femur, leaving intact whatever portion of the neck remained attached to the shaft; the upper end of the shaft with the remainder of the end of the neck, was then brought up into the incision and rounded off in the same curve which had been produced in hollowing out the head (fig. 2 *c*). It was found necessary in cases in which there was very little neck remaining to narrow the upper end of the shaft from front to back by removing the sharp edges left by the removal of the trochanter in order that it might not strike the edge of the acetabulum in flexion and extension. After the upper end of the shaft had been modeled to fit into the hollowed out head and had been narrowed by cutting away bone from the front and back edges of the shaft where the trochanter had been removed, a Murphy skid was placed against the upper rim of the acetabulum and over the upper end of the shaft, and the newly modeled neck was levered into its new position in the head. At the same time the leg was abducted, care being taken to rotate the shaft while abducting the leg so that the upper convex surface on the neck would fit into the concave surface cut to receive it in the head. In all cases in this series, the muscles originating on the pelvis and inserted in the femur and leg were sufficient to hold the end of the shaft snugly up into the acetabulum when the leg was held in about 45 degrees of abduction.

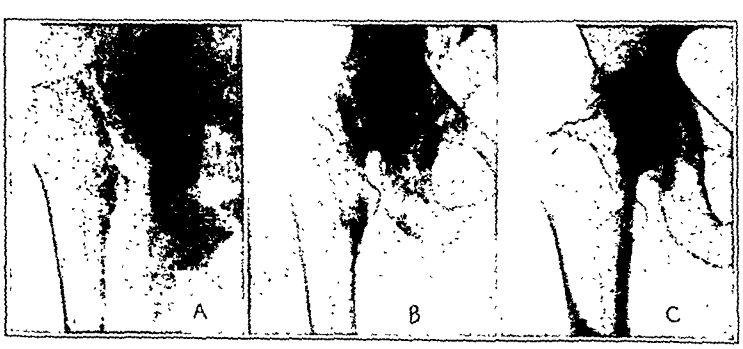

Fig. 5.—Fractured neck of femur in patient shown in figure 4: *A*, before operation; *B*, three months after operation; *C*, five years after operation. Note union and direct weight-bearing from shaft into head.

This accomplished, it was necessary to reattach the trochanter to the shaft of the femur. The trochanter has suffered, as has the rest of the bone, from atrophy of disuse and consequently is not a satisfactory area through which to pass the retaining sutures of malleable iron wire or silk used for fixation. Two holes were drilled through one side of the cortex of the upper end of the shaft and a suture inserted in each, which was brought out through the medullary cavity and carried up through the muscle attachments just at the tip of the trochanter (fig. 3 *b*). The trochanter was then pulled downward to come into a position below and lateral to its normal, the sharp, wedge-shaped lower end protruding beyond the shaft on the lower lateral border of the place from which it was removed.

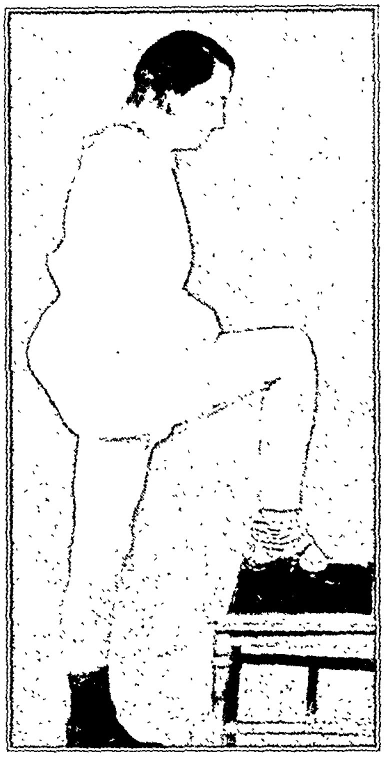
Fig. 6.—Woman, aged 52, operated on three weeks after fracture as choice between Whitman closed method and open operation. Patient left hospital seventy-four days after operation, bearing weight. Three-fourths inch shortening two years after operation; no other disability; no limp. This is the only patient we have operated on for any cause other than nonunion.

The normal relations of the hip joint being practically reestablished, the muscle attachments were all in place and had a constant tendency to hold the upper end of the shaft firmly into the head (fig. 3 *c*). The head with its smooth hyaline cartilage moved freely in the acetabulum and followed the motions of the shaft of the femur because of the firmness with which the shaft was held against it, or actually reposing within it. In no instance was the patient placed in a cast, it being necessary only to hold both legs in 45 degrees of abduction, which can be done with a Ranney splint; in this way the discomfort resulting from fixation in a cast was avoided. The legs were flexed as much as 45 degrees. After two weeks of immobilization the patient was allowed to semirecline in bed and was given complete sponge baths.

During the first eight weeks of convalescence, two points that cannot be overemphasized are: (1) The legs must be maintained in at least 45 degrees of abduction; (2) the affected leg must be fixed continuously in a position of internal rotation. If these two positions are maintained, the hip can be moved and the patient can be moved in bed. Such fixation is necessary for eight weeks only, at the end of which time the patient can be allowed up in a wheel-chair and on crutches. Weight-bearing can be started as soon as the patient is out of bed. Bony union is not necessary, because the upper end of the shaft and the head become firmly adherent in eight weeks, and, as weight-bearing tends to force the shaft further into the head, walking is advisable.

The surprising feature in this operation is that it seems to involve comparatively slight surgical shock. The youngest patient of this series was 47, the oldest 85 years of age. There were no deaths and no cases of serious postoperative shock. The results were uniformly satisfactory to the patient. The time between the date of fracture and operation varied from six months to seven years in all excepting one case (fig. 6). In only one case was it necessary at the time of operation to remove the head. This patient, the youngest in the series, had been disabled for seven years; the head was so degenerated that it was useless, and a Whitman operation was performed.

### CONCLUSIONS

Because of the large mass of fibrous tissue present in this type of case, nailing and the usual form of autogenous graft fixation is unsatisfactory in most cases.

The fractured surface of the trochanter cannot be brought opposite the fractured surface of the neck because of the mass of fibrous tissue.

New bone will not form in hard, old scar tissue, and fractured surfaces covered with old fibrous tissue will not produce new bone.

It is necessary to remove the fibrous tissue between the head and the trochanter completely before new bone will form; this can be done only by opening the capsule.

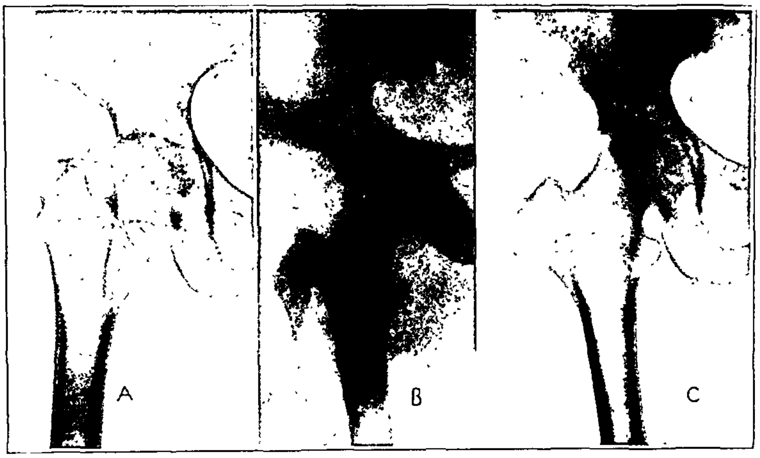

Fig. 7.—Fractured neck of femur in patient shown in figure 6: *A*, before operation; *B*, immediately after operation; *C*, two years after operation.

This operation reestablishes as nearly as possible normal anatomic relations, leaves the head covered with normal cartilage in contact with the normal cartilage of the acetabulum, and therefore results in a painless hip with much freer motion than can be obtained by any other method.

There is little surgical shock connected with the operation, and in patients of normal expectancy it can be performed without fear.

30 North Michigan Avenue.

# ENCEPHALOGRAPHY UNDER NARCOSIS PRODUCED BY NONVOLATILE ANESTHETICS

## A NOTE ON THE TECHNIC

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AND
S. H. EPSTEIN, M.D.
BOSTON

Our purpose in this paper is to discuss the use o nonvolatile anesthetics in the performance of encepha lography or pneumorachicentesis. By these terms i understood *the introduction of air through the lumba puncture needle, displacing fluid in the ventricular an subarachnoid systems and subsequently the making o roentgenograms of the head. This is in contradistinc*tion to the method of ventriculography, in which the skull is trephined and air is introduced directly int the ventricles.

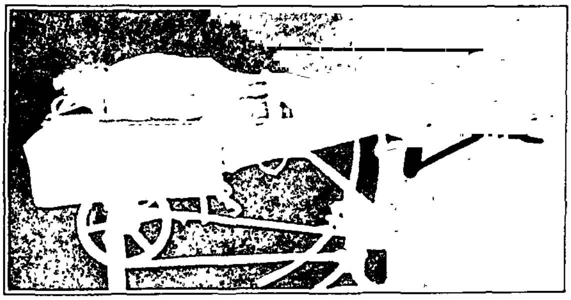

Fig. 1.—Patient lying supine on the stretcher.

Encephalography is largely replacing ventriculography because of the greater simplicity of the procedure, i. e., the necessity of trephining the skull being obviated. By many it is considered a somewhat less dangerous procedure, although about this there is considerable question.

The chief objection to encephalography is the great discomfort experienced by the patient, especially during the injection of the air. As a rule, after from 30 to 40 cc. of air has been injected, the patient complains of headache which grows more and more severe and which, from all appearances, is quite extreme. At about this time marked sweating occurs and the pulse becomes slow, dropping to 60, 50 and occasionally even as low as 40 beats a minute, and at the same time the quality becomes rather poor. As the injection of air continues, vomiting of the projectile type frequently occurs. As the amount of air required to give adequate roentgenograms is from 100 to 200 cc., and as this must be injected moderately slowly, it takes from fifteen minutes to half an hour to carry out the procedure. This is, of course, a long period of suffering for a patient unless alleviated by some means. It is also a difficult period for the operator. At times the procedure has to be stopped before the required amount of air is injected because of collapse or near collapse of the patient. Following the encephalography, headache usually continues for a number of hours and not infrequently for a day or two.

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From the Boston Psychopathic Hospital.

Because of these reactions, various measures have been utilized, tending to mitigate the severity of the reaction and to make the procedure less disturbing. Morphine and scopolamine are used frequently; while these drugs greatly diminish the discomfort, they by no means entirely overcome it, and there are obvious disadvantages of using these drugs in the high dosage that is necessary to give reasonable relief. Volatile anesthetics, especially ether, have been satisfactorily employed. There are, however, several disadvantages to them; namely, the possibility of pulmonary complication, the marked increase in intracranial pressure which is a contraindication in cases of pathologically increased intracranial pressure, the unpleasant after-effects of the anesthesia, and the need of an anesthetist. Hence we have turned to the use of nonvolatile anesthetics such as sodium ethyl (1-methyl-butyl) barbiturate (pentobarbital-sodium), sodium isoamylethyl barbiturate (amytal), and avertin. These drugs have the advantage of a quickly induced anesthesia with no markedly unpleasant after-effects, no rise in intracranial pressure, a fairly prolonged analgesic effect after the anesthesia has worn off, ease of administration, and relative safety.

Our experience has been obtained chiefly with pentobarbital-sodium. However, we believe that what can be said about the use of this drug is equally true of sodium isoamylethyl barbiturate, as we have used the latter preparation for anesthesia for other purposes, and the clinical and physiologic results are very similar.

Our procedure is to give an intravenous injection of from 0.3 to 0.5 Gm. (from 5 to 7½ grains) of pentobarbital-sodium dissolved in from 10 to 15 cc. of distilled water. The solution is injected slowly, from three to five minutes being taken for the injection. The patient is usually in a state of narcosis by the time the injection is completed. Occasionally a subcutaneous injection of 0.16 Gm. of morphine sulphate is given fifteen minutes before the pentobarbital-sodium. The narcosis obtained is quite profound. The deep reflexes are abolished, as are the skin and gag reflexes. This state of areflexia and complete anesthesia is obtained in from ten to twenty minutes after the injection, and the patient is then ready for the encephalographic procedure.

As the patient is in a state of muscular relaxation, it is convenient to have an apparatus that will hold him in position for the air injection. It is quite practical to get along without any special apparatus by placing the patient on a stool, allowing the body to rest on a padded table with support given on either side by a nurse, attention being given to the support of the head. However, we have found it more convenient and practical to use the apparatus to be described.[1]

This apparatus consists of a jointed stretcher which may be placed on the operating table; the anesthetic is administered while the patient is lying supine on the stretcher (fig. 1). About midway along each side of the frame there is a joint with a semicircular disk containing a number of holes into which pins may be placed. In this way various angles of the sitting position may be obtained (fig. 2). The patient is held in place by a head sling, two shoulder straps hung from the top of the frame, and an abdominal strap fastened to the sides (fig. 3).

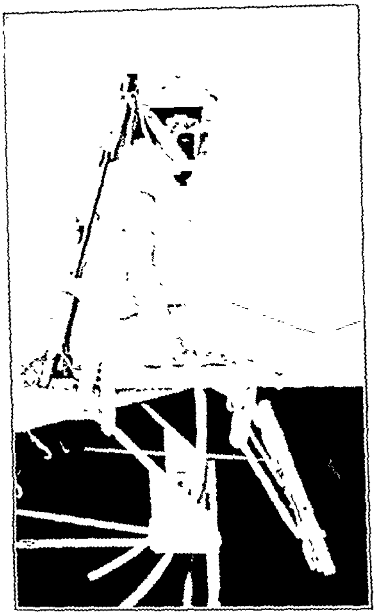

Fig. 2.—Patient in sitting position, held by sling, shoulder and abdominal straps.

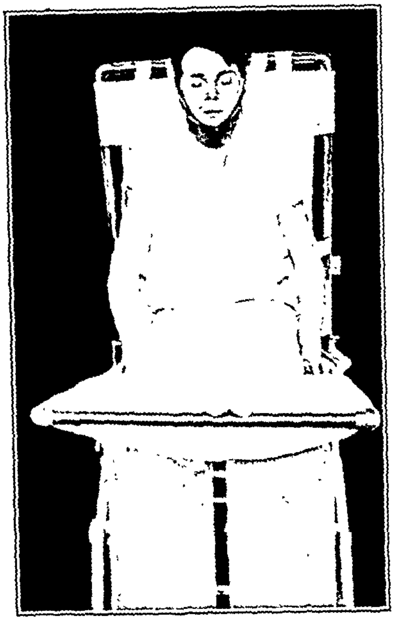

Fig. 3.—Front view of chair.

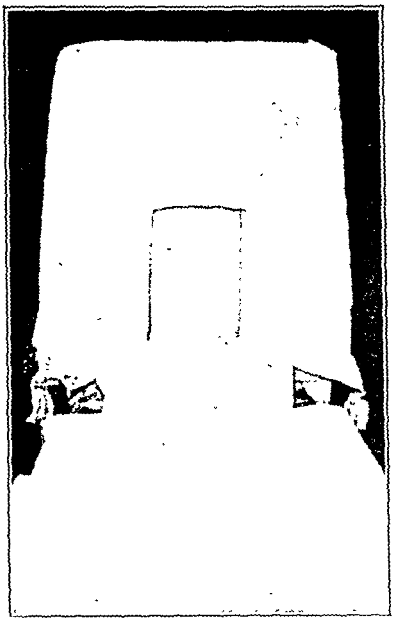

Fig. 4.—Back view of chair, showing opening for lumbar puncture.

The lumbar puncture and the air injection are made with the patient in an upright position through a rectangular opening in the canvas which forms the back of the apparatus (fig. 4).

In order to get the best filling of both the subarachnoid space of the head and the ventricles, it is necessary to be able to shift the position of the patient from time to time. Thus, with the head and trunk in an erect position, the best filling of the ventricles is obtained, whereas with the head and trunk bent forward or backward, the subarachnoid spaces are more readily filled. It is also advisable to move the head from side to side and backward and forward at the neck. These changes of posture are easily produced with this apparatus. The head sling allows for easy movement of the head by an assistant, and the angle of the back-rest is readily changed.

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[1] This table was designed for use in encephalography under anesthesia by Drs. S. H. Epstein and S. S. Hanflig.

When the air injection has been completed, the patient may be wheeled to the x-ray apparatus either sitting upright or recumbent, and the pictures may be taken in the vertical or the horizontal position as thought best by the roentgenologist.

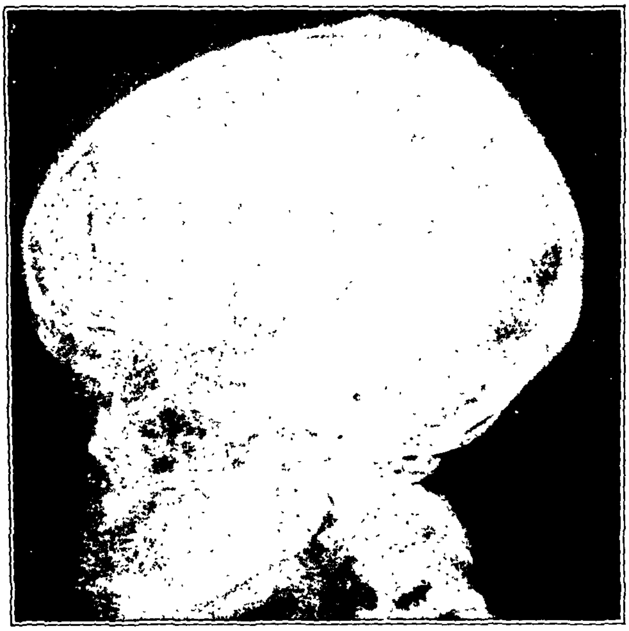

Fig. 5.—Lateral view showing a normal encephalogram.

As already mentioned, the air injection usually takes from fifteen to thirty minutes. During this period the patient is completely anesthetic, the operator is not disturbed by complaints from the patient, and the injection is not interrupted, nausea and vomiting do not occur, and there is practically no diaphoresis. The roentgenograms are made with the patient in a state of anesthesia which enables one to put the head in any desired position; no vomiting occurs, as is frequently the case when an air injection is performed without anesthesia, and thus the roentgenologist has no interference with his technic from the patient. In dealing with psychotic, disturbed or fearful patients, this is of especial advantage.

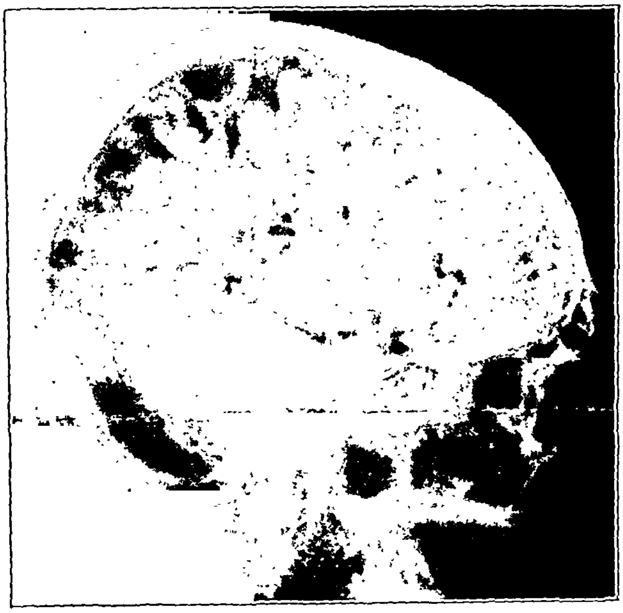

Fig. 6.—Lateral view showing extensive cortical atrophy and enlargement of the lateral ventricles.

The narcosis gradually wears off in the course of from four to six hours. On awakening, the patient rarely has a complaint and usually is able to take nourishment. There are, as a rule, no headache, no gastro-intestinal symptoms, and no fever. Headache frequently does occur some hours later, but at this time it is rarely very severe and is easily controlled by a moderate dose of some opiate.

With avertin anesthesia, the conditions are very similar both as to the condition while the air is being introduced and as to the after-effects.

We have encountered no special contraindications to the use of pentobarbital-sodium anesthesia in cases selected for encephalography. We have employed this drug in twenty instances, mainly in cases with symptoms of intracranial pathologic conditions other than those of tumor. Figures 5 and 6 show the roentgenographic results of the technic as described in this paper with pentobarbital-sodium anesthesia.

270 Commonwealth Avenue—484 Commonwealth Avenue.

# ROENTGEN VISUALIZATION OF LYMPH NODES IN ANIMALS

## PRELIMINARY REPORT

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As is well known, the lymphatics will absorb particulate substances, and also materials insoluble in water, whereas the blood capillaries are principally concerned with the absorption of materials soluble in water. This knowledge has resulted in much interesting experimental work bearing on the subcutaneous injections of certain insoluble materials which were found to have been taken up by the lymph vessels and carried to the lymph nodes. Many investigators have reported certain experimental results obtained by injecting insoluble substances, such as carbon and carmine, into the subcutaneous tissues of the legs of animals. They have been able to prove, by recovering them in the lymph nodes, that the lymphatic system absorbed these substances. While such results are interesting and important, we are unable to find experimental use of the roentgen ray in the living animal to visualize foreign opaque particles in lymph nodes. The collection of iodized poppy-seed oil in the lymph spaces of the neck and head was observed by Pfahler[1] one year after the injection of the antrums by this opaque medium for the purpose of studying the sinuses. He was of the opinion that his case was the first roentgen demonstration of the lymph spaces. He was unable, however, to demonstrate the lymph glands or nodes. Our review of the literature would indicate that this presentation of experimental work on the visualization of lymph nodules of animals is the first roentgen demonstration of this important unit of the lymphatic system.

While conducting certain experimental work on animals by injecting thorium dioxide into the tail veins

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Aided by a grant from the David Trautman-Schwartz Research Fund.
From the [illegible] Division of Radiology, Tulane University of [illegible]

[1] Pfah[illegible] the Lymphatic Drainage from the Maxill[illegible] 27: 352-356 (March) 1932.

of rats, visualizing the liver, spleen and kidney with their vessels, we were unsuccessful in several instances in injecting the material into the vein. This was particularly true in the tail vein of rats, and in these instances a small amount of the thorium dioxide was injected into the tissues surrounding the blood vessels. In such instances, it was observed at a later time that a roentgenogram disclosed the lymph nodes clearly visualized.

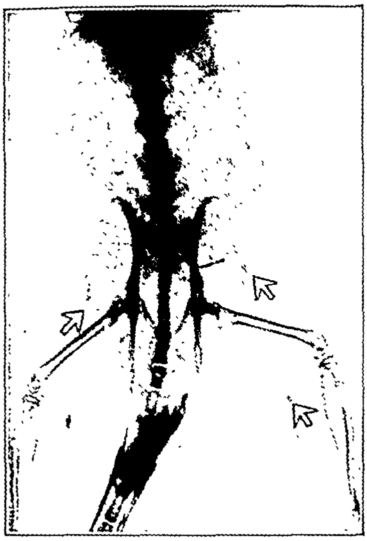

Fig. 1.—The popliteal and inguinal nodes and also a vessel leading from the tail of the rat to one of the lymph nodes.

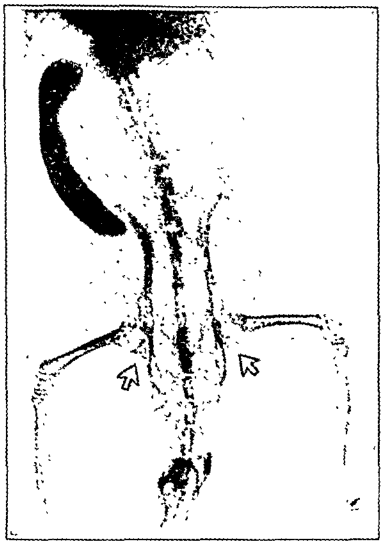

Fig. 2.—Visualization of inguinal lymph nodes with vessels. This rat was previously injected intravenously to visualize the liver and spleen. The inguinal lymph nodes were visualized, however, by subcutaneous injection with thorium dioxide.

The following experiments were conducted on the white rat and the dog to ascertain whether lymph nodes could be visualized in every instance and in different locations. Twelve white rats and one dog were used in these experiments. They were all injected with 0.1 to 0.25 cc. of thorium dioxide in the tail and legs, as near blood vessels as possible without introducing the material into them. These areas were chosen because of the prevalence of perivascular lymph spaces. It was found that visualization was produced more rapidly from this vicinity than when injections were made in other less vascular areas. Roentgenograms were made of each animal every twelve hours, and in every instance the lymph nodes were visualized in the region near the injections in from one to three days. These visualizations include popliteal (fig. 1), inguinal (fig. 2), axillary (fig. 3), and mesenteric (fig. 4) glands. Among the rats used, two were pregnant, and in both instances the lymph nodes were visualized much earlier and with greater density than in the nonpregnant rats. These subcutaneous injections of thorium dioxide have never produced any slough, abscesses or harmful effects. It is now more than two months since some of the animals were injected, and the thorium is still visible at the site of injection.

In order to be certain that the objects demonstrated on the roentgenograms were lymph nodes, we removed several of the lymph nodes and examined them by means of the roentgen ray. The marked density of these nodules left no doubt in our minds that they were impregnated with thorium. In the instances wherein we used a dog, injected in the same manner as the rats, a similar visualization of the inguinal lymph nodes was apparent (fig. 5). We removed these (fig. 6), and a histologic examination by Dr. W. H. Harris of the Department of Pathology, Tulane University of Louisiana School of Medicine, showed conclusively that the lymph nodes had absorbed a large quantity of thorium.

We are at present conducting similar observations on man and our encouraging results indicate that an early report on this subject will follow. Other experimental work is now under way in which the visualized lymph nodes are being studied to ascertain whether or not the radioactivity of thorium alone is sufficient to produce biologic changes; also whether the characteristic rays of thorium, when hard roentgen rays are applied to it, will be a factor in producing changes in the tissues of lymph nodes. If this can be shown to be the case, it will serve to stimulate investigation as to the greater effect that radiation therapy might have on malignant nodules impregnated with thorium. We are at present beginning such a study, to be reported later.

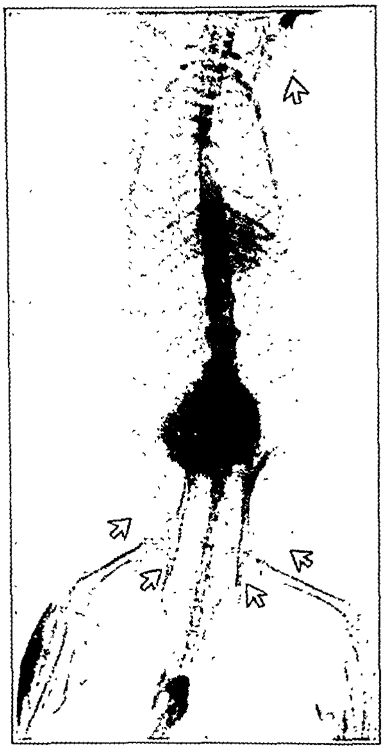

Fig. 3.—Visualized lymph node in the axillary space.

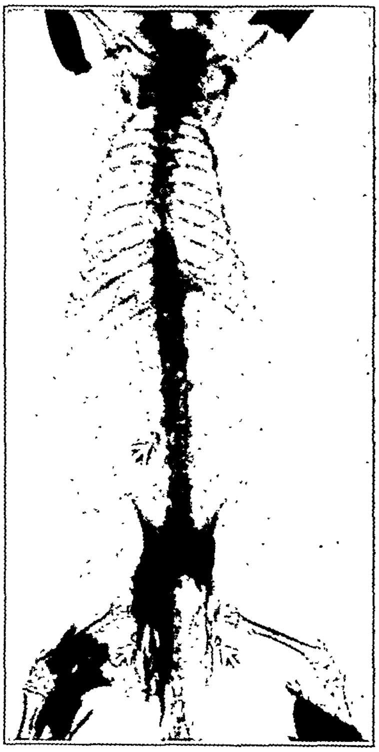

Fig. 4.—Visualization of the mesenteric lymph node and also inguinal lymph node.

The visualization of lymph nodes has two outstanding possibilities: namely, diagnostic and therapeutic. From a diagnostic standpoint, it can be appreciated that the possible visualization of lymph nodes in man could be of invaluable assistance to the surgeon in locating metastatic nodules before and after operation. From the therapeutic point of view, because lymph nodes absorb the metal thorium, which is radioactive and emits characteristic rays, it is possible that the efficacy of radiation therapy in cancer may in the future be greatly enhanced.

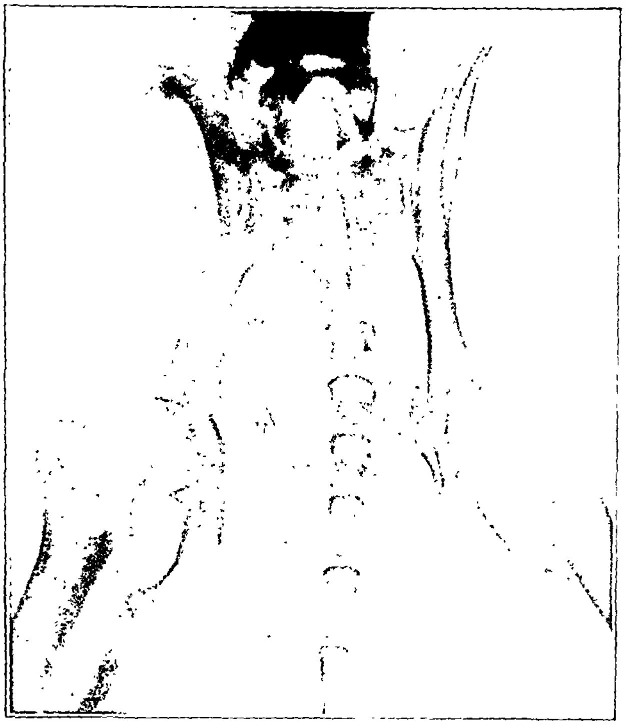

Fig. 5.—Visualized inguinal lymph nodes of a dog.

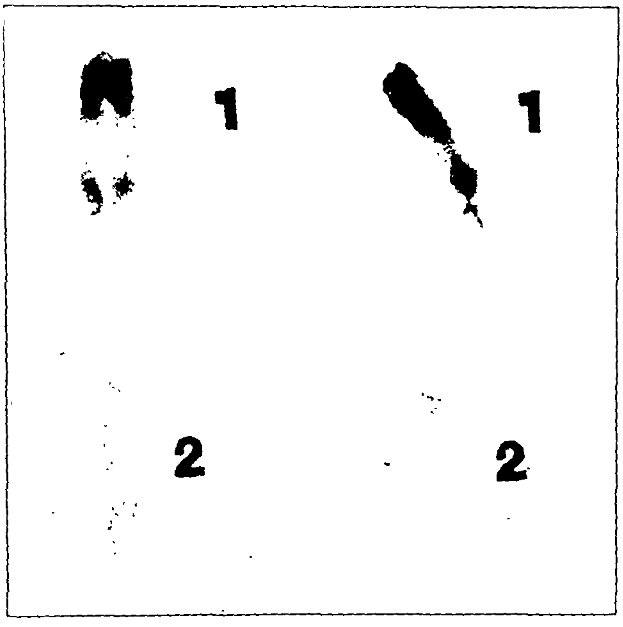

Fig. 6.—Same nodes as in figure 5, removed.

921 Canal Street.

# SKIN ERUPTIONS FROM BISMUTH THERAPY IN SYPHILIS

EDWARD A. SKOLNIK, M.D.
AND
IRMA ALESHIRE, M.D.
CHICAGO

With the increasing use of bismuth compounds in the treatment of syphilis, various skin eruptions due to the drug have been observed. A few examples are recorded in the American literature and a larger number are reported by foreign writers.

Among the acute types of eruptions described are the erythrodermatous and exfoliative,[1] scarlatiniform,[2] hemorrhagic,[3] urticarial[4] and those resembling erythema multiforme.[5] Both Lehner[6] and Boas[1] have reported herpes zoster at the site of a bismuth injection.

The chronic forms observed were the eczematous and maculosquamous.[7]

During the past three years, approximately 25,000 intramuscular bismuth injections have been given at the Central Free Dispensary of Rush Medical College. Twenty-two cases of bismuth eruption occurred during this time. The diagnosis was established in most of the patients by (1) development of the eruption during the administration of bismuth; (2) subsidence of the rash on discontinuing the drug; (3) recurrence of the lesions on readministering bismuth.

The first case to be recognized is reported here in full, because the diagnosis was not established until after the appearance in the same patient of eruptions resembling three common skin disorders.

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From the Department of Dermatology, Rush Medical College.

[1] Sezary, A., and Benoist, J.: Erythrodermie grave aprés une seule injection d'iodo-bismuthate de quinine, Bull. Soc. franç. de dermat. et syph. **34:** 419 (June) 1927. Voigt and Görl: Ueber toxische Hauterscheinungen nach Wismutbehandlung, München. med. Wchnschr. **71:** 904 (July 4) 1924. Froment, J., and Gaté, J.: Un cas d'érythrodermie bismuthique tardive avec lesions hyperkeratosiques et fissuraires des régions palmaires et plantaires, Lyon méd. **139:** 600 (May 22) 1927. Pinard, M.; Weil, M. P., and Louvel, R.: Un cas de dermatite exfoliatrice d'origine bismuthique, Bull. et mem. Soc. med. d. hôp. de Paris **48:** 660 (May 9) 1924. Lortat-Jacob, L., and Roberti, J.: Les érythrodermies bismuthiques, Médecine **8:** 147 (Nov.) 1926. Gaté, J., and Gardère, Henri: Accidents bismuthiques multiples, Lyon méd. **140:** 109 (July 31) 1927. Kerl, W.: Ueber Hautschädingung nach Bismogenolbehandlung, Wien. med. Wchnschr. **75:** 352, 1925. Pinard and Marassi: Dermatite exfoliatrice apres injection bismuthique, Bull. et mém. Soc. méd. d. hôp. de Paris **46:** 1434 (Nov. 3) 1922. Galliot, A.: Trois cas d'érythème bismuthique, Bull. Soc. franç. de dermat. et syph. **30:** 203, 1923. Gastou and Pontoizeau: Un cas d'érythrodermie bismuthique, Bull. Soc. franç. de dermat. et syph. **29:** 382, 1922. Hudelo, L., and Rabut, R.: Incidents et accidents de la [illegible] méd **32:** 312 (April 9) 1924. Boas, K.: Ue[illegible] im Verlaute der Wismutbehandlung [illegible] **20:** 1533 (Nov. 2); cont'd 1571 (Nov. 9) 1924.

[2] Galliot (footnote 1). Hudelo and Rabut (footnote 1). Boas (footnote 1). Gabriel, Ernst: Zwei Wismutexantheme nach Sorbismal, Dermat. Wchnschr. **86:** 571 (April 28) 1928. Decrop: Accidents de la médication bismuthique, Bull. Soc. franç. de dermat. et syph. **31:** 456, 1924. Grund, J. L.: Disorders of the Skin Following Intramuscular Administration in Syphilis, Boston M. & S. J. **196:** 996 (June 16) 1927. Nicholas, Joseph; Gaté, J., and Leboeuf, F.: Eruption lichenoide d'origine bismuthique, Bull. Soc. franç. de dermat. et syph. **30:** 275, 1923.

[3] Hudelo and Rabut (footnote 1). Heimburger, L. F.: Severe Bismuth Poisoning, China M. J. **40:** 842 (Sept.) 1926. Sternberg, A.: Ueber eine Wismutschadingung der Haut, Arch. f. Dermat. u. Syph. **148:** 28, 1924.

[4] Galliot (footnote 1). Hudelo and Rabut (footnote 1). Grund (footnote 2). Helfer, Adolf: Zwei Fälle von urtikariellem Mesurolexanthem, Dermat. Wchnschr. **83:** 1358 (Sept. 11) 1926. Gougerot, H., and Peyre, E.: Anaphylaxie et sensibilisation au bismuth, Ann. d. mal. vén. **22:** 181 (July) 1927. Bueler, F. A.: Wismutschädigungen, Zentralbl. f. Haut- u. Geschlechtskr. **14:** 281, 1924-1925. Fouquet, C., and Machton: Manifestations cutanées au cours des traitments par le bismuth seul ou associé au mercure, Bull. Soc. franç. de dermat. et syph. **32:** 289, 1925. Lepinay, E.: Urticaire provoquée par des injections de sel de bismuth, Bull. Soc. franç. de dermat. et syph. **30:** 150, 1923.

[5] Hudelo and Rabut (footnote 1). Gabriel (footnote 2). Müller, H.: Wismutbehandlung der syphilis, Zentralbl. f. Haut- u. Geschlechtskr. **7:** 289.

[6] Lehner, E.: Toxisches Erythem und Herpes Zoster nach intramuskulärer Bismutinjektion, Dermat. Wchnschr. **77:** 1107, 1923.

[7] Gastou and Pontoizeau (footnote 1). Hudelo and Rabut (footnote 1). Grund (footnote 2). Gougerot and Peyre (footnote 4). Fouquet and Machton (footnote 4). Holzamer, H., and Schultze-Heubach, H.: Ein Fall von Hartnäckigem, fast universellem Wismutexanthem mit folgender Neurodermisierung (Lichenifikation), Klin. Wchnschr. **4:** 1448 (July 23) 1925. Mulot, O. L.: Bismuth Skin Manifestations in Cases of Syphilis, M. J. & Rec. **126:** 103 (July 20) 1929.

CASE 1.—A Jewess, aged 35, with latent syphilis, received sixteen weekly injections of potassium bismuth tartrate in oil with no untoward reaction to the drug. Six neoarsphenamine treatments, followed by eighteen injections of water soluble bismuth sodium tartrate, were given. After the sixteenth bismuth treatment, she presented numerous coin-sized, oval, fawn-colored, scaling macules which followed the cleavage planes of the skin on the neck, trunk, arms and thighs. This was pruritic and was considered to be pityriasis rosea.

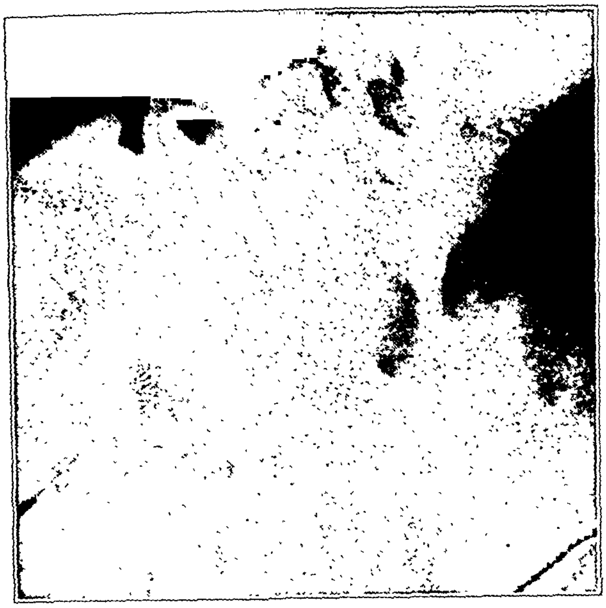

Fig. 1 (case 1).—Patches of lichenified dermatitis and pigmented relics of old lesions on the chest and neck during the third attack of bismuth dermatitis

Marked improvement in the lesions occurred during six weeks' rest and six subsequent neoarsphenamine treatments. Three weekly potassium bismuth tartrate injections were followed by the appearance of generalized, papular, lichenoid patches, from 0.5 to 3 cm. in diameter. Many of the lesions were pigmented. A diagnosis of lichen planus was considered; but under a presumptive diagnosis of a lichenoid neoarsphenamine rash, bismuth was discontinued and fifteen daily intravenous treatments of 1 Gm. of sodium thiosulphate were given. Because of only slight improvement, a diagnosis of lichen planus was made and mercuric chloride administered intragluteally for three months. The lichen planus-like patches disappeared, leaving pigmented relics.

After a rest, neoarsphenamine was given guardedly without mishap for a total of ten injections. It was then felt certain that she was not sensitive to this drug, but possibly to bismuth. After fourteen weekly bismuth treatments new lesions appeared in the pigmented relics of many of the old patches (fig. 1). These were fewer, larger, and of an acute eczematous nature with lichenification supervening. It was now decided that this and all previous eruptions had been caused by bismuth. She slowly recovered under intravenous sodium thiosulphate therapy. A test injection of bismuth caused a reactivation of some of the eczematoid lesions.

The patient's general health remained good throughout the entire period of observation. Urinalyses were invariably negative. A biopsy (fig. 2), done at the time of the lichen planus-like eruption, showed a nonspecific type of inflammatory reaction, with collections of small round cells immediately under the epidermis and about the blood vessels of the cutis.

There were thirteen patients, seven of whom were Negroes, who presented acute, erythematous, scaling, oval patches, following the cleavage planes of the skin and simulating the lesions of pityriasis rosea. Of these, seven were proved to be due to bismuth by withdrawal of the drug, administration of sodium thiosulphate, and recurrence of the lesions on the readministering of bismuth.[8] The following history is typical of this type of bismuth eruption.

CASE 2.—A white man, aged 31, with secondary syphilis, received ten neoarsphenamine and fifteen potassium bismuth tartrate injections, and a course of mercury rubs. Then, six neoarsphenamine and five bismuth treatments were given, when a mildly pruritic, pityriasis rosea-like exanthem appeared over the thorax and the arms (fig. 3). This eruption practically disappeared after four intravenous treatments of sodium thiosulphate, and promptly reappeared at the old sites following two injections of bismuth. The eruption again cleared and reappeared in an aggravated form following five treatments of bismuth salicylate in oil. This patient had three attacks of bismuth dermatitis, provoked by two different preparations of bismuth in oil.

In several instances, this acute type of pityriasis rosea-like rash became chronic and lichenified, as the result of scratching. However, all cleared up as soon as the bismuth depots in the body had been eliminated. Soothing, oily lotions were the only local medication used in these cases.

In several instances, in which the patient was intolerant to mercury or the eruption mild, bismuth was given cautiously as the only intramuscular medication. In some, a mild dermatitis persisted throughout bismuth therapy. In others, gradual desensitization to the drug and complete disappearance of the rash occurred during treatment. Case 3 is illustrative of this desensitization:

CASE 3.—A Negro, aged 40, with secondary syphilis, developed an acute, patchy, erythematosquamous rash, scattered sparsely over the arms, chest, abdomen, thighs and legs, following the first course of neoarsphenamine and bismuth. The rash subsided during a rest and a course of neoarsphenamine. After the fourth injection in a new series of bismuth treatments, he developed a slight stomatitis and an exacerbation of a moderate number of the old lesions. A severe mercurial stomatitis and diarrhea occurred on three separate occasions when mercury was substituted for bismuth. For this reason, bismuth was used thereafter, in spite of the known bismuth sensitivity. The lesions persisted in a lichenified form during a twelve weeks' course of bismuth.

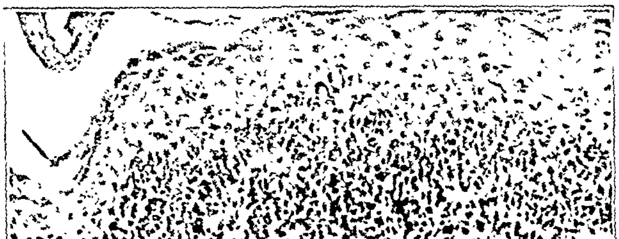

Fig. 2 (case 1).—Section taken at biopsy during the second attack of dermatitis, which shows the nonspecific character of the inflammatory infiltrate of a papule.

After a rest and a neoarsphenamine course, the skin was normal, excepting for pigmented relics of the patches. Following the twelfth bismuth treatment in this course, a mild lichenified recurrence appeared with no accompanying stomatitis. Later, a fourth course of bismuth produced no skin reaction whatever. While this patient was becoming desensitized, there was no change in the kind of drug used.

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[8] Since this paper was accepted for publication, two more of the pityriasis rosea-like eruptions have been proved by our three criteria to be due to sensitivity to bismuth.

In one case the patient had an erythematosquamous eruption with acute urticaria preceding it. This was the only urticarial reaction from bismuth in our series and was identical with a case reported by Courcous and Boutelier.[9]

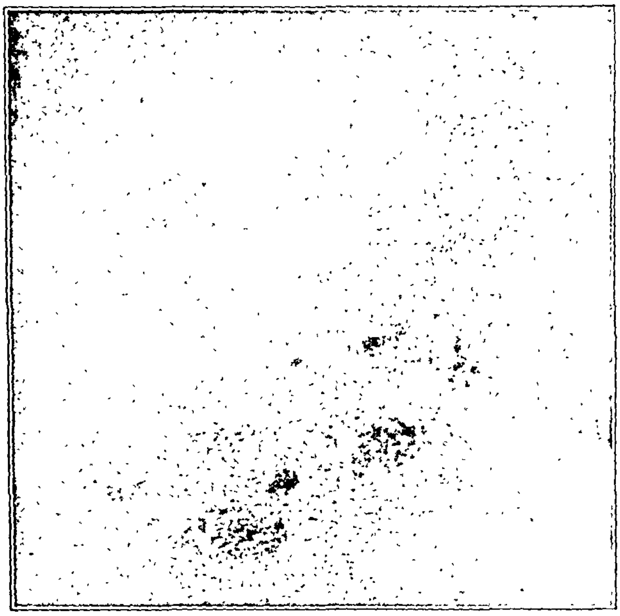

Fig. 3 (case 2).—Acute pityriasis rosea-like, oval, scaling patches on the anterolateral chest wall.

Case 4.—A young adult Negro with secondary syphilis received a course of neoarsphenamine and three injections of potassium bismuth tartrate, when an eruption appeared on the thorax and the abdomen. He did not report this until immediately after receiving the fifth bismuth treatment. At this time, he had maculosquamous lesions interspersed with acute, urticarial wheals, about 18 mm. in diameter, on the lateral and anterior aspects of the trunk. He stated that the wheals appeared first and developed into a scaling patch. Twenty-four hours later, many new wheals, severe nausea, and a moderate jaundice had appeared. Urinalysis was negative for sugar and albumin. Sodium thiosulphate cleared up the condition, after which he disappeared from observation.

In cases 5 to 14, inclusive, relatively mild erythematosquamous eruptions of a pityriasis rosea-like type were present. Of these, five proved to be bismuth sensitive according to the three criteria previously outlined. The diagnosis in the other cases was made from the occurrence of the distinctive rash during bismuth therapy. Except for one case of moderate stomatitis, there was no evidence of injury to the body associated with the dermatitis from bismuth in cases 5 to 14.

One instance of a lichen planus-like bismuth eruption appeared in the following case:

Case 15.—A white man, aged 30, with latent syphilis developed, during bismuth therapy, an eruption on the flexor aspects of the forearms and wrists. It consisted of small, polygonal, violaceous, flat-topped papules, indistinguishable from lichen planus. The patient had three different attacks of this dermatitis while receiving bismuth, the first clearing up with mercury therapy under a mistaken diagnosis of lichen planus. The second was recognized as a bismuth exanthem, disappearing with the use of sodium thiosulphate. The third attack was deliberately precipitated as a test.

In patients 16 and 17, one, a Negress, and the other, a white woman, a pruritic, generalized, fine, horny, folliculopapular eruption appeared. In the Negress, the eruption was so benign that two courses of bismuth were given, even though the rash persisted throughout treatment. In the white woman, the eruption tended to become more severe and exfoliative, precluding the use of bismuth. This was the second case in the series caused by bismuth salicylate. It was the only case of exfoliative dermatitis in our group, in contrast to the great number of these reported in the literature.

Patients 18 to 22 inclusive, two of whom were Negroes, developed a lichenified dermatitis, simulating lichen simplex chronicus, during treatment with bismuth. As in the previous cases, the patches subsided during rest periods and reappeared on subsequent therapy with bismuth. The patches were not very numerous and appeared on the neck, forearms and legs as pruritic, oval, pigmented, lichenified lesions up to the size of a palm (fig. 5). When seen early in their evolution, these patches presented vesicles with oozing and crusting. Three patients of this group never received neoarsphenamine from us. Two of the cases proved to be bismuth eruptions by fulfilling the criteria previously outlined.

## COMMENT

In all the cases here reported, the eruptions that developed as a manifestation of bismuth sensitivity had never previously appeared in these patients. The exanthems occurred during the administration of bismuth and ceased after the withdrawal of the drug, though some of the common skin disorders which they simulated are notably refractory to therapy. Since the eruptions in this series were so benign and resembled some of the usual skin diseases, we felt justified in

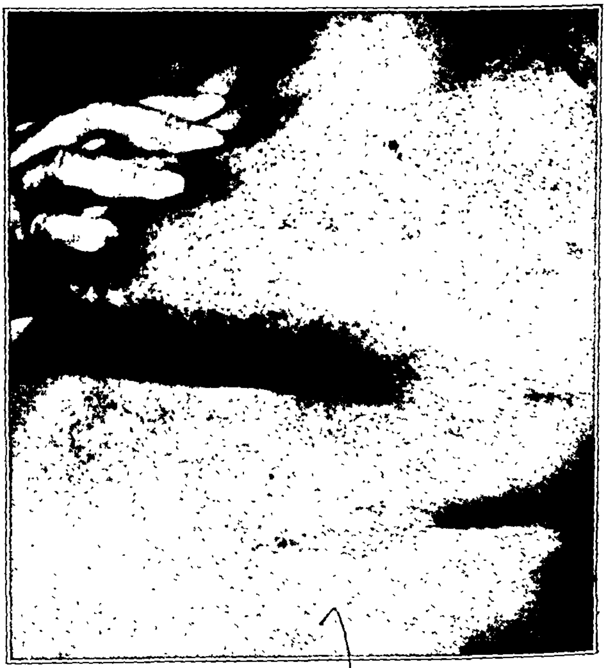

Fig. 4.—Same type of eruption as in case 3 on the skin of a Negress.

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[9] Courcous and Boutelier, A.: Eruption pigmentée survenue au cours d'un traitement arsenico-bismuthique, Bull. Soc. franç. de dermat. et syph. 31: 59, 1924.

reproducing the condition a second or even a third time to prove the etiologic rôle of the bismuth. Thirteen of the cases were tested and proved in this fashion.

The mildness of the eruption is best illustrated by those cases in which the use of bismuth was continued in spite of the sensitivity, some of these patients gradually becoming desensitized. In contrast to these cases, there are reports in the literature of cases comparable in severity to those of arsphenamine dermatitis.

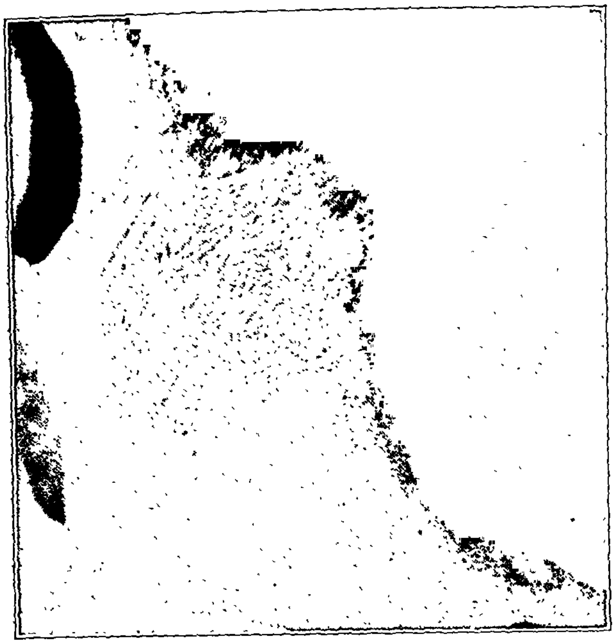

Fig. 5 (case 18).—Lichen simplex chronicus-like bismuth dermatitis on the neck.

The acute types of rash produced were the urticarial, folliculopapular, exfoliative, and the erythematosquamous, which resembled pityriasis rosea. The chronic types were the lichen planus-like and the chronic lichenified form, simulating lichen simplex chronicus. By far the greater number, fourteen, were in the pityriasis rosea-like group.

The incidence of skin reactions was approximately 1 in 1,140 bismuth treatments. Of the twenty-two cases reported, ten were in the Negro race, which is a much higher incidence than in the white race, considering the relative attendance of the two in the syphilis clinic. Reactions occurred with all the preparations used, which were an oil suspension of potassium bismuth tartrate, an aqueous solution of bismuth sodium tartrate, and an oil suspension of bismuth salicylate. The eruption was reproduced in several instances by a different preparation of bismuth, indicating that the sensitization was to bismuth alone.

These reactions developed in patients undergoing treatment for all stages of syphilis. In no case was there sensitivity to neoarsphenamine, although one man showed a marked sensitivity to mercury. Other than the skin lesions there were no subjective or objective manifestations attributable to the bismuth, except in two cases with moderate stomatitis and in another case with severe nausea and icterus. No serologic change attributable to the nonspecific action of the eruptions (esophylaxis) was found after their healing.

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# NONRACHITIC CUPPING OF LONG BONES IN THE NEW-BORN

## A ROENTGENOLOGIC AND CLINICOPATHOLOGIC STUDY

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EDWARD F. BURT, M.D.
ARDMORE, PA.

The possible existence of congenital rickets and its recognition have been much discussed. The problem has been approached from both the roentgenologic and the histologic angles, but little attempt has been made to correlate the observations of one with the other. Ylppö,[1] in a roentgenographic investigation of eighty-eight premature infants, believed that evidence of rickets was present in the long bones of five. Hess and Weinstock,[2] in a similar study of 250 new-born infants, found fraying with a tendency to cupping in the ulnas in a few instances, but they were unable to find a frank case of congenital rickets. Histologic studies carried out by Schmorl[3] on a series of over 100 full term and premature infants failed to show evidence

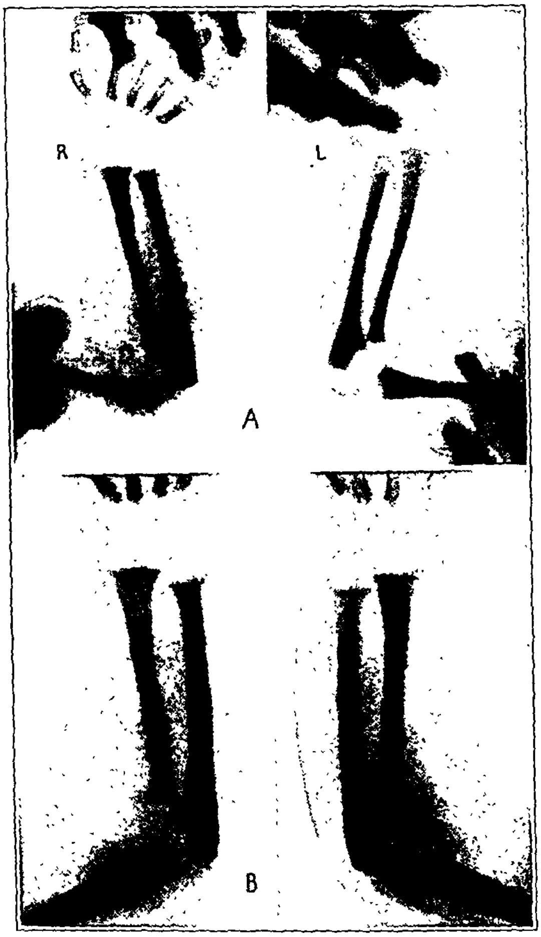

Fig. 1.—*A*, cupping of ulnas of baby 2 shortly after birth; *B*, characteristic rachitic changes of radius and ulna in same infant at 13 weeks of age.

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From the x-ray and obstetric departments of the Jefferson Hospital.

[1] Ylppö, A.: Das Wachstum der Fruehgeborenen von der Geburt bis zum Schulalter, Ztschr. f. Kinderh. **24**: 111, 1919.

[2] Hess, A. F., and Weinstock, Mildred: A Comparison of the Evolution of Carpal Centers in White and Negro New-Born Infants, Am. J. Dis. Child. **29**: 347 (March) 1925.

[3] Schmorl, G.: Die pathologische Anatomie der rachitischen Knochenerkrankung, Ergeb. d. inn. Med. u. Kinderh. **4**: 403, 1909.

of rickets. Hess[4] cites the earlier histologic work of Pommer[5] in which the observations were identical with those of Schmorl.

Alterations in the diaphyso-epiphyseal line due to rickets are reflected in roentgenograms. The characteristic saucer-shaped deformity and jagged irregularity of the end of the diaphyses are universally recognized.

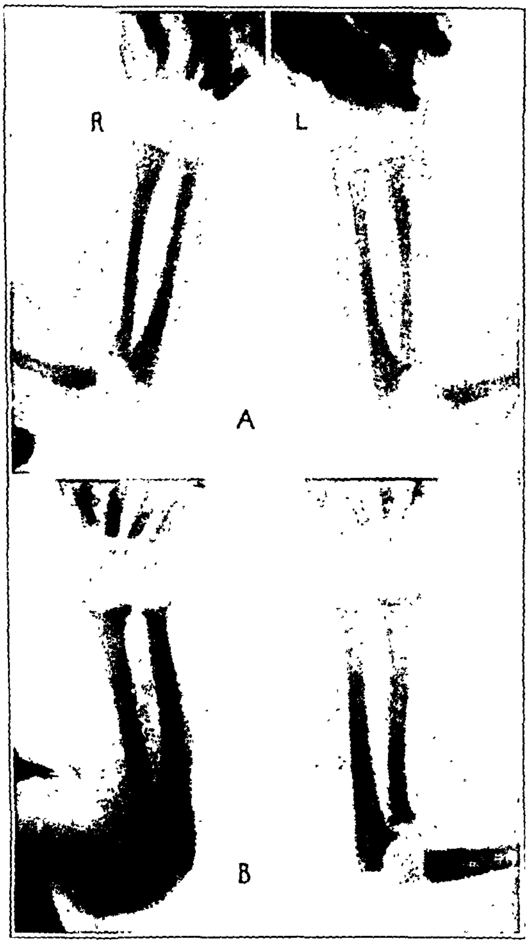

Fig. 2.—*A*, cupping of ulnas of baby 5, shortly after birth; *B*, characteristic rachitic changes of radius and ulna in same infant at 13 weeks of age.

In an attempt to find patients suitable for use as controls in a study of antirachitic agents, we made roentgenograms of the long bones of forty-two infants ranging in age from 3 to 28 weeks. Two infants, aged 4 weeks, and two, aged 5 weeks, showed cupping. We thought that this deformity might be rachitic.

To determine the earliest age at which cupping could be found roentgenographically we roentgenographed a group of Negro infants born during the months of February, March and April. We chose Negro infants because of the high incidence of clinical rickets in children of this race. Theoretically, the material was eminently suitable for the development of congenital rickets; the majority of the mothers came from unhygienic homes, lived on diets poor in vitamin D and received very little sunshine during the latter months of pregnancy.

The forty-eight new-born Negro infants in this selected group were roentgenographed within the first two days of life. Seven showed evidence of abnormality, cupping or flange formation in one or more of the bones. Cupping of the ulnas was present in each of the seven; in two the fibulas were also involved, and in one instance the ends of each radius, ulna, tibia and fibula were altered, as shown in the accompanying table. Five of the seven we were able to reexamine after an interval of several weeks. Two, studied thirteen weeks after birth, showed marked cupping and irregularity of all the bones (figs. 1 and 2). One infant showed cupping of the ulnas alone at 8 weeks; another, at 5 weeks of age, showed changes in the fibulas in addition to those noted in the ulnas at birth. One infant, reexamined at 3 weeks of age, was normal.

Of the two infants showing cupping at birth who were not reexamined, one died and autopsy was not obtained, and the mother of the other refused to have her baby restudied.

*Results of Roentgen Examination at Birth and a Subsequent Examination at a Later Date**

| | First Examination | | | | Second Examination | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baby | Ulna | Fibula | Radius | Tibia | Ulna | Fibula | Radius | Tibia | Age at Second Examination | Maternal Prenatal Environment | Cord Wassermann Reaction | Maternal Wassermann Reaction |
| 1 | | .. | .. | .. | + | + | .. | .. | 5 wks. | Very poor | Neg. | Neg. |
| 2 | + | .. | .. | .. | + | + | + | + | 13 wks. | Very poor | Neg. | Neg. |
| 3 | | .. | .. | .. | + | .. | .. | .. | 8 wks. | Poor | Neg. | ..... |
| 4 | | .. | .. | .. | Not repeated | | | | | Poor | Neg. | Neg. |
| 5 | | .. | .. | .. | | | | | 13 wks. | Fair | Neg. | Neg. |
| 6 | | .. | .. | .. | 0 | 0 | 0 | 0 | 3 wks. | Good | Neg. | Neg. |
| 7 | | + | + | + | Died | | | | | Poor | Anti-Comp. | Neg. |

* The presence of cupping is indicated by a plus sign.

These studies clearly indicated the existence of cupping in the new-born. From the clinical course, with the development at a later date of the unmistakable rachitic deformity, it appeared that the cupping was probably due to congenital rickets. In an attempt to confirm these observations, we next studied roentgenographically and by histologic sections the ends of the long bones of still-born infants. Cupping was again

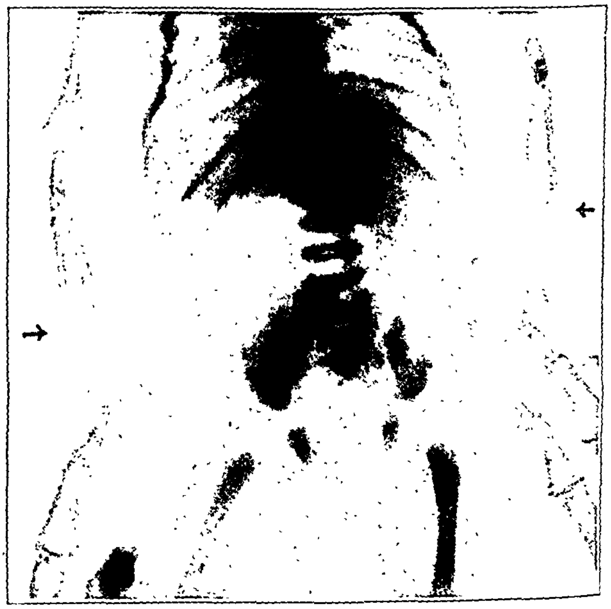

Fig. 3.—Ulnas of still-born normal infant; cupping indicated by arrows (microscopic section shown in figure 4).

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4. Hess, A. F.: Rickets Including Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.

5. Pommer, G.: Untersuchungen über Osteomalacie und Rachitis, Leipzig, F. C. W. Vogel, 1885 (quoted by Hess, footnote 4).

observed roentgenographically (fig. 3); but, on microscopic study of sections of the ends of the bones, none of the evidences of rickets were found. Instead of an irregular line at the diaphyso-epiphyseal junction made up of numerous prolongations of cells sent out by the cartilaginous overgrowth, as is characteristic of rickets, a perfectly regular and normal arrangement of columns was found. However, the zone of preparatory calcification, instead of joining the zone of proliferating cartilage as a straight or convex line as is usual in normal bone, presented a concave surface (fig. 4). This concavity was responsible for the cupping noted roentgenographically.

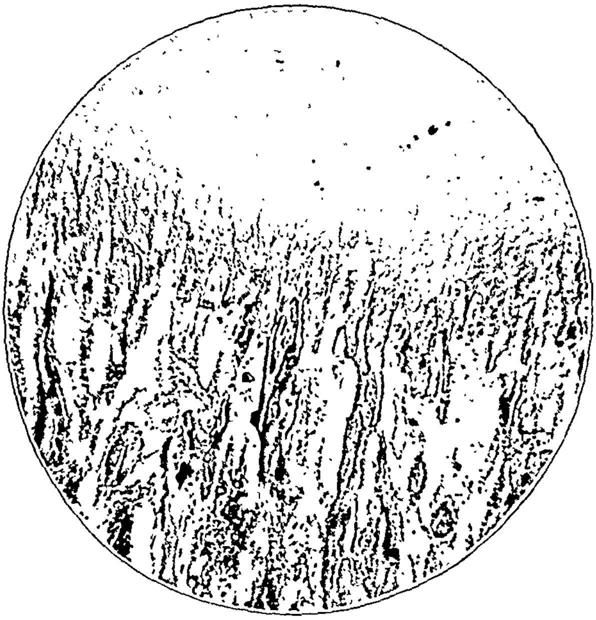

Fig. 4.—Section of ulna of still-born baby (fig. 3) showing a concavity in which the zone of preparatory calcification joins the zone of proliferating cartilage. This concavity is seen as cupping roentgenographically in figure 3.

### SUMMARY

1. In a series of forty-eight new-born Negro infants, cupping of the long bones was found in seven; of these, unmistakable evidence of clinical rickets appeared in four from five to thirteen weeks after birth.
2. A similar deformity was found roentgenographically in still-born infants, but on histologic examination there was no microscopic evidence of rickets.
3. The cupping was due to a concave variation from the usual normal straight or convex line at the junction of the zone of proliferating cartilage and the zone of preparatory calcification.

### CONCLUSION

Roentgenographically recognizable cupping is sometimes present normally in the ends of the long bones of new-born infants, caused by a normal variation in the manner in which the zone of preparatory calcification joins the zone of proliferating cartilage.

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**The Value of Life.**—Fortunate is the youth who discovers early the positive value of existence itself. . . . If one would find examples of normal healthy-mindedness as well as egoism, fear, superstition, and conceit, read Dickens and Hawthorne and Kipling. Better still go among the workers in our industries and on our farms.—Burnham, W. M.: The Wholesome Personality, New York, D. Appleton and Company, 1932.

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# Clinical Notes, Suggestions and New Instruments

## A HOLLOW KIDNEY STONE

Howard L. Cecil, M.D., Baltimore

Stones that have remained in the ureter for a long time occasionally have holes through them. I have such a specimen, which was removed from a man who gave a history of ureteral colic for several years. Other urologists have found similar specimens. The method of formation of these stones is similar to that of other calculi. The deposit is made on the primary calculus, but it follows the circumference of the ureter, leaving a groove or a hole through the stone.

The specimen presented here is so unusual and the conditions contributing to its formation so rare that it seems wise to report it. I have not found the report of a similar case. Joly says it is impossible for hollow stones to form. He did not, however, consider such unusual conditions as those contributing to the formation of this stone.

*History.*—A man, aged 31, complained of a pain in each kidney, worse on the left side. The patient's father had tuberculosis; the patient had been associated with him during eight months of his illness.

The patient stated that he had had an injury to the spine three years before. No defects could be found. His previous history was otherwise negative except for the following:

When the patient was 3 years old, he was kicked by a horse on the right side. The three lower ribs were fractured and there was evidently an injury to the right kidney. He had hematuria for about three days but recovered completely in about three weeks. During the following sixteen years there was no trouble. While in the navy, he fell from a hammock and again injured the right side. He again had hematuria, which recurred at intervals during the following eight years. There were numerous attacks of severe pain in the right side, accompanied by nausea and vomiting, but no chills or fever. During all these eight years, there was a thin, watery, urethral discharge. This was diagnosed as gonorrhea and treated as such while he was in the navy. He stated that no exposure occurred which could have accounted for gonorrhea.

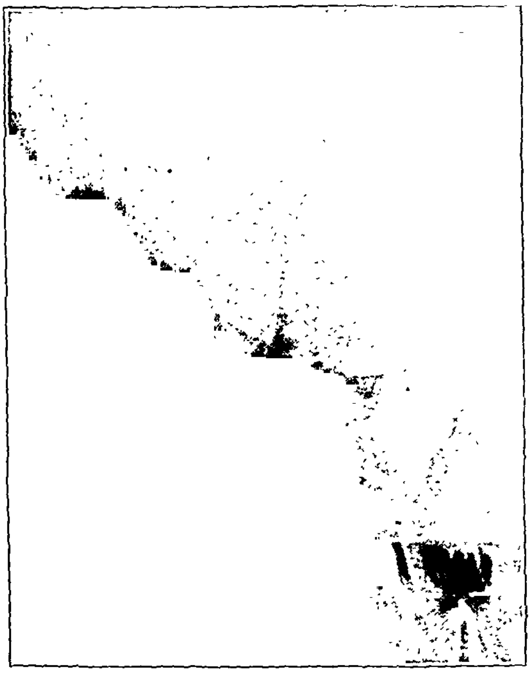

Fig. 1.—Appearance of stone in plain roentgenogram.

Eight years after the injury in the navy he consulted a surgeon, who made a roentgen examination and found a stone in the right kidney. A cystoscopic examination was not done. The stone was removed through a pyelotomy. After the operation the surgeon told the patient that he was sorry he had not removed the kidney.

*Following the operation, there was no urethral discharge and* no hematuria, but the patient had almost constant pain in the right kidney region. One year after the removal of the stone, pain began in the left kidney region. This had gradually grown worse until, on admission, it was very severe and worse than that in the right side. The pain in the left side was located in the back beneath the last rib. It did not radiate. The pain in the right side radiated to the rectum, bladder and testicle. He again noticed hematuria three days before; there had been none for twenty-four hours.

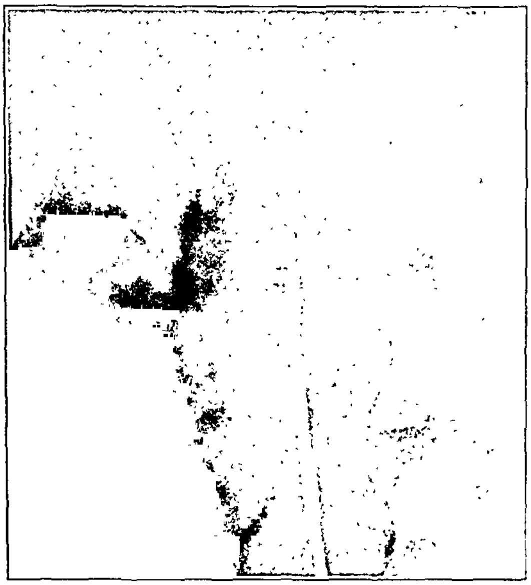

Fig. 2.—Pyelogram of kidney four years after removal of stone.

*Examination.*—General physical examination was negative. There was no tenderness over either kidney region; neither kidney could be felt.

The sphincter tone was good. The rectum was normal. The prostate was larger than normal. It was indurated throughout, particularly on the outer borders. The seminal vesicles could not be palpated, except the lower portion, but appeared thickened. The secretion contained considerable pus.

Examination of the urine was negative for albumin, sugar, pus, blood, casts and infection (smear).

A phenolsulphonphthalein test resulted in the return of 60 per cent of the dye in the first half hour, and 10 per cent in the second half hour.

A cystoscope entered with ease. The prostatic orifice and bladder were normal. A number 8 catheter was passed with ease up the left ureter. A number 6 passed with difficulty up the right.

Nothing was obtained from the right kidney. Examination of the left kidney was negative for pus and infection. Phenolsulphonphthalein appeared in three minutes; 40 per cent was collected in fifteen minutes.

Roentgenograms made before the removal of the stone showed a shadow 3 by 2 cm. opposite the second lumbar vertebra (fig. 1) just between the twelfth rib and the psoas muscle. The shadow was faint, with the greatest density at the periphery. The outline of the kidney was not shown.

Pyelograms done four years after the removal of the stone (fig. 2) showed ureters of normal size and position. The pelvis of the right kidney was circular and measured 1 cm. The calices were represented by two small projections 0.5 cm. in diameter and length. A pyelogram of the left kidney was negative.

Following this examination, the temperature rose to 105 F. and remained high during the following two days. There was considerable nausea and vomiting. The urinary output was scant. There was considerable pain, most marked in the left kidney region. The urine, which had been free of pus, now contained a great deal, as well as many bacilli. For fear that the left and only functioning kidney might be infected, another cystoscopic examination was done. Apparently clear urine was coming from the left kidney, but a thick, creamy pus exuded from the right ureteral meatus. Since the temperature was accounted for by the infection of the right kidney, ureteral catheterization was not done, as it seemed impossible to drain the kidney adequately by this method. The patient quickly recovered from this flare up but refused operation at this time. He returned one month later and the right kidney was removed.

*Operation and Result.*—The scar was excised and the usual approach to the kidney easily carried out. In spite of a careful search, the kidney was not found. The ureter was identified and was followed upward into a mass of scar tissue about 4 cm. long and 3 cm. thick. This was removed and represented the remains of the kidney.

The recovery was uneventful. The patient was discharged from the hospital ten days after the operation. The infection of the urine quickly cleared up after the operation.

*Pathologic Examination.*—This was done by Dr. Gofarth. The specimen was an irregular structure, measuring 3 by 2 by 2 cm. Tags of fatty tissue were attached. A duct extended from the mass for about 3 cm. On section, it was found that the central part of the specimen had undergone cystic change. Cloudy mucoid fluid was present.

Microscopically, section through the specimen showed chiefly scar tissue. Here and there, remnants of tubules and occasionally an obliterated or obliterating glomerulus was seen. In the center of the specimen, cystic structure lined by pelvic mucosa was demonstrable. Section through the ureter showed the entire wall heavily infiltrated with chronic inflammatory cells.

The diagnosis was total destruction of the kidney secondary to infection.

The stone removed at the previous operation was light yellow and measured 3.5 by 3 by 2 cm. (fig. 3). It was a mere shell. Its weight was 1.8 Gm. There were three holes in it, two at the upper end and one at the lower end. The outer surface was slightly irregular but smooth. There was no evidence that stone had been formed by deposits on the pelvic wall. The inner surface was very smooth. The wall was thin, varying from about 0.1 to 0.5 mm.

Analysis of the stone showed that it consisted chiefly of phosphates, but it had some organic material in it. There were no oxalates or uric acid.

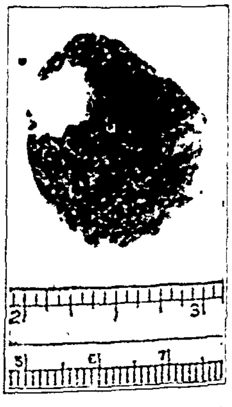

Fig. 3.—Stone removed at previous operation.

COMMENT

Most probably, the severe injury to the kidney when the patient was 3 years old caused a blood clot to fill the pelvis of the kidney. Urinary salts were deposited on the clot, which disintegrated, leaving a thin shell. At about this time the kidney ceased functioning; otherwise the center of the stone would have been filled with salts, and the stone would have grown up into the calices. It is known that in some cases of severe trauma the kidney secretes for a short time and then ceases to function. It is to be assumed that this is what happened in this case.

The injury he suffered sixteen years later does not seem to have been sufficient to destroy the kidney but was probably sufficient to cause trouble in one already filled with a stone and probably severely infected. All subsequent symptoms can readily be accounted for by the infection in a destroyed kidney.

The case demonstrates again the advisability of late examination of patients who have had severe kidney injuries.

518 Medical Arts Building.

## A PUMP FOR CLINICAL AND LABORATORY PURPOSES WHICH EMPLOYS THE MILKING PRINCIPLE

C. M. Van Allen, M.D., Peiping, China

The instrument here presented pumps fluid or gas through a rubber tube by the action of a series of rollers on a tube. It has been in use for several years and has proved advantageous for numerous clinical and laboratory operations, including direct and indirect blood transfusion, aspiration of fluids from body cavities, infusion, administration of artificial pneumothorax, and circulation between appliances for various purposes. The transfusion of blood and the administration of pneumothorax are the more recent accomplishments and are done with particular facility. The milking principle of the pump deals well with viscid, sticky or coagulable fluids while pumps that depend on the action of pistons or automatic valves are liable to obstruction. Additional features are the continuous stream, accurately measurable delivery, instantly reversible action, production of ample degrees of both pressure and suction, and ready adaptability to aseptic operation.

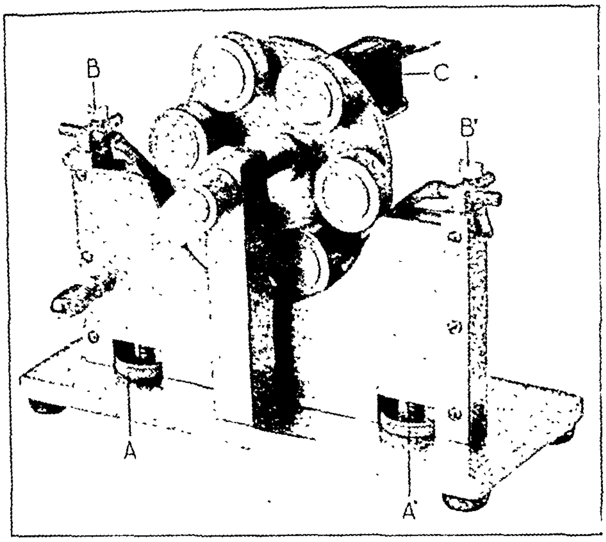

Fig. 1.—The pump.

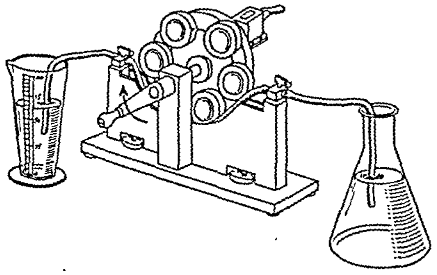

Fig. 2.—Method for calibrating the pump. The number of revolutions required to displace 100 cc. of water into the graduated container is determined and the displacement at each revolution is calculated. These values serve thereafter for estimating displacements while pumping either liquids or gases.

The pump has a wheel 14 cm. in diameter, mounted vertically with shaft and bearings on a base (fig. 1).[1] A driving handle is attached to the shaft. Six rollers are mounted on bearings at regular intervals along the periphery of the wheel, and they are met and pressed against from below by a semicircular track 30 cm. long. The track is supported on springs, the tension of which is adjustable by two thumb-screws (*A, A'*). Between the rollers and the track lies a rubber tube, which is held in place by connection to two short metal tubes fixed at the ends of the track. Each metal tube is T shaped and has two free limbs for the attachment of outside lead-tubes. One of the free limbs carries a stopcock (*B, B'*). An automatic counter (*C*) on the shaft records the revolutions of the wheel. Construction is metallic and durable throughout, except for the tube under the rollers, which is made of live rubber and is replaceable from stocks of standard hospital tubing. The tube suitable for most purposes has an internal diameter of about 6 mm., but larger ones, up to 1 cm. in caliber, can be used. The tubes in the pump, together with any lead-tubes that may be attached, are removable without separation from one another.

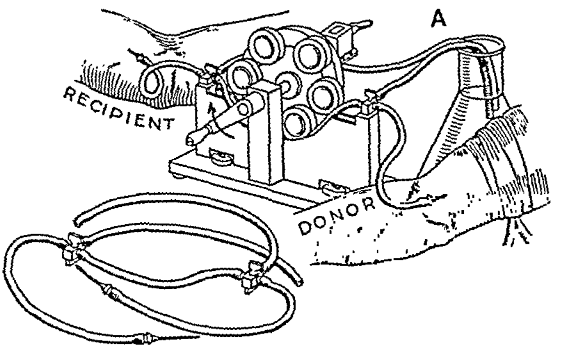

Fig. 3.—Method for direct blood transfusion. Tubes at *A* lead to a flask of saline solution. All tubes are filled with saline solution beforehand and are flushed with it at any time that transfusion is temporarily stopped. This is done by opening the stopcocks of the tubes to the saline solution, one at a time, and by pumping in the appropriate directions. The cocks are kept closed, as shown, at other times. Inset shows the tubes and needles assembled and removed from the pump preparatory to sterilization for whole blood transfusion.

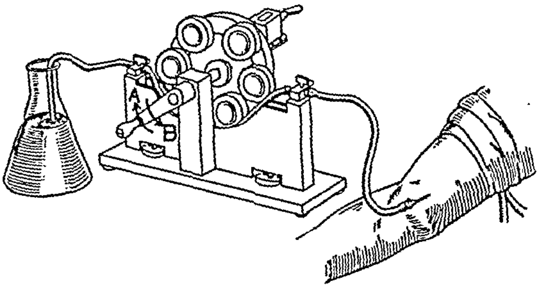

Fig. 4.—Method of drawing blood into citrate solution (direction of rotation *A*) and of injecting citrated blood (direction *B*) for indirect blood transfusion. Aspiration and injection of fluids in other parts of the body are performed similarly.

Pumping is accomplished by turning the wheel; the rollers drive the contents of the tube ahead and the elastic recoil of the tube draws in more contents from behind. When resistance at the ends of the tube interferes with these effects, pressure is produced ahead and suction behind, either of which may be as great as the rubber can carry without bursting from its connections or collapsing. The tension of the springs must be sufficient to obliterate completely the lumen of the tube but not great enough to cause the rollers to push the tube forward. While the total volume pumped must be calculated from the number of revolutions, the volume per revolution should be determined by trial beforehand, by pumping water into a graduated container (fig. 2). A 6 mm. tube delivers about

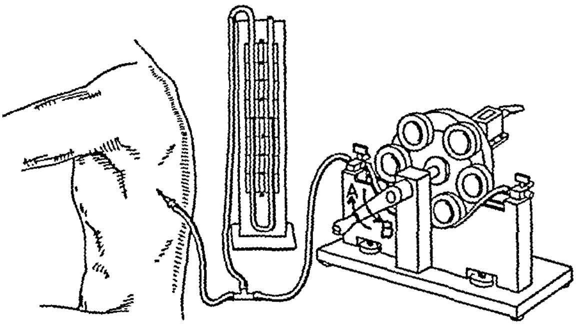

Fig. 5.—Method for administering (direction *A*) or eliminating (direction *B*) pneumothorax. It is only necessary to stop pumping at any time to obtain the intrathoracic pressure from the manometer.

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From the Department of Surgery, Peiping Union Medical College.

[1] A few pumps may be obtained from the Peiping Union Medical College, Precision Shop.

10 cc. at each revolution. The figure for water applies also for more viscid fluids and for gases. The error in such calculations should not exceed 0.5 per cent; but care must be taken that the rate of pumping does not exceed the rate of supply, which event is indicated at once by the collapse of the tube on the intake side. For aseptic operation, all tubes to be used are first assembled, then detached from the pump without separation from one another (fig. 3, inset), sterilized by boiling and reinserted at the time of operation. Reinsertion can be done without contaminating the outsides of the free ends of the lead-tubes, or the interior of any part of the system of tubes. Before an operation is begun the entire system may easily be pumped full of fluid and all the air eliminated, if this is desired.

Some clinical uses and methods are illustrated in figures 3, 4 and 5. Complete details for performing artificial pneumothorax and whole blood transfusion are to be reported in separate publications.

Originality is not claimed for the use of the milking principle, since pumps of other designs have employed it before, as for instance that designed by DuNuöy. However, the pump described here is the only one known to me which has sufficient precision and adaptability for general medical purposes.

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# CORONARY THROMBOSIS WITHOUT PAIN: ITS INCIDENCE AND PATHOLOGY

Nathan Smith Davis III, M.D., Chicago
Assistant Professor of Medicine, Northwestern University Medical School

There is a syndrome that is not associated with angina which may follow coronary thrombosis more frequently than has generally been reported. It is characterized by the abrupt onset of dyspnea, which may be paroxysmal or continuous and is unprovoked by exertion; and by shock, lowered blood pressure, disordered or weakened heart action, fever, leukocytosis, pericardial friction or embolic complications. Death may ensue in a few hours or days from ventricular fibrillation or rupture. There may be a partial recovery, after a long convalescence, which, usually in less than two years, is followed by an intractable congestive heart failure and death. Aubertin and Lereboullet[1] have reported a series of cases of coronary thrombosis in which this syndrome was present in about 20 per cent, and the anginal syndrome in about 80.

In a review of the records of patients at the Alexian Brothers' Hospital, Chicago, in whom a diagnosis of coronary thrombosis could be made, basing it on history, physical and laboratory observations and electrocardiograms, twenty patients were found who had had precordial pain or distress and sixteen who complained of dyspnea, abrupt in onset and unprovoked by effort, but did not complain of pain (table 1).

A study was also made of the records of the Department of Pathology of Northwestern University Medical School from Jan. 1, 1925, to June 30, 1931, to determine the relative incidence of the syndrome without history of pain. In this series of fifty-three cases, including the thirteen from the Alexian Brothers' Hospital in which the diagnosis was confirmed by necropsy, twenty-one were found in which there was coronary thrombosis with a history of pain, twenty-one in which there was no history of pain, and eleven cases of sudden death in which there was no history at all (table 2). The two series of cases are combined in table 3.

How is the absence of pain or precordial distress to be accounted for? Herrick[2] states in his Harvey Lecture: "It has been suggested that normally certain areas of the heart are not only less vital than others, indifferent or silent they have been called, but also less sensitive. At autopsy fresh infarcts are sometimes found associated with multiple areas of fibrosis that speak for previous obstruction of small branches, yet no pain has been noted, *no pain even announcing the recent infarction.* There has evidently been a very gradual and progressive narrowing of the artery by sclerotic processes. The area irrigated by the artery has become relatively inactive, relatively anesthetized by destruction of vessels, nerves and functioning muscles, so that a painful response to the new obstruction is lacking. The final complete obstruction comes without a sudden shock, the element of surprise is lacking as the heart is in a sense prepared for the supreme insult. Abrupt heart failure with its dyspnea and other phenomena may be present, but pain may be lacking. These are the 'substitution symptoms' in the hyposensitive described by Libman. As Obratzow and Straschesko expressed it, dyspnea may be the pain equivalent."

It is generally believed that the pain both of the angina of effort and of coronary thrombosis is due to a relative ischemia of the heart muscle; that it is similar in origin to the pain arising in skeletal muscle in which there is a relative ischemia whether produced by pathologic processes or by artificial means.[3] From a study of the pathologic records in the series reported, it appears that in the cases not associated with pain the coronary thrombosis caused not an area of relative ischemia, but one of absolute ischemia, with complete necrosis of tissue, an anemic infarct as pointed out by Sutton.[4] When the patient survives for some weeks or months, a cardiac aneurysm often forms at the site of the infarction. In some instances the conditions were similar to those described by Herrick in the passage cited; in others the infarct was not associated with multiple areas of fibrosis but was apparently due to obstruction of an end artery.

Table 1.—*Incidence of Coronary Thrombosis Without Pain in the Series of Cases Diagnosed as Coronary Thrombosis at Alexian Brothers' Hospital, Chicago*

| | Number | Per Cent | Confirmed by Necropsy |
|---|---|---|---|
| Coronary thrombosis with history of pain... | 20 | 56 | 8 |
| Coronary thrombosis without history of pain. | 16 | 44 | 5 |
| | 36 | 100 | 13 |

Table 2.—*Incidence of Coronary Thrombosis Without Pain in the Series of Cases of Coronary Thrombosis from the Department of Pathology, Northwestern University Medical School*

| | Number | Per Cent |
|---|---|---|
| Coronary thrombosis with history of pain......... | 21 | 40 |
| Coronary thrombosis without history of pain....... | 21 | 40 |
| Coronary thrombosis without history (sudden deaths) ........................................ | 11 | 20 |
| | 53 | 100 |

Table 3.—*Incidence of Coronary Thrombosis Without Pain in in the Series of Cases from Alexian Brothers' Hospital and the Department of Pathology, Northwestern University Medical School* *

| | Number | Per Cent |
|---|---|---|
| Coronary thrombosis with history of pain........ | 36 | 47 |
| Coronary thrombosis without history of pain...... | 29 | 38 |
| Coronary thrombosis without history ............. | 11 | 15 |
| | 76 | 100 |

* The thirteen cases from Alexian Brothers' Hospital in which the diagnosis was confirmed by necropsy also appear in the series from the Department of Pathology, Northwestern University Medical School.

It appears from this study of hospital and pathologic records that coronary thrombosis with a syndrome characterized by the abrupt onset of dyspnea and heart failure, unprovoked by effort, may be more common than is generally believed; that this syndrome may be due to the formation of an area of absolute ischemia, an anemic infarct, whereas the syndrome characterized by "severe, enduring, substernal or epigastric pain, unprovoked by effect,"[2] is due to the formation of an area of relative ischemia.

700 North Michigan Avenue.

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[1] Aubertin, C., and Lereboullet, Jean: Arch. d. mal. du cœur **27**: 705-721 (Nov.) 1929.

[2] Herrick, J. B.: Am. Heart J. **6**: 589 (June) 1931.

[3] Lewis, Thomas: First Frank Billings Lecture of the Thomas L. Gilmer Foundation of the Institute of Medicine of Chicago, Oct. 31, 1931: Proc. Inst. Med., Chicago **8**: 318 (Nov. 15) 1931.

[4] Sutton, D. C.: Cardiac Pain, J. A. M. A. **97**: 1369 (Nov. 7) 1931.

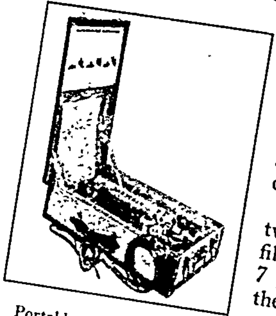
## Council on Physical Therapy

The Council on Physical Therapy of the American Medical Association has authorized publication of the following report.
H. A. Carter, Secretary.

### THE H-H INHALATOR ACCEPTABLE

The H-H Inhalator, manufactured by the Mine Safety Appliances Company, Pittsburgh, is used, according to the firm, for the "successful resuscitation of victims of carbon monoxide poisoning, gas asphyxia, electric shock, drowning, and asphyxia in the new-born," and as "an adjunct to prone pressure method of artificial respiration."

There are two types of H-H Inhalator on the market; namely, the portable type and the hospital type.


Portable Type H-H Inhalator.

The portable type is equipped with two 16 cubic foot cylinders of Carbogen, a proprietary product consisting of carbon dioxide 7 per cent and oxygen 93 per cent, complete with breathing bag, facepiece, tubes, gages and valves. The shipping weight complete is 72 pounds.

The hospital type is equipped with two 200 cubic foot cylinders, one filled with Carbogen (carbon dioxide 7 per cent, oxygen 93 per cent) and the other with chemically pure oxygen, mounted with a panel board on a substantial hospital cart, so that it may be easily moved about the emergency room, operating room or to other locations in the hospital. Its shipping weight complete is 515 pounds.

#### DIRECTIONS

How to use the device:

1. Open cylinder valve and valve between cylinder and pressure gage.
2. Open low pressure regulating valve one complete turn until breathing bag is inflated, then turn pointer back to 10 on the dial.
3. Inflate cushion and place the mask over the nose and mouth of the patient.
4. Watch breathing bag for indications of patient's respiration.
5. When the patient's breathing increases, open the low pressure regulating valve to increase the flow of the Carbogen (carbon dioxide 7 per cent, oxygen 93 per cent) so as to keep the breathing bag from collapsing each time the patient inhales.
6. Apply inhalator until patient is breathing freely and entirely conscious.

#### DESCRIPTION OF PRONE PRESSURE METHOD

In using the prone pressure method, place the person on his abdomen, and remove from his mouth all foreign bodies, such as false teeth, tobacco and gum; the tongue usually falls forward of its own weight, but see that it is forward. Turn his head to one side and rest it on his forearm, so that the mouth and nose will not come in contact with the ground, and extend the other arm forward.

Kneel and straddle the victim's thighs, facing his head. The palms of your hands are placed on the small of the back with the fingers over the ribs, the little finger just touching the lowest rib, the thumb alongside the fingers, the tips of the fingers just out of sight. With arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear on the person. This operation, which should take about two seconds, must not be violent lest the internal organs be injured. The lower part of the chest and also the abdomen are thus compressed and air is forced out of the lungs. Now immediately swing back slowly to remove the pressure, thus returning to the original position. Through their elasticity, the patient's chest walls expand and his lungs are thus supplied with fresh air.

After two seconds, swing forward again and repeat deliberately about fifteen times a minute the double movement of compressing and releasing, thus causing a complete respiration in about four seconds. Continue artificial respiration until natural breathing has been restored or a physician has arrived.

#### COMMENT

The H-H Inhalator is simple in design and practical in operation. Two cylinders of Carbogen (carbon dioxide 7 per cent, oxygen 93 per cent) should provide a continuous supply for long periods. Spare cylinders can be inserted without interrupting operation. Special valves are used for the simple manual control of the gas from the cylinders to the reducing valve. The pressure gage registers in atmospheres the supply of prepared oxygen available for use from either cylinder. The McCaa Type reducing valve regulates the flow of gas at low pressure, which does not exceed 5 pounds per square inch. The low pressure regulating valve graduated in liters per minute controls the flow of the gas to the patient. A safety or relief valve protects the patient from injury due to high pressure in the breathing bag. The rubberized fabric breathing bag permits the operator to observe each respiration of the patient. Wire reinforced hose assures free flow of the gas from the breathing bag to the patient. As a part of the facepiece, the check valve chamber eliminates any dead air space and provides the patient with a supply of fresh air and permits the easy elimination of each exhalation. The facepiece is transparent and permits observation of the condition of the mouth and nose of the patient. The facepiece is provided with a pneumatic rubber cushion which assures a perfect fit. Tongue forceps and an oral screw are mounted in the lid ready for use.

The name of the inhalator is derived from the fact that it was developed by Dr. Yandell Henderson and Dr. Howard W. Haggard of Yale University. The initials (H-H) of the names are used.

The Council on Physical Therapy accepts the H-H Inhalator for inclusion in its list of devices for physical therapy.

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## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.
W. A. Puckner, Secretary.

**COD LIVER OIL** (See New and Nonofficial Remedies, 1931, p. 259).

**Scott's Norwegian Cod-Liver Oil (Plain).**—It has a vitamin A potency of not less than 1,000 units per gram as determined by the method of the U. S. Pharmacopeia and a vitamin D potency of not less than 250 units per gram when tested by the method of the American Drug Manufacturers Association.

*Dosage.*—For patients over 5 months of age 4 cc. (1 fluidrachm) three times daily.

Manufactured by Scott & Bowne Laboratories, Bloomfield, N. J. No U. S. patent. U. S. trademark 17960.

*Scott's Norwegian Cod-Liver Oil (Flavored).*—Scott's Norwegian cod-liver oil (plain), containing 0.78 per cent of a mixture of oils of peppermint, sweet birch, cassia and bitter almond as flavoring.

*Scott's Emulsion of Cod-Liver Oil.*—It has a vitamin A potency of not less than 140 units per gram as determined by the method of the U. S. Pharmacopeia and a vitamin D potency of not less than 70 units per gram when tested according to the method of the American Drug Manufacturers Association (*J. Am. Pharmaceutical A.* **20:** 588 [June] 1931). Scott's emulsion of cod liver oil is prepared from Scott's Norwegian cod-liver oil (plain) 27.9 per cent (30 per cent by volume); glycerin 12.5 per cent, acacia 1.56 per cent, tragacanth 1.46 per cent, flavoring 0.15 per cent, agar 0.03 per cent, and water to make 100 per cent.

*Dosage.*—For adults 15 cc. (4 fluidrachms) three or four times daily; for children 15 cc. (4 fluidrachms) twice daily.

Scott's Norwegian cod-liver oil (plain) complies with the U. S. P. standards for cod liver oil. In addition, it is required to have a content of fat-soluble vitamin A, determined by the U. S. P. method, of not less than 1,000 units per gram, and an antirachitic potency, determined by the method of the American Drug Manufacturers Association (*J. Am. Pharmaceutical A.* **20:** 588 [June] 1931) of not less than 250 units per gram.

# REPORTS OF THE COUNCIL

The Council has authorized publication of the following reports.

W. A. Puckner, Secretary.

## "ANTI-CEPT" NOT ACCEPTABLE FOR N. N. R.

"Anti-Cept," according to the Anti-Cept Company, Los Angeles, is a "Vaginal Antiseptic Powder, Safe—Pleasant—Effective" which is applied in the form of a powder by means of a powder blower.

No statement of the composition of "Anti-Cept" appears on the label of the package. In an advertising circular, the following statement of composition is given: "Chloral Hydrate 10%, Silver-Nitrate Powder 2%, Menthol 1%, Boric acid 55%, Alum 5%, Quinine Sulph. 2%, Kaolin 25%." The formula furnished the Council by the Anti-Cept Company differs from the formula just quoted in that the amount of boric acid is given as 56% and the amount of quinine sulphate as 1%.

No evidence for the rationality of this complex mixture or of its effectiveness was furnished the Council. The silver nitrate component of the mixture becomes incompatible with the other ingredients, especially the chloral, at least when water is added. The following questionable statement in reference to the chloral hydrate contained in the mixture was made to the Council: "This is used as a depressor action on the secretory nerve fibers, supplying the glands of the cervix. It also has a sedative action on the individual. It is a known fact that the vaginal discharge is most prevalent in the nervous type of individual." Although the preparation is not claimed to contain volatile oils, and menthol is the only declared constituent related to essential oils, the claim is made in the information sent the Council that "It is a deodorant composed of various oils which are soothing and have a pleasant effect on the individual. . . ."

The following misleading and essentially false statement is made in the advertising circular: "Anti-Cept is highly recommended by the medical profession as a vaginal antiseptic. Its value has been proven. It replaces the antiquated methods of treating ulcerations, erosions and infections of specific and nonspecific origin of the cervix."

Anti-Cept is ineligible for admission to New and Nonofficial Remedies because it is an unscientific complex mixture of indefinite composition, which is marketed under a noninforming, therapeutically suggestive name and with unwarranted claims.

## EUBETIN NOT ACCEPTABLE FOR N. N. R.

Eubetin "for Diabetes" is a product of Eubetin G.m.b.H., Hamburg, Germany, Aesculap Pharmaceutical and Chemical Co., Inc., New York (G. W. Steiger Co.), acting as U. S. distributor.

Eubetin, according to the information furnished the Council, has the following percentage composition: "Natr. bic. 67%; Magn. carb. 6.70%; Kal. bicarb. 13.40%; Calc. Phosph. 5.40%; Natr. sulf. 2.95%; Kal. sulf. 0.82%; Natr. chlor. 1.20%; Extract. bact. (bac. Chauvoei); carb. lign. subt. adsorb. 2.53%." While the same statement of composition appears on the submitted packages, the advertising circular enclosed with the packages declares: "It is impossible to keep the ratio between the various compounds of every series of manufacture the same. Every time the bacteriologic extract is newly prepared, the ratio must be compounded afresh, according to the results of the animal experiments. Thus an even efficacy of the total compounds is guaranteed." However, neither the advertising nor the information furnished the Council contains any statement in regard to the method by which it is claimed that the potency and uniformity of the preparation is controlled, nor is there even an informative statement in regard to the composition of the "bacteriological extract."

The following statement in reference to the composition of Eubetin is offered in the advertising: "EUBETIN consists mainly of two groups of ingredients. The first is inorganic. It is so compounded that it specially prepares the way for action of the organic group. The latter consists of substances which Collip has called 'Glukokinines.' They resemble in their function the animal insulin, being, however, produced from the tissues of lower animals and plants. The 'Glukokinines' contained in EUBETIN are of bacteriological extraction, and are obtained from certain branches of the bacillus chauvoei." About eight years ago, considerable attention was given to an insulin-like substance which appeared to be contained in a variety of plants, bacteria, and even animal tissue. To this substance or group of substances the name "glucokinin" was applied. At that time efforts were being made to utilize these glucokinines as substitutes for insulin. In this country considerable attention was given to a blueberry leaf extract, and in 1927 the Council issued a report on the experimental status of this preparation. Although much experimentation was done with this preparation, its manufacturer has not placed it on the market.

In the advertising which accompanies the Eubetin package, it is stated that "EUBETIN may be used in all forms of Diabetes . . . ," and it is claimed that the effect is "permanent." The drug is to be taken by mouth, it being claimed that the destruction of the "bacteriological extract" is prevented by its being "embedded in charcoal," so that it is "not absorbed by the stomach but by the bowels." No evidence for the effectiveness of Eubetin as a substitute for insulin is offered in the advertising, nor was such evidence submitted to the Council. The name "Eubetin" (good for diabetes) is not only not informative of the composition of the product but is therapeutically suggestive.

The Council declared Eubetin unacceptable for New and Nonofficial Remedies because its composition is indefinite, because no evidence is offered that it possesses therapeutic value or that its potency is demonstrated or controlled; because it is sold under a therapeutically suggestive name which is noninformative of the composition of the product, with unwarranted claims in such a way as to lead the public to place false dependence on it in a disease the management of which requires the supervision of a physician.

## DE-GERM NOT ACCEPTABLE FOR N. N. R.

De-Germ contains, according to the label, "Essential Oils" (the identity of which is not declared) 4 per cent, "Sodium and Potassium Oleates (Soaps)" 2.5 per cent and solution of formaldehyde U. S. P. 10 per cent. Since the pharmacopeial formaldehyde solution is required to contain not less than 37 per cent of formaldehyde, it appears that De-Germ is a soap solution containing about 3.7 per cent of formaldehyde admixed with essential oils. According to the Dale Products Co., which requested consideration of the product, De-Germ is "the Perfect Purifier" and is a disinfectant, deodorant and germicide which "Helps Prevent all Contagious Diseases." The invitation to "Try a Few Drops in the Bath, the Washing Machine and the Dishpan or on your Handkerchief," which appears on the label, may lead the purchaser to place false dependence on the product. It is claimed that De-Germ is an "especially efficient Disinfectant and Germicide" which is to be used freely "to combat the spread of contagious diseases, such as colds, influenza, scarlet fever, diphtheria, etc." As evidence of the efficacy of De-Germ, a report is quoted from what is designated to be a "Nationally Known Laboratory," in which it is stated that, while germs were found on culture plates exposed in a room that could be tightly closed, there was no development of germs on such plates when they were exposed in the same room after the walls, floors and ceiling had been sprayed with De-Germ according to directions. It is well known that when used properly, formaldehyde is a most efficient disinfectant. When a formaldehyde preparation is sprayed in a room that is not tightly closed and in which the concentration of the formaldehyde can therefore not reach an effective level, and in which the temperature and humidity cannot be controlled, such use gives no protection from contagious diseases.

De-Germ is an unoriginal formaldehyde preparation which is marketed with unwarranted claims in such a way as to lead the user to place false dependence on it, and under a name which is not descriptive of its composition but therapeutically suggestive instead.

When the preceding report was sent to the Dale Products Co., Detroit, a reply was received stating that this firm had been absorbed by the Century Chemical Products Co., but the new owner presented no evidence which permitted a revision of the Council's report.

# Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## PETRA'S LONG AND SHORT KEW BEE BREAD

### (Sliced and Unsliced)

*Manufacturer.*—Petra Baking Company, Olean, N. Y.

*Description.*—A white bread made by the sponge dough method.

*Manufacture.*—The sponge dough ingredients, patent flour, water, lard, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, lard and powdered skimmed milk to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 34.7 |
| Ash | 0.9 |
| Protein (N × 6.25) | 9.4 |
| Fat | 1.6 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 53.1 |

*Calories.*—2.6 per gram; 74 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## BANQUET TEA—EXTRA FANCY ORANGE PEKOE

*Manufacturer.*—McCormick and Company, Inc., Baltimore.

*Description.*—A blend of India and Ceylon black fermented "Orange Pekoe" teas packed in tins.

*Manufacture.*—This orange pekoe tea is blended from hill grown India and Ceylon orange pekoe tea leaves, which are hand picked, withered, rolled, fermented and cured in the country of origin.

On arrival at the tea factory the green tea leaves are examined, weighed and spread on tats or trays of hemp cloth spread on wire screen for withering. The tea is withered from sixteen to twenty-four hours, during which process considerable moisture is lost and it becomes soft and pliable. The green leaves contain about 75 per cent moisture, the withered leaves about 37 per cent.

The withered leaves are rolled, which process breaks the leaf cells, liberating the juice and spreading it over the surface of the leaves, thus bringing it in contact with the air and permitting oxidation and fermentation. The leaf is also twisted in the rollers to reduce its bulk and improve the appearance. The rolled leaves are fermented on tables provided with shelves on which the tea is thinly spread. The leaves assume a coppery color in this operation. The aroma and color are developed in the fermentation, during which oxidation process an abundant supply of cool, humid air is provided. The fermented tea is placed in a tea drying machine composed of wire bottomed trays on which the leaves are spread and subjected to a continuous current of dry hot air from a furnace. The drying checks the fermentation. The dry tea is black.

The dry tea is hand picked to remove red leaves or other impurities and is sorted in sifting machines, which divide the tea into a number of grades, of which orange pekoe is the most highly regarded by the American trade. The graded tea is stored in bins until ready for shipment, when it is packed in lead or aluminum lined cases which are hermetically sealed.

The orange pekoe tea in the American plant is selected for thickness and rich, fine flavor, is thoroughly "vacuum" cleaned of tea dust, blended in mixing machines and packed by automatic filling machines in air tight tin containers.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 7.0 |
| Total ash | 5.9 |
| Water soluble ash | 3.8 |
| Acid insoluble ash | 0.2 |
| Alkalinity of water soluble ash....39 cc. normal alkali solution per 100 gm. | |
| Petroleum ether extract | 1.3 |
| Volatile ether extract | 0.3 |
| Crude fiber | 11.1 |
| Tannin | 13.8 |
| Caffeine | 3.6 |
| Water extract | 45.4 |
| Facing material | none |
| Exhausted tea leaves | none |
| Foreign leaves | none |
| Foreign astringent substances | none |
| Other foreign substances | none |

*Claims of Manufacturer.*—Black fermented "Orange Pekoe" tea is for tea beverage and all table uses.

## BABY RALSTON

### (Wheat endosperm and embryo)

### Baby's First Cereal Food

*Manufacturer.*—Ralston Purina Company, St. Louis.

*Description.*—A cereal mixture of farina (wheat endosperm) and wheat embryo (germ).

*Manufacture.*—Farina (wheat endosperm) and a smaller quantity of wheat germ are mixed, briefly processed at 60 C. to destroy any insect infestation, and automatically packed in cartons.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 7.1 |
| Ash | 0.4 |
| Fat (ether extract) | 1.8 |
| Protein (N × 5.7) | 15.3 |
| Crude fiber | 0.5 |
| Carbohydrates other than crude fiber (by difference) | 74.9 |
| Iron (Fe) (colorimetric method, J. Biol. Chem. **67**: 48, 1926) | 0.003 |
| Copper (Cu) (ferrocyanide method, Yoe, Photometric Chemical Analysis **1**: 182, 1928) | 0.0003 |
| Phosphorus (P) | 0.27 |
| Calcium (Ca) | 0.07 |

*Calories.*—3.8 per gram; 108 per ounce.

*Vitamins.*—A rich source of vitamins B and E, and a fair source of vitamins A and G, as a result of the presence of wheat embryo.

*Claims of Manufacturer.*—A high protein wheat cereal, designed especially for the infant's first cereal food. It contains two and one-half times as much vitamin $B_1$ as whole wheat. Its fine texture permits its use in adult smooth diets.

## CLOVERDALE SARSAPARILLA

*Manufacturer.*—Cloverdale Spring Company, Baltimore.

*Description.*—A carbonated beverage prepared from Cloverdale Mineral Water, sucrose, citric acid, and flavoring materials: oils of sweet birch and sassafras, extracts of vanilla, ginger root, pipsissewa, gentian and yarrow, and syrup of wild cherry bark; colored with caramel.

*Manufacture.*—The sucrose and citric acid and the flavoring materials in definite proportions are dissolved in Cloverdale Mineral Water (The Journal, March 5, 1932, p. 816). The solution is bottled and carbonated as described for Cloverdale Mineral Water.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 90.7 |
| Total solids | 9.3 |
| Ash | 0.1 |
| Fat | 0.0 |
| Protein (N × 6.25) | 0.0 |
| Reducing sugars, as dextrose | 1.6 |
| Sucrose (copper reduction method) | 5.6 |
| Titratable acidity as citric acid | 0.03 |
| Flavored with essential oils and extracts Undetermined | 2.0 |

*Calorics.*—0.3 per gram; 9 per ounce.

*Claims of Manufacturer.*—A bottled, carbonated sarsaparilla beverage.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 21, 1932

## THE NEW ORLEANS SESSION

New Orleans is no amateur in the entertaining of a convention. On three previous occasions it provided for the annual session of the American Medical Association. This year it continued the enviable reputation that it had established. When the Association met in New Orleans in 1920, accommodations were not nearly so adequate as at present. The great auditorium takes suitable care of most of the activities of the meeting, including the exhibits and many of the sections. Other sections and the House of Delegates met in hotels.

The 1932 session followed the form of previous meetings, opening with the exhibits, the clinical lectures and the House of Delegates on Monday, May 9. While the attendance failed to reach the 1920 figure, it approximated that figure closely. Considering the extraordinary financial situation, this would seem to be cause for congratulation. The clinical lectures were exceedingly well attended and were correlated with exhibits, particularly on poliomyelitis. Many prominent orthopedic and neurologic specialists remarked that the physician who heard these lectures and studied these exhibits would no longer have the slightest excuse for failure to diagnose a case of poliomyelitis at the earliest possible moment. The scientific exhibit excited admiration for its quality and particularly for the artistic finish of the display. The technical exhibits were remarkable this year for the dignity and the scientific exactitude developed, particularly by pharmaceutical manufacturers, in the displays. Much interest was aroused by the number and quality of the exhibits of foods, an evidence of the manner in which dietetics has entered into scientific medicine.

The sessions of the House of Delegates were well attended. The interest displayed by delegates in the various discussions and resolutions indicated the feeling of responsibility of members of the House of Delegates in their deliberations for the benefit of the public and of the profession. The House of Delegates gave special attention to questions of legislative action, particularly concerning the care of veterans and the questions of maternal and infant mortality. Every reference committee of the House expressed appreciation not only of the valuable services rendered by the organization in national and state affairs but also of the personal services to physicians, which have been built up in the headquarters office.

The medical profession of New Orleans and of the state of Louisiana provided entertainment distinctive of Southern hospitality. The opening banquet for the officers and delegates, the opening session at which the President delivered his address, and the President's reception were placed in beautiful settings with excellent music and marked particularly by the light summer costumes of both men and women guests.

Perhaps the most significant feature of this session of the Association was the spirit displayed in the House of Delegates, in the various sections and in the exhibits. Here was a spirit that could not be depressed—a demonstration of the innate conviction of all that medical science must go on, that the practice of medicine is essential to human happiness, and that the physician and those associated with him in his work must carry on regardless of extraneous circumstance.

## THE IRON REQUIREMENT OF CHILDREN

While the rôle of iron in the maintenance of health has long been recognized, the possible participation of the element in biologic reactions has only recently become clearly revealed. Today we are justified in asserting that iron is an essential dietary constituent, not only for the production of blood and muscle hemoglobin but also for necessary components of all cells.[1] That is why its availability in foods and its metabolism in the body command particular attention. It is merely necessary to mention some of the questions that come to mind in this connection in order to realize the importance of the subject. How much iron is in the human body at different ages? What are the available sources of iron? How much is needed for maintenance and for growth, and how are these requirements affected by different conditions? Does the amount of iron in the food have any influence on growth?

The answer to such problems is complicated by the analytic difficulties that attend the chemical investigation of the distribution of iron. A recent writer[1] has well pointed out that the estimation of iron in biologic materials is a difficult undertaking, because a rapid and accurate method still remains to be attained, although the recent improvements that have been introduced are promising. Reported analyses of biologic materials for iron must be critically examined in the light of the analytic method employed, and some of the results in the older literature have to be discarded because of improbable analytic values. According to this reviewer, the iron content of the body at maturity is calculated at about 4.5 Gm., more or less, most of which can be accounted for by the blood. Between the first and twenty-first years (the latter age is taken only for convenience), 4,000 mg. of iron is retained. Distributed over twenty years, this amounts to an actual daily growth of 1.8 mg. of iron.

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[1] A Recent discussion of this subject may be found in Growth and Development of the Child, Part III, Nutrition, New York, Century Company, 1932, p. 225. Some of the data considered here are taken from this new volume.

The adult has the opportunity for such a wide range in the choice of his food that the problem of his requirement of iron is perhaps not quite so circumscribed as that of the growing young child, whose regimen is dictated in larger degree by those who provide his less diversified sustenance. Until recently the only modern balance observations in childhood relating to the iron requirement have been those of Rose[2] and her collaborators at Teachers College in New York. Considerable surprise was occasioned several years ago when they reported that even in dietaries that might have been considered perfectly satisfactory the daily inclusion of one egg yolk per child resulted in better development and in slightly higher hemoglobin figures. Careful metabolism studies with respect to iron were subsequently made on one child, a girl aged 2 years and 7 months. These showed that, on a daily intake of 4.64 mg. of iron, a negative balance of 1.10 mg. resulted. The authors have estimated without further evidence that 8.50 mg. would not only be sufficient to bring about iron equilibrium but also allow for growth. This figure amounts to 0.76 mg. of iron per hundred calories of ingested food. McKay[3] has reported an average of 8.17 mg. of iron in the diets of preschool children in private homes, as compared with 4.37 mg. in the diets of children in an institution.

The most recent essay in this important field of research comes from the University of Minnesota, where Leichsenring and Flor[4] have conducted typical balance experiments in which the utilization of iron at two levels of intake was compared in healthy children ranging in age from 35 to 56 months. This is the characteristic preschool age. The results of the food analyses indicate that the iron content of foods may show considerable variation from the most commonly used figures. Diets that were planned to contain 5 and 8.5 mg. of iron actually contained only 3.25 and 6.5 mg. On a diet containing 3.25 mg. of iron, an average of 1.2 mg. was retained daily, whereas, on a diet containing 6.5 mg. of iron, 3.2 mg., or nearly three times as much as during the period of lower iron intake, was retained. The observed maintenance need of the children in this study was approximately 0.12 mg. per kilogram. On the basis of body weight, according to Leichsenring and Flor, the maintenance requirement of the child is similar to that of the adult. The iron requirement for growth, as observed in this study, was approximately 0.2 mg. per kilogram. It is customary to allow a considerable margin of safety above observed requirements of the various inorganic elements. If this margin is estimated at 50 per cent, it would make a standard allowance for children of this age of 0.48 mg. per kilogram, or 0.62 mg. per hundred calories, or a total of 8.2 mg. daily. Thus the most careful investigators in this field are in essential agreement as to the iron needs of the preschool child. One cannot depend on milk alone for an adequate supply of iron. That is why the diet chosen should be varied to include, as early as proper, generous amounts of foods that are comparatively rich in iron.

## DIGESTIVE LEUKOCYTOSIS

Circumstantial evidence has occupied an extremely important place in the evolution of conceptions in physiology. Life is maintained through the maintenance of a complex series of so-called vital equilibriums in which both physical and chemical factors have significant parts. It can be expected that a disturbance of one equilibrium is accompanied by readjustments of factors maintaining a related equilibrium. It becomes almost impossible to adjust one regulatory mechanism without eliciting a response in several different directions. However, one can point out concomitant processes, essentially unrelated, which either by their chronological parallelism or by their ease of experimental study have been mistakenly associated in a causative relation. An example of apparent misinterpretation of such associated occurrences is the usual conception of digestive leukocytosis. First described in the middle of the last century, this phenomenon was early associated with the digestion and absorption of protein. After a meal the number of circulating white blood cells was augmented markedly, the increase being greatest in the lymphocyte fraction, which frequently showed twice the concentration observed in the fasting state. Furthermore, these cells were found in greater numbers in the intestinal mucosa and in the lumen during the height of digestion and absorption. It seemed reasonable, therefore, to assume that leukocytes were concerned with the absorption of protein.

A vigorous and convincing note of doubt that there exists a functional connection between digestion per se and the frequent concomitant leukocytosis has been sounded by Garrey and Butler[1] of Vanderbilt University in Nashville, Tenn. These investigators point out that the concentration of circulating leukocytes is subject to a number of factors and that the mechanisms causing a change are surprisingly sensitive. The white cell count of normal individuals at work is uniformly between 8,000 and 9,000 per cubic millimeter, whereas the count is between 5,000 and 6,000 an hour after the subject has assumed a recumbent posture. This so-called basal level is observed as long as rest and immobility are maintained. In several experiments, after the basal level had been attained, a meal rich in protein was consumed by the subject and the prone position maintained. In no single instance did the leukocyte count rise above the basal level. A high carbohydrate meal produced like results. When the erect posture was assumed, the white cells rose to the usual higher activity level. In another experiment the erect person with the higher leukocyte count consumed a dinner and immediately lay down; there followed a progressive decrease in the concentration of white cells to the basal level.

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[2] Rose, Mary S.: The Influence of Prolonged Administration of Egg upon the Hemoglobin Content of Children's Blood, J. Biol. Chem. **67:** xx (Feb.) 1926. Rose, Mary S., and McCollum, E. L.: Studies in Nutrition: II. The Effect of Adding Egg to a Diet Already Adequate, ibid. **78:** 549 (July) 1928. Rose, Mary S.; Vahlteich, E. M.; Robb, E., and Bloomfield, E. M.: Iron Requirement in Early Childhood, J. Nutrition **3:** 229 (Nov.) 1930.

[3] McKay, H.: Ohio Agric. Expt. Station Bull. 400, 1926.

[4] Leichsenring, J. M., and Flor, I. H.: The Iron Requirement of the Preschool Child, J. Nutrition **5:** 141 (March) 1932.

[1] Garrey, W. E., and Butler, V.: Am. J. Physiol. **100:** 351, 1932.

To determine the influence of the filling of the stomach and change in temperature of the contents, the Nashville investigators caused resting subjects to drink large quantities of lemonade of various temperatures. Counts made immediately showed an increase over the basal level with both the cold and the hot drink, the latter showing the greater effect. Similar studies were made on laboratory animals under anesthesia. Rapid distention of the stomach with air or water is followed by an immediate increase in the leukocyte count, which disappears within half an hour. It is pointed out that "the promptness and transiency of these reactions place them definitely into the category of nervous reflexes affecting the vascular area and producing a sudden redistribution of leukocytes, with more gradual readjustment to normality." Apparently the rigorous exclusion of all factors except the one under consideration, together with the adoption of a basal level for comparison, has simplified a situation which has long been a physiologic enigma. It appears that the name digestive leukocytosis is a misnomer arising from an erroneous association of parallel but largely unrelated activities.

# Current Comment

## DEAN LEWIS—PRESIDENT-ELECT

The House of Delegates at the New Orleans Session elected Dean Lewis, surgeon-in-chief of the Johns Hopkins Hospital, to the office of President-Elect of the American Medical Association. Through his service to scientific medicine, marked by attendance at many scientific meetings throughout the country, through his contributions to scientific medical literature, through his distinguished career in the World War, and through his contribution to the work of the American Medical Association, Dr. Lewis is widely known to the medical profession of this country and of the world. Dean Lewis was born in Kewanee, Ill., Aug. 11, 1874. He received his A.B. degree from Lake Forest University in 1895 and the degree of doctor of medicine from Rush Medical College in 1899. Early he became associated in a teaching position with his alma mater, acting as assistant in anatomy from 1900 to 1901 and associate from 1901 to 1903. He then taught surgery as an instructor from 1903 to 1919; he was associate professor from 1919 to 1920 and professor from 1920 to 1924. In 1924 he received invitations to the chairs of surgery in several important medical schools and finally accepted the professorship of surgery in the University of Illinois College of Medicine, which position he filled from January to July, 1925. Then he was appointed professor of surgery at the Johns Hopkins University School of Medicine and surgeon-in-chief to the Johns Hopkins Hospital. His membership in medical societies includes the American Surgical Association, the American Association of Anatomists, the American Physiological Society, the American Society of Clinical Surgery, the Interurban Surgical Society and the Southern and the Western Surgical Associations. During the World War he served as lieutenant colonel and was awarded the Distinguished Service Medal. He has been made a foreign member of Italian and German surgical societies and is a member of the Medical Council of the Veterans' Administration. Since the establishment

Dean Lewis, M.D.
President-Elect of the American Medical Association

of the *Archives of Surgery* in 1920, Dr. Lewis has been editor-in-chief. He is also the editor of a system of surgery and a correlated periodical, the *International Surgical Digest.* In the American Medical Association, Dr. Lewis has been a member of the House of Delegates, representing the Section on Surgery in 1915, 1916 and 1917. He was also secretary of the Section on Surgery, 1912-1913, and chairman, 1919-1920. At the Philadelphia Session he was made a member of the Council on Medical Education and Hospitals. His record and his repute promise a useful and valuable career as President-Elect and President of the Association.

## MONTGOMERY WARD & COMPANY WITHDRAWS LABORATORY SERVICE

Following publication in The Journal of the report of the laboratory of the American Medical Association relative to its survey of the urine examining service conducted by Montgomery Ward & Company, many physicians throughout the country wrote to Montgomery Ward & Company asking for an explanation of this project. In reply the following letter has been sent by the president of Montgomery Ward & Company, Mr. Sewell Avery, to many physicians and to stockholders:

> "Thank you for sending the copy of the American Medical Association Report. Upon careful investigation we have found that their position in the matter was in large part justified, although the check test which we made before adopting the service had indicated their [Universal Research Laboratories] analyses to be accurate. Because of these new developments we have discontinued the service, and are accepting no further orders."

The Journal wishes to commend the president of Montgomery Ward & Company for taking this action. It would be well if lay corporations in general could recognize the fact that the practice of medicine is distinctly a profession for trained workers and that any lay group which enters into the field is likely to develop a fiasco such as that which eventuated for Montgomery Ward & Company.

## VITAMIN B AND METABOLISM

The problem of the precise rôle of vitamin B in nutrition is by no means entirely solved. There can no longer be any doubt that it is a factor essential for physiologic welfare. This statement, based on the repeatedly demonstrated genesis of disorders when there is a shortage of vitamin B in the diet and a restoration of health when suitable sources of the vitamin are again supplied, does not reveal the details of its function. The abrupt failure of appetite, after a preliminary period, has been a conspicuous effect of lack of vitamin B, the outcome varying with the age and the species of animal under consideration. The digestive secretions are apparently not modified. Cowgill of Yale University, who has devoted much attention to this subject, has pointed out that the marked systemic manifestations characteristic of advanced cases of vitamin B deficiency suggest that the loss of the desire to eat in such instances is due as much to a generalized systemic disturbance as it is to an abnormal condition localized in the alimentary canal. Several years ago it was pointed out in The Journal that vitamin B should not be overlooked in its possible relations to certain types of gastric atony. There have long been assumptions, to say the least, that vitamin B is somehow associated with metabolism.[1] Final pronouncements are by no means yet warranted. Preliminary studies by Cowgill and his co-workers indicated that the vitamin B requirement of an animal is significantly increased when the metabolic rate is augmented. This has already been shown to be true when the voluntary food intake is increased through vigorous exercise.[2] In a more recent investigation, Himwich, Goldfarb and Cowgill[3] have demonstrated that when metabolism is heightened in the well known manner by thyroid administration the requirement for vitamin B seems to be increased. Thus, in dogs it was found that during hyperthyroidism anorexia appeared in from one half to two thirds of the time required during the control period when the diet was devoid of the vitamin. The animals successfully maintained their weights by voluntary ingestion of food only when receiving sufficient amounts of vitamin B. According to the Yale investigators, these facts may be of clinical significance. The marked loss of body weight characteristic of hyperthyroidism is well known; in the light of these experiments it is quite possible, the Yale investigators state, that vitamin B deficiency is an etiologic factor here. Administration of large amounts of vitamin B to patients with hyperthyroidism is certainly worthy of clinical trial. If one were permitted to generalize, they add, it might be said that vitamin B therapy is indicated in those conditions which are characterized by an increase in the metabolic rate.

# *Association News*

## MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 2:25 to 2:30 p. m., over Station WBBM (770 kilocycles, or 389.4 meters), and on Friday from 1:25 to 1:30 p. m., over Station WBBM and other stations of the Columbia Broadcasting System.

The program for the week is as follows:

May 23. A Monument to the Dog.
May 25. Flies are Dangerous.
May 27. Foods and Food Advertising.

There is also a fifteen minute health talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM, Chicago.

The program for the week is as follows:

May 28. Unconsciousness.

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[1] A review of the theories and evidence is given by Sherman, H. C., and Smith, S.: The Vitamins, ed. 2, New York, Chemical Catalog Company, 1931.

[2] Cowgill, G. R.; Rosenberg, H. A., and Rogoff, J.: Studies in the Physiology of Vitamins: XVI. The Effect of Exercise on the Time Required for the Development of the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, Am. J. Physiol. **98**: 589 (Nov.) 1931.

[3] Himwich, H. E.; Goldfarb, W., and Cowgill, G. R.: Studies in the Physiology of Vitamins: XVII. The Effect of Thyroid Administration upon the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, Am. J. Physiol. **99**: 689 (Feb.) 1931.

# PROCEEDINGS OF THE NEW ORLEANS SESSION

## MINUTES OF THE EIGHTY-THIRD ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT NEW ORLEANS, MAY 9-13, 1932

## *HOUSE OF DELEGATES*

### *First Meeting—Monday Morning, May 9*

The House of Delegates convened in the Tip Top Inn of the Roosevelt Hotel, and was called to order at 10 a. m. by the Speaker, Dr. F. C. Warnshuis.

#### Preliminary Report of the Reference Committee on Credentials

A preliminary report of the Reference Committee on Credentials was submitted by the chairman, Dr. J. D. Brook, Michigan, who reported that 101 delegates with proper credentials had registered.

On motion duly seconded and carried, Dr. John A. Card, New York, and Dr. W. E. Bannen, Wisconsin, who had lost their credentials but who were properly identified, were seated.

The Speaker, not hearing any objections, declared that the list of delegates in the hands of the Reference Committee on Credentials would constitute the roll of the House for the first meeting.

#### Adoption of Minutes of Philadelphia Session

The Secretary stated that the minutes of the Philadelphia session of the Association had been printed and put into the hands of all members of the House of Delegates, and that no corrections or amendments had been received. No objections being heard on the floor of the House, the minutes were adopted as printed, on motion of Dr. James N. Vander Veer, New York, seconded by Dr. J. W. Burns, Texas, and carried.

#### Address of the Speaker, Dr. F. C. Warnshuis

The Vice Speaker, Dr. Albert E. Bulson, Indiana, took the chair while the Speaker read his address, which was referred to the Reference Committee on Reports of Officers:

*Members of the House of Delegates:*

I am privileged again to preside during your annual deliberations. My studied endeavor will be to do so impartially and justly, and to aid you to record your action expeditiously and constructively. I solicit your assistance and forbearance.

Times change and we must change with them. The sincere student recognizes that we are at present in the vortex of readjustment along every avenue of human endeavor. New professional and public relationships are being formulated and instituted. You who represent and speak for the entire profession of scientific medicine are intimately concerned. On you who constitute this House of Delegates rests the tremendous responsibility of molding and guiding public opinion and formulating the fundamental principles that will bring about acceptable readjustments wherein all the traditions and achievements of the medical profession will be conserved and its relationship to patient and public enhanced. It is not within the province of your Speaker to lead or indicate the scope of your program. That is for this House to determine. Your Speaker's comment is intended to stress the importance of the serious duty that confronts you; to urge that you accept the commission and accomplish well directed leadership. Your constituents have the faith and confidence that your wisdom and judgment will be sound and that your final conclusions will be productive of acceptable solutions and leadership that will inspire public endorsement. Your Speaker urges that every delegate pause in thoughtful reflection and accept his rôle in initiating and applying policies that the hour and day impel.

I would urge anew the importance of the most thorough consideration of every proposal that is advanced. Reference committees frequently consider a resolution without having presented to them evidence in support or in refutation of the purpose that it embodies. There have been occasions when the action taken resulted in embarrassment to the Association, its officers and councils. Intelligent action cannot be accomplished without information and discussion. The sponsors of a resolution and those who hold opposite views or opinions should place before the reference committees all data and substantiating or refuting facts. It is the duty of delegates to appear before the reference committees on all referred business and aid in forming tenable recommendations.

It would be highly desirable if all reference committees would decline to bring in recommendations or express opinions on subjects regarding which no evidence or facts are submitted. This procedure will result in eliminating injudicious action and obviate reversal of opinions and expressions at some subsequent time.

##### COMMITTEE APPOINTMENTS

May I state anew that committee appointments are made from the list of delegates sent me by your Secretary some thirty days before the annual session. In forming committees your Speaker endeavors to give representation to every state. There are 66 committee assignments to be selected from 175 delegates. Every delegate cannot be assigned to committees. To give representation to every state is not possible. I have endeavored to be governed by the Fellowship records of each state, the number of delegates and the state's representation on boards, councils and committees.

##### EXECUTIVE SESSION

In order that the Tuesday afternoon executive session shall not aimlessly concern itself with irrelevant matters, your Speaker recommends that you authorize your Secretary, chairman of the Board of Trustees and Speaker to formulate a program of pending questions that the year's activities and experience indicate as meriting executive consideration, the consideration of other subjects to remain subject to your decision as to whether the House desires to accord to them executive attention. This policy would be conducive to well directed conclusions and is worth while considering for future sessions. Delegates informed as to the subjects presented for consideration would be prepared to discuss them and reach wise decisions. The suggestion is made for your consideration.

##### REPORTS TO STATE ORGANIZATIONS

On several previous occasions it has been recommended that delegates complete the discharge of their responsibilities and duties by rendering to their respective state organizations a detailed and explanatory report of activities of this House. This is most essential and quite desirable. State organizations stand in need of and are entitled to that information. They need to know the detailed action of this House for guidance in the administration of state organizational affairs. National unity is unattainable without such instructive and guiding knowledge.

Some delegations render detailed reports with helpful explanatory comments, some delegations merely submit an attendance report and some there are who make none. You will render a distinct contribution to this Association and to your own state if you as a delegate or delegation render specific, detailed explanatory reports on the business transactions of each session of this House. It is on the recommendation of your officers, councils and committees that your Speaker stresses this recommendation.

##### DEATHS

It is with sadness of heart and deep regret that we bow to the immutable law of life that yearly records the deaths of esteemed fellow delegates. We adjourn our annual session, return to our homes and then suddenly and all too frequently the message comes, Thrash, Polak, Hornbogen have departed from among us. It is left for us, the living, to enroll their names and deeds on the honor scroll of our Association and acknowledge their contributions to our Association, and the profession it represents. So today, in solemn recognition and tribute, your Speaker officially announces the deaths of J. O. Polak, New York; E. C. Thrash, Georgia; A. W. Hornbogen, Michigan; Donald Macrae, Iowa, and David Ross, Indiana. We have reasons for believing that these departed members maintained the sacred and honored traditions of their profession in the services they rendered. Communal life was enhanced and enriched by their ministrations.

Your Speaker acknowledges with sincere appreciation all the many courtesies and the kindly consideration you have accorded. A personal contact with this House of Delegates over a period of twenty years moves me to affirm emphatically that the affairs and interests of organized medicine rest in safe hands. Final judgment is characterized by fairness and wisdom. I am certain you will translate and effect the highest and noblest in medicine. My good wishes are yours.

### Reference Committees

The Speaker resumed the chair and appointed the following reference committees:

#### SECTIONS AND SECTION WORK

| | |
|---|---|
| F. W. Cregor, Chairman | Section on Dermatology and Syphilology |
| Bundy Allen | Florida |
| W. G. Ricker | Vermont |
| James S. McLester | Section on Practice of Medicine |
| A. J. Bedell | New York |

#### RULES AND ORDER OF BUSINESS

| | |
|---|---|
| B. L. Bryant, Chairman | Maine |
| Fred Moore | Iowa |
| R. W. Fouts | Nebraska |
| C. R. Scott | Idaho |
| W. H. Myers | Georgia |

#### MEDICAL EDUCATION

| | |
|---|---|
| Irvin Abell, Chairman | Kentucky |
| Seale Harris | Alabama |
| F. S. Crockett | Indiana |
| J. F. Burnham | Massachusetts |
| W. A. Pusey | Illinois |

#### LEGISLATION AND PUBLIC RELATIONS

| | |
|---|---|
| Grant C. Madill, Chairman | New York |
| J. F. Hagerty | New Jersey |
| Southgate Leigh | Virginia |
| C. J. Whalen | Illinois |
| A. A. Ross | Texas |

#### HYGIENE AND PUBLIC HEALTH

| | |
|---|---|
| Junius B. Harris, Chairman | California |
| C. T. Pigot | Montana |
| D. E. Sullivan | New Hampshire |
| W. F. Draper | Virginia |
| H. C. Macatee | District of Columbia |

#### AMENDMENTS TO CONSTITUTION AND BY-LAWS

| | |
|---|---|
| N. B. Van Etten, Chairman | New York |
| W. F. Donaldson | Pennsylvania |
| J. W. Amesse | Colorado |
| J. H. C | |
| H. M. | |

#### REPORTS OF OFFICERS

| | |
|---|---|
| C. E. Mongan, Chairman | Massachusetts |
| W. R. Steiner | Connecticut |
| A. R. McComas | Missouri |
| J. F. Smith | Wisconsin |
| W. A. Cook | Oklahoma |

#### REPORTS OF BOARD OF TRUSTEES AND SECRETARY

| | |
|---|---|
| W. F. Braasch, Chairman | Minnesota |
| J. N. Vander Veer | New York |
| Wells Teachnor, Sr. | Ohio |
| J. W. Burns | Texas |
| F. C. E. Mattison | California |

#### CREDENTIALS

| | |
|---|---|
| J. D. Brook, Chairman | Michigan |
| Mather Pfeiffenberger | Illinois |
| J. F. Hassig | Kansas |
| M. L. Stevens | North Carolina |
| J. N. Hunsberger | Pennsylvania |

#### MISCELLANEOUS BUSINESS

| | |
|---|---|
| J. R. Bloss, Chairman | West Virginia |
| W. R. Bathurst | Arkansas |
| H. B. Everett | Tennessee |
| Randolph Winslow | Maryland |
| G. P. Johnston | Wyoming |

#### EXECUTIVE SESSION

| | |
|---|---|
| J. W. Van Derslice, Chairman | Illinois |
| S. P. Mengel | Pennsylvania |
| A. W. Booth | New York |
| J. F. D. Cook | South Dakota |
| J. Q. Graves | Louisiana |

| | |
|---|---|
| Sergeant-at-Arms | George A. Leitner, New York |
| Assistant Sergeant-at-Arms | R. L. Green, Illinois |

### Address of President E. Starr Judd

The Speaker presented the President, Dr. E. Starr Judd, Rochester, Minn., who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

*Mr. Speaker and Members of the House of Delegates:*

The report of the Board of Trustees makes evident the increasing amount of work that is demanded of this Association each year. The activities reach into every branch of society and are becoming more important. The annual report shows a marked extension of the work of each department, and it also shows that some of these departments are taking on new duties.

In spite of extension of the work demanded of the Association and in spite of the fact that the income to the Association is reduced, nevertheless the Association is in a most satisfactory condition. The Board of Trustees, the General Manager, the Business Manager and the Editor of The Journal deserve much credit for this excellent showing of the Association the last year.

#### RESPONSIBILITIES OF THE MEMBERS OF THE HOUSE OF DELEGATES

It has been said that every man owes some of his time to the upbuilding of the profession to which he belongs, and I think that you who are members of the House of Delegates are the best illustrations of service to the medical profession. Many of you are contributing a considerable amount of time and your best efforts in the interest of organized medicine and for the benefit of society. Oftentimes your contribution must be at considerable sacrifice to yourself and to those dependent on you. You all deserve the greatest amount of credit, and I am sure that when you see the progress in preventive and curative medicine that is being made from year to year, and realize that this progress is largely the result of the activities which you have made possible through the building and maintaining of this great medical organization, you must feel well paid for your efforts and your sacrifices.

#### FUNCTIONS OF THE MEDICAL PROFESSION

The functions of members of the medical profession are, first, to advise, treat and care for those who are in need of their services; second, to plan and direct programs of preventive medicine and public health, and, third, to protect the public in every manner possible against the activities of insufficiently educated or dishonest practitioners:

1. In caring for those who are sick and injured, physicians are doing a most personal service, and whatever else happens, this must be maintained as a personal service. The profession is constantly confronted with the problem as to what is the best plan for giving adequate medical service to all of the people at all times. I think it can be said that, as a rule, the service as now furnished to society is satisfactory and adequate. Suggestions for new methods of practice are constantly being made. Many of these suggestions have to do with the economics of the practice of medicine. Others concern plans for carrying out medical service. It seems to me that organized medicine might have a more definite plan for studying these suggestions and problems. I have been informed that a committee was once in existence for the purpose of studying the various social implications of the practice of medicine but that this was some time ago. This committee was formed to give advice to the Board of Trustees, the House of Delegates and the various councils. It seems to me that a new committee might be formed, or that some member of the permanent staff might be delegated to cooperate with the bureaus and councils, for the purpose of further study of some of the plans in use in European countries, and any new plans suggested. I am not at all sure how much change, if any, should be made in our present plan, but I do think that if there was a committee working on these problems, for possibly the next five years, it might be able to suggest some changes that would help solve problems in this country. It would be possible to look into the future of medicine and to be prepared for changing conditions before they arrive, rather than to investigate conditions after the advancing tendencies have been established.

The chairman of the Committee on the Costs of Medical Care has given a preliminary report which suggests that this committee will probably recommend community health taxes.

This committee has done a tremendous amount of work and has accumulated a great deal of material that will need very careful study. In one of its reports, it reviewed an investigation of one community of 38,000 people. As I understand this report, it showed that most of these people had physical defects of one kind or another. The question that arose as I read this report was, first, What is a perfect physical specimen? and Is it necessary or advisable to attempt to correct all of these so-called defects? I believe that this illustrates some of the problems that must be carefully studied by members of the medical profession.

Caring for the sick by contract with business concerns and societies has been suggested and tried. Contract practice is probably one of the most important questions confronting the profession today. A study of the problem is being carried on by the Bureau of Medical Economics at the present time and also by some state societies. I hope that after these studies have been completed it will be possible to make some definite statement; but it is not conceivable to me that this method of practicing medicine will help to solve our present problems. Undoubtedly this form of practice will continue in certain places; it has been carried too far in other localities, and the results are not wholly satisfactory to the patient. A study of this kind necessarily involves a tremendous amount of work and time, and I feel sure that the final report on this problem will be most interesting and valuable.

There has been a tendency in some specialties and in certain communities to turn over certain cases to nurses, midwives or technicians. So far as I can see, there is no way to make the conscientious practice of medicine an easy task. And, furthermore, it has been asserted repeatedly that there are too many physicians. Although I do not believe that there are too many physicians, nevertheless I do think that in order to give the people the best care, the actual practice of medicine must be kept in the hands of physicians.

Without claiming too much, I think we may contend that we are doing very well in our present plan of practice. Progress is evident each year.

2. The second function of the medical profession concerns public health and preventive medicine. The profession may well be proud of the results accomplished in this field of endeavor. Certain infectious diseases have been greatly reduced in prevalence and severity, and others have been almost completely eradicated. Although these excellent accomplishments are largely the result of better knowledge of the exact cause of various diseases and of the application of this knowledge, nevertheless they are also due to a better understanding on the part of the people of the problems confronting medical men, and also are the result of more confidence in the profession. It seems to me, and I hope that I see clearly, that there is a better relationship between the physician and the public than there has ever been before. Undoubtedly, if this is so, it is partly due to the public meetings, and to the realization of the value of giving to the press any medical facts or information that we have. Radio programs and health talks assist in this campaign of organized medicine to keep the people informed.

Promoting public health and preventive medicine is one of the definite functions of the medical profession, and this service must not be divorced from medicine. In certain large communities it is necessary to have health officers who devote all their time to this work and who become specialists in this field. Many of the problems associated with the work must be under government supervision. All general practitioners must become familiar with the problems of public health and preventive medicine and must help in every way that they can to see that these activities are carried out adequately in their communities. At this particular time, preventive medicine is accomplishing a great deal. Organized medicine must do everything possible to escape having this function of the medical profession taken over exclusively by the government.

3. Protecting society from the irregular practices of medicine is one of the most important functions of the Association. No one realizes the tremendous commercial business carried on by these irregular concerns until such an example is offered as the one exposed this last year. It is the duty of organized medicine to expose these practices, so that the regularly constituted government authorities can prosecute the violators. The editorial departments of The Journal and of *H* are well used for this purpose when it is necessary. satisfactory exposure of activities of this kind, it seem me, is one of the real accomplishments of this associa Prosecution must be by the government. Irregular prac cannot be eliminated, but they can be reduced to a minin

GRADUATE TRAINING

The methods of practice are constantly changing, and necessary for each physician to continue to study. The ph cian's life is one of almost constant study. New things being learned each year concerning the cause and the tr ment of disease, and many of the older ideas and meth must be discarded from time to time. It is not possible one to succeed and to progress by employing methods one taught as a student some years ago. In order that the ph cian may keep abreast of the times, he must make trips large centers of medicine, and attend clinics and courses c ducted by experienced teachers where there is great abunda of clinical material. A physician who does not seek th clinics, who does not attend medical meetings, or who d not keep up his reading of medical literature, cannot do best that might be done for his patients, and cannot hope progress.

In former years it was possible in any of the larger citi on certain days, to find a good clinic where there would well chosen material presented in an interesting fashion some well known clinician or surgeon. In the present da most of these old, well established clinics have been allow to go out of existence. I think that these clinics, especial for those who are surgeons, were of great value, and I a sorry that they have not been continued. I wonder wheth it is due to some change in our conception of practice th has allowed this to take place. I wonder also whether scien and research are overshadowing the art and the human si of practice too much. I also wonder whether the full tim teaching plan for clinicians has not been a factor in allowin these important clinical days to disappear. Can a man on full time teaching appointment retain his stimulus and th industry required to make such a clinic successful? I hop that some way may be found of reviving these regular, independent clinics, so that it may again be possible to derive th benefit of a few hours with some well known physician, surgeon or specialist.

SPECIALIZATION

The House of Delegates last year requested the Council on Medical Education and Hospitals to investigate the entire subject of specialization, and to make recommendations looking to the establishment of proper qualifications of physicians who wish to engage in special practice. Specialization has been greatly overdone and not only is responsible for less satisfactory results but also has a tendency to increase the cost. I believe the best specialists will be those who have spent some time in general practice. One of the difficulties seems to be in the medical schools where the students are directed to some special field, and where students say it is difficult at the present time to obtain a well rounded out training such as would equip one for general practice.

Nevertheless there are many fields of medicine in which the general practitioner cannot hope to be sufficiently trained. Special knowledge, special training and an abundance of experience are required to make a specialist. One of the duties of organized medicine is to make it possible for society in general as well as the medical profession to find out who are qualified specialists in the various fields. Furthermore, I believe that there is nothing more important than the regulation of specialization and the proper qualification of specialists at the present time.

Some of the specialties have established qualifying boards and are attempting to further the plan of certifying as to special qualifications. I have been informed that representatives of several clinical specialties have suggested that the National Board of Medical Examiners state its present attitude concerning the part it is willing to take in assisting the qualifying boards in the clinical specialties. The subject of specialization has been discussed in a preliminary manner at several informal conferences by the representatives of certain specialties, and a subcommittee of the National Board of Medical Examiners. The consensus in these conferences has been that it is desirable that some dependable method of certification be devised by each of the special clinical fields, and, further, that there should be some central organization of the several qualifying bodies to insure better coordination. It has been suggested also that the American Medical Association become responsible for the publication of official lists of qualified specialists.

Several sections of the Association have already accomplished a good deal toward determining and regulating the qualifications for specialization in particular fields. It seems to me that it is advisable to do all that we possibly can to promote this activity among the sections. If the American Medical Association, cooperating with the Association of American Medical Colleges, state boards of medical licensure, the National Board of Medical Examiners, the American College of Surgeons, the American Board for Ophthalmic Examinations, the American Board of Otolaryngology, the American Board of Obstetrics and Gynecology, and such other specialty boards as may be developed can officially regulate specialization, it will have accomplished much.

### HOSPITAL BEDS FOR VETERANS

One of the most important problems before society and the medical profession is the one dealing with the best plan for care of war veterans. Some of these men are sick and must be cared for. The medical profession is willing and anxious to see that the best medical attention possible is provided for them. It wants them to have exactly the same care that all other orders of society are given. It does not want them to be pauperized and to be placed in hospitals when they are not sick. It seems to me that the federal government has built enough hospitals. There are many unoccupied beds in civilian hospitals that might well be used in the care of veterans who are sick.

It is fortunate that these affairs are in the hands of an industrious and intelligent committee. The medical profession can feel hopeful and confident that the efforts of its committee, combined with those of the American Legion and the American Hospital Association, will bring forth the proper solution of this problem.

### NEW BUILDING

The thing this Association needs as much as anything else is a new building for its headquarters offices. The Board of Trustees is studying this problem and I hope it will soon find that it is feasible to proceed. More space is needed adequately to house the departments as they are at the present time. Progress is being hampered in many ways by not having sufficient and good space in which to work. Not only would a new building, properly planned and adequately equipped, permit the activities of organized medicine to be more effectual, but the added possibilities for progress and development would help to keep the American Medical Association in its position of the largest and most important medical organization in the world.

## Address of President-Elect Edward H. Cary

The Speaker then presented the President-Elect, Dr. Edward H. Cary, Dallas, Texas, who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

*Mr. Speaker and Members of the House of Delegates:*

I come to you after a year of partial observation of the medical activities of our country. There are many questions which will undoubtedly be brought to your attention; hence it will be unnecessary for me to mention more than three or four which I would like to accentuate.

### DUAL RELATIONSHIP OF PHYSICIANS

I have been greatly impressed with the dual responsibility of the doctor. His personal relationship to patients is so vital that it must always be kept in the foreground. To preserve this intimate quality of service embodies human happiness by meeting human needs and should be harmonized with the continued flexible growth of the medical profession. Our civic relations demand that we take part in public health service. We are forced to become interested in the activities of lay organizations which are striving to solve health problems. Many of these problems have arisen from an awakened public health consciousness, which has come from the revelations of medical research. The public is groping for a more widespread application of what it believes to be medical discoveries. We are loath to believe that the enlightened public desires to interfere with the private practice of medicine, but social trends which involve medical practice should be studied, for, after all, medicine is a social function.

### APPOINTMENT OF A COMMITTEE TO COOPERATE WITH BUREAU OF MEDICAL ECONOMICS

The profession must not be deterred from contributing its weight of opinion and battling for leadership in lay organizations which are interested in health matters. In my opinion, the Board of Trustees should be authorized to appoint a committee to cooperate with the Bureau of Medical Economics, this committee to study and aid in reconciling conflicting views related to the practice of medicine. These may include better cooperation on the part of the members of the profession, and a better understanding of the needs of the people as related to the individual practitioners and public health service, developing a formula outlining to what extent public health service will be acceptable and practical. This committee should consider, too, the numerous studies being made by the profession and others of the so-called high cost of medical care, reconciling conflicting views as they may affect the practice of medicine, and making available the plan most adaptable to conditions in communities seeking relief. This study should include methods of handling indigents and those of limited financial resources as a civic responsibility. For the underprivileged, some plan should be developed whereby the family may budget its health needs, an effort being made to eliminate the middleman but to conserve the right of the patient to select his doctor and to preserve the right of the physician to open opportunity on equal terms with his brother practitioner.

This committee should help to develop a plan of cooperative medicine for greater efficiency, applicable to each community, suggesting methods of practice for the purpose of making certain a correct diagnosis, partnerships between doctors being unnecessary. The fee should be commensurate with the ability of the patient to pay. There would be, through the committee, several helpful minds added to the Bureau of Medical Economics.

### DEVELOPMENT OF POSTGRADUATE INSTRUCTION

I am also impressed with the need of a comprehensive effort on the part of the Council on Medical Education and Hospitals to develop postgraduate instruction. There are many component and associated medical societies which are now carrying on intensive postgraduate work. These societies need the active aid of a committee representing the American Medical Association through the Council on Medical Education and Hospitals. This committee can suggest appropriate and nonconflicting dates, can list available instructors, and can suggest subject matter most needed for elucidation. Regional clinical meetings for intensive study should be encouraged in certain geographic localities, to discourage a multiplicity of like endeavors which are apt to lessen professional interest or conflict with the meetings of the state medical societies.

Efforts should be made to cooperate with special societies now doing postgraduate work, and to encourage all such efforts when accomplished through our medical organization. It would seem highly desirable that the House of Delegates suggest to the Board of Trustees that a committee be appointed, and, with the aid of the Council on Medical Education and Hospitals, accomplish these suggestions with nominal cost to the American Medical Association.

### NEED FOR CONSERVING RESOURCES

Though I am sure that the economic trend is strongly for retrenchment throughout the land, we should consider seriously any suggestion that would retard the growth of our organization. We have a tremendous task ahead of us to preserve the rights and privileges that have come through years of endeavor. I fear that the average member of our profession gives little

This committee has done a tremendous amount of work and has accumulated a great deal of material that will need very careful study. In one of its reports, it reviewed an investigation of one community of 38,000 people. As I understand this report, it showed that most of these people had physical defects of one kind or another. The question that arose as I read this report was, first, What is a perfect physical specimen? and Is it necessary or advisable to attempt to correct all of these so-called defects? I believe that this illustrates some of the problems that must be carefully studied by members of the medical profession.

Caring for the sick by contract with business concerns and societies has been suggested and tried. Contract practice is probably one of the most important questions confronting the profession today. A study of the problem is being carried on by the Bureau of Medical Economics at the present time and also by some state societies. I hope that after these studies have been completed it will be possible to make some definite statement; but it is not conceivable to me that this method of practicing medicine will help to solve our present problems. Undoubtedly this form of practice will continue in certain places; it has been carried too far in other localities, and the results are not wholly satisfactory to the patient. A study of this kind necessarily involves a tremendous amount of work and time, and I feel sure that the final report on this problem will be most interesting and valuable.

There has been a tendency in some specialties and in certain communities to turn over certain cases to nurses, midwives or technicians. So far as I can see, there is no way to make the conscientious practice of medicine an easy task. And, furthermore, it has been asserted repeatedly that there are too many physicians. Although I do not believe that there are too many physicians, nevertheless I do think that in order to give the people the best care, the actual practice of medicine must be kept in the hands of physicians.

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2. The second function of the medical profession concerns public health and preventive medicine. The profession may well be proud of the results accomplished in this field of endeavor. Certain infectious diseases have been greatly reduced in prevalence and severity, and others have been almost completely eradicated. Although these excellent accomplishments are largely the result of better knowledge of the exact cause of various diseases and of the application of this knowledge, nevertheless they are also due to a better understanding on the part of the people of the problems confronting medical men, and also are the result of more confidence in the profession. It seems to me, and I hope that I see clearly, that there is a better relationship between the physician and the public than there has ever been before. Undoubtedly, if this is so, it is partly due to the public meetings, and to the realization of the value of giving to the press any medical facts or information that we have. Radio programs and health talks assist in this campaign of organized medicine to keep the people informed.

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### GRADUATE TRAINING

The methods of practice are constantly changing, and it is necessary for each physician to continue to study. The physician's life is one of almost constant study. New things are being learned each year concerning the cause and the treatment of disease, and many of the older ideas and methods must be discarded from time to time. It is not possible for one to succeed and to progress by employing methods one was taught as a student some years ago. In order that the physician may keep abreast of the times, he must make trips to large centers of medicine, and attend clinics and courses conducted by experienced teachers where there is great abundance of clinical material. A physician who does not seek these clinics, who does not attend medical meetings, or who does not keep up his reading of medical literature, cannot do the best that might be done for his patients, and cannot hope to progress.

In former years it was possible in any of the larger cities, on certain days, to find a good clinic where there would be well chosen material presented in an interesting fashion by some well known clinician or surgeon. In the present day, most of these old, well established clinics have been allowed to go out of existence. I think that these clinics, especially for those who are surgeons, were of great value, and I am sorry that they have not been continued. I wonder whether it is due to some change in our conception of practice that has allowed this to take place. I wonder also whether science and research are overshadowing the art and the human side of practice too much. I also wonder whether the full time teaching plan for clinicians has not been a factor in allowing these important clinical days to disappear. Can a man on a full time teaching appointment retain his stimulus and the industry required to make such a clinic successful? I hope that some way may be found of reviving these regular, independent clinics, so that it may again be possible to derive the benefit of a few hours with some well known physician, surgeon or specialist.

### SPECIALIZATION

The House of Delegates last year requested the Council on Medical Education and Hospitals to investigate the entire subject of specialization, and to make recommendations looking to the establishment of proper qualifications of physicians who wish to engage in special practice. Specialization has been greatly overdone and not only is responsible for less satisfactory results but also has a tendency to increase the cost. I believe the best specialists will be those who have spent some time in general practice. One of the difficulties seems to be in the medical schools where the students are directed to some special field, and where students say it is difficult at the present time to obtain a well rounded out training such as would equip one for general practice.

Nevertheless there are many fields of medicine in which the general practitioner cannot hope to be sufficiently trained. Special knowledge, special training and an abundance of experience are required to make a specialist. One of the duties of organized medicine is to make it possible for society in general as well as the medical profession to find out who are qualified specialists in the various fields. Furthermore, I believe that there is nothing more important than the regulation of specialization and the proper qualification of specialists at the present time.

Some of the specialties have established qualifying boards and are attempting to further the plan of certifying as to special qualifications. I have been informed that representatives of several clinical specialties have suggested that the National Board of Medical Examiners state its present attitude concerning the part it is willing to take in assisting the qualifying boards in the clinical specialties. The subject of specialization has been discussed in a preliminary manner at several informal conferences by the representatives of certain specialties, and a subcommittee of the National Board of Medical Examiners. The consensus in these conferences has been that it is desirable that some dependable method of certification be devised by each of the special clinical fields, and, further, that there should be some central organization of the several qualifying bodies to insure better coordination. It has been suggested also that the American Medical Association become responsible for the publication of official lists of qualified specialists.

Several sections of the Association have already accomplished a good deal toward determining and regulating the qualifications for specialization in particular fields. It seems to me that it is advisable to do all that we possibly can to promote this activity among the sections. If the American Medical Association, cooperating with the Association of American Medical Colleges, state boards of medical licensure, the National Board of Medical Examiners, the American College of Surgeons, the American Board for Ophthalmic Examinations, the American Board of Otolaryngology, the American Board of Obstetrics and Gynecology, and such other specialty boards as may be developed can officially regulate specialization, it will have accomplished much.

### HOSPITAL BEDS FOR VETERANS

One of the most important problems before society and the medical profession is the one dealing with the best plan for care of war veterans. Some of these men are sick and must be cared for. The medical profession is willing and anxious to see that the best medical attention possible is provided for them. It wants them to have exactly the same care that all other orders of society are given. It does not want them to be pauperized and to be placed in hospitals when they are not sick. It seems to me that the federal government has built enough hospitals. There are many unoccupied beds in civilian hospitals that might well be used in the care of veterans who are sick.

It is fortunate that these affairs are in the hands of an industrious and intelligent committee. The medical profession can feel hopeful and confident that the efforts of its committee, combined with those of the American Legion and the American Hospital Association, will bring forth the proper solution of this problem.

### NEW BUILDING

The thing this Association needs as much as anything else is a new building for its headquarters offices. The Board of Trustees is studying this problem and I hope it will soon find that it is feasible to proceed. More space is needed adequately to house the departments as they are at the present time. Progress is being hampered in many ways by not having sufficient and good space in which to work. Not only would a new building, properly planned and adequately equipped, permit the activities of organized medicine to be more effectual, but the added possibilities for progress and development would help to keep the American Medical Association in its position of the largest and most important medical organization in the world.

## Address of President-Elect Edward H. Cary

The Speaker then presented the President-Elect, Dr. Edward H. Cary, Dallas, Texas, who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

*Mr. Speaker and Members of the House of Delegates:*

I come to you after a year of partial observation of the medical activities of our country. There are many questions which will undoubtedly be brought to your attention; hence it will be unnecessary for me to mention more than three or four which I would like to accentuate.

### DUAL RELATIONSHIP OF PHYSICIANS

I have been greatly impressed with the dual responsibility of the doctor. His personal relationship to patients is so vital that it must always be kept in the foreground. To preserve this intimate quality of service embodies human happiness by meeting human needs and should be harmonized with the continued flexible growth of the medical profession. Our civic relations demand that we take part in public health service. We are forced to become interested in the activities of lay organizations which are striving to solve health problems. Many of these problems have arisen from an awakened public health consciousness, which has come from the revelations of medical research. The public is groping for a more widespread application of what it believes to be medical discoveries. We are loath to believe that the enlightened public desires to interfere with the private practice of medicine, but social trends which involve medical practice should be studied, for, after all, medicine is a social function.

### APPOINTMENT OF A COMMITTEE TO COOPERATE WITH BUREAU OF MEDICAL ECONOMICS

The profession must not be deterred from contributing its weight of opinion and battling for leadership in lay organizations which are interested in health matters. In my opinion, the Board of Trustees should be authorized to appoint a committee to cooperate with the Bureau of Medical Economics, this committee to study and aid in reconciling conflicting views related to the practice of medicine. These may include better cooperation on the part of the members of the profession, and a better understanding of the needs of the people as related to the individual practitioners and public health service, developing a formula outlining to what extent public health service will be acceptable and practical. This committee should consider, too, the numerous studies being made by the profession and others of the so-called high cost of medical care, reconciling conflicting views as they may affect the practice of medicine, and making available the plan most adaptable to conditions in communities seeking relief. This study should include methods of handling indigents and those of limited financial resources as a civic responsibility. For the underprivileged, some plan should be developed whereby the family may budget its health needs, an effort being made to eliminate the middleman but to conserve the right of the patient to select his doctor and to preserve the right of the physician to open opportunity on equal terms with his brother practitioner.

This committee should help to develop a plan of cooperative medicine for greater efficiency, applicable to each community, suggesting methods of practice for the purpose of making certain a correct diagnosis, partnerships between doctors being unnecessary. The fee should be commensurate with the ability of the patient to pay. There would be, through the committee, several helpful minds added to the Bureau of Medical Economics.

### DEVELOPMENT OF POSTGRADUATE INSTRUCTION

I am also impressed with the need of a comprehensive effort on the part of the Council on Medical Education and Hospitals to develop postgraduate instruction. There are many component and associated medical societies which are now carrying on intensive postgraduate work. These societies need the active aid of a committee representing the American Medical Association through the Council on Medical Education and Hospitals. This committee can suggest appropriate and nonconflicting dates, can list available instructors, and can suggest subject matter most needed for elucidation. Regional clinical meetings for intensive study should be encouraged in certain geographic localities, to discourage a multiplicity of like endeavors which are apt to lessen professional interest or conflict with the meetings of the state medical societies.

Efforts should be made to cooperate with special societies now doing postgraduate work, and to encourage all such efforts when accomplished through our medical organization. It would seem highly desirable that the House of Delegates suggest to the Board of Trustees that a committee be appointed, and, with the aid of the Council on Medical Education and Hospitals, accomplish these suggestions with nominal cost to the American Medical Association.

### NEED FOR CONSERVING RESOURCES

Though I am sure that the economic trend is strongly for retrenchment throughout the land, we should consider seriously any suggestion that would retard the growth of our organization. We have a tremendous task ahead of us to preserve the rights and privileges that have come through years of endeavor. I fear that the average member of our profession gives little thought to the value of this collective effort. I sometimes wonder whether we realize what it means to the individual physician. To make effective this effort to advance the science and practice of medicine and to preserve its endowments, the Association should be made as strong financially as it is numerically. It is true that we have deliberately defended the people from many abuses, and such efforts have been rewarded with suits for large sums of money. Legal defense is always expensive, but the members of the profession in the localities immediately affected are helpless if the American Medical Association does not assume the task of exposure and defense.

No other organization in the world is giving to its members so much. Its scope embraces literature, news and information of all kinds, not to speak of the associational advantages. The *British Medical Journal,* for instance, which in size and importance is next to ours, costs $15 annually. Other foreign journals of less importance cost relatively the same, while the annual income of the average American physician is greater. The new revenue bill will undoubtedly carry increased postal rates which will add greatly to the cost of The Journal. It would seem unwise to jeopardize our progress by reducing the cost of The Journal to our members. Any reduction would be a backward step and would actually amount to very little to the individual member. I hope that any constituent society which has expressed itself in favor of a reduction in the present price of The Journal will reconsider its decision, for the beneficent influence of the organization should not be curtailed. If the medical profession is to meet its obligations and responsibilities successfully in this new commercial age, it must be able in all respects, and fully fortified.

#### NEW HOME FOR THE ASSOCIATION

The American Medical Association should and can be properly housed. An organization as strong as ours in its financial resources might be able now to take advantage of the greatest opportunity it will ever have to acquire the most desirable property suited to its needs, at a cost so low that what would seem an extravagance under normal conditions might be provident now.

#### DELIBERATIONS OF THE HOUSE

The wisdom of the House of Delegates manifested in the past justifies the hope that its deliberations will aid in solving many problems, either during this session or through the orderly procedure of referring to your distinguished Board of Trustees matters for which you are unable to find a ready solution.

It is my earnest desire to cooperate with you, and the profession generally, in advancing our professional prestige and welfare, as well as the science and practice of medicine. I am convinced that professional effort, when carried on in orderly fashion, offers to the people of this country one of the most beneficent influences they have for the common good.

### Remarks of Dr. Paul Wolff

Dr. Morris Fishbein introduced Dr. Paul Wolff of Berlin, who addressed the House as follows:

*Mr. Chairman:*

It is a great privilege for me to convey to you and my esteemed colleagues of America my heartfelt thanks for the honor which you have conferred on me by asking me to come here to lecture to you. And I need hardly say that it is with the greatest enthusiasm that I accepted the invitation; for it has given me the opportunity not only of explaining the world situation of drug addiction as my special subject but, in connection with this, particularly the situation in Germany and the opinions of the German medical corps. At the same time I have been entrusted by the Deutscher Aerztevereinsbund, which is the professional union of all physicians in my country, and is the equivalent in Germany of the American Medical Association, to convey to you all the heartiest greetings as a means of establishing a closer and firmer relationship between your country and mine. And this will lead, I hope, to a furthering of the scientific work and professional interest of both nations.

### Greetings to House

Dr. Olin West, Secretary, read a telegram of greeting from the British Medical Association and from Dr. G. E. de Schweinitz, a Past President.

## REPORTS OF OFFICERS

### Report of the Secretary

Dr. Olin West then presented his report as Secretary, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary, with the exception of the following: The part containing amendments to the Constitution and By-Laws introduced by Dr. D. E. Sullivan, New Hampshire, by Dr. J. Gurney Taylor, Wisconsin, and by Dr. Isaac A. Abt, Section on Diseases of Children, was referred to the Reference Committee on Amendments to the Constitution and By-Laws; the resolution from the Michigan State Medical Society was referred to the Reference Committee on Legislation and Public Relations; the resolution introduced by Dr. G. Henry Mundt, Illinois, was referred to the Reference Committee on Medical Education; the part pertaining to dual membership was referred to the Reference Committee on Constitution and By-Laws, and the resolution introduced by Dr. Albert Soiland, California, and adopted at the Philadelphia Session, was referred to the Reference Committee on Constitution and By-Laws.

### Report of the Board of Trustees

The Secretary presented the report of the Board of Trustees, which was referred to the Reference Committee on Reports of the Board of Trustees and Secretary.

### Report of the Special Committee on Legislative Activities

Hearing no objection, the Speaker ruled that the report of the Special Committee on Legislative Activities would be presented at the executive session, Tuesday afternoon, with the exception of the portion referring to amendment to the By-Laws, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws.

### Report of the Judicial Council

Dr. George E. Follansbee, Chairman, presented the report of the Judicial Council, which was referred to the Reference Committee on Rules and Order of Business.

### Report of the Council on Medical Education and Hospitals

General Merritte W. Ireland, Washington, D. C., presented the report of the Council on Medical Education and Hospitals, which was referred to the Reference Committee on Medical Education.

### Report of the Council on Scientific Assembly

Dr. Roger S. Morris, Cincinnati, presented the report of the Council on Scientific Assembly, which was referred to the Reference Committee on Sections and Section Work.

### Good Wishes and Good Cheer to Ill Confrère

Dr. William G. Ricker, Vermont, moved that a telegram of good wishes be sent to Dr. J. Gurney Taylor, Wisconsin, absent because of illness. The motion was seconded by Dr. Arthur C. Morgan, Pennsylvania, and carried.

## NEW BUSINESS

### Resolution on the Care of Veterans

Dr. H. H. Shoulders, Tennessee, presented the following resolution on the Care of Veterans, which was referred to the Reference Committee on Legislation and Public Relations:

*Resolved,* By the House of Delegates of the American Medical Association that, in furtherance of the plan and policy of a resolution with regard to the governmental policy of rendering medical and hospital benefits to veterans with non-service connected disabilities, adopted in Philadelphia, at the 1931 session, the principles of which we hereby reaffirm, the House of Delegates hereby gives its approval to the draft of a proposed amendment to the World War Veterans' Act, 1924, which is as follows:

"An Act to Amend the World War Veterans' Act, 1924

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

"Section 1. That Paragraph 10 of Section 202 of the World War Veterans' Act, 1924, approved June 7, 1924, as amended by Acts approved March 4, 1925, July 2, 1926, and July 3, 1930, is hereby amended by striking therefrom the following: "The director is further authorized, so far as he shall find that existing Government facilities permit, to furnish hospitalization and necessary traveling expenses incident to hospitalization to veterans of any war, military occupation, or military expedition, including those women who served as Army nurses under contracts between April 21, 1898, and February 2, 1901, and including persons who served overseas as contract surgeons of the Army at any time during the Spanish-American War, not dishonorably discharged, without regard to the nature or origin of their disabilities."

"SECTION 2. The World War Veterans' Act, 1924, is further amended by adding thereto the following:

"(1) Each honorably discharged veteran of any war, military expedition, or military occupation with ninety days or more of actual service, shall be entitled to the following disability benefits for disabilities not resulting from injury or disease suffered or contracted in military or navy service:

"A. A cash benefit of $12.50 per week during any period of total disability from disease or injury.

"B. A hospital benefit of $4.00 per day during any period of actual and necessary hospitalization.

"(2) Such benefits shall be payable to the veteran upon satisfactory proof of the disability, furnished by the veteran to the Veterans' Bureau, upon forms and in accord with rules to be prescribed by the Director of the Veterans' Bureau; each such proof to include the supporting statement of an attending physician of good standing and repute, and, in the case of hospital benefit, the certificate of the superintendent or person in charge showing actual confinement in a hospital approved by the Director for service to veterans;

"(3) PROVIDED, no cash benefit shall be payable under this section to a veteran for any condition for which he is paid disability allowance for total permanent disability under the amendment to the World War Veterans' Act of July 3, 1930; and no benefits under this section shall be paid to any veteran for any disability resulting from his own wilful misconduct; nor for any disability for which the veteran is entitled to hospitalization under paragraph 10 of section 202 of the World War Veterans' Act, as amended by this Act, in a hospital under the control of the Veterans' Bureau.

"(4) Whenever malingering or fraudulent collusion on the part of an attending physician is suspected by the Director, any veteran claiming benefits under this section may be ordered by the Bureau to a Veterans' Bureau or to a veterans' hospital for examination, observation and report as to the existence of a condition entitling him to the benefits claimed, pending compliance with which order payment of benefits shall be suspended; and in all cases hospital records of the claimant shall be open to the inspection of the Bureau, and the claimant shall be subject to examination under the provisions of section 203 of the World War Veterans' Act, 1924, as amended.

"(5) The Director of the Veterans' Bureau shall furnish to each living veteran who may be entitled to benefits under this section a "Disability Benefit Certificate," reciting the benefits provided herein and the terms and conditions under which they may be paid and received, together with a blank form on which application and proof for such benefits may be made. The Director shall enforce the provisions of this section through and as a department of the Division of War Risk Insurance of the Veterans' Bureau.

"Section 3. The provisions of Section 1 hereof shall take effect six months from the date of this enactment; and the benefits provided in Section 2 shall accrue and commence six months from the date of enactment."

Be it further

*Resolved*, That the proper officers of this association be instructed to take steps to present this matter properly to every important local Legion post in the United States, with a view to securing their endorsement of the amendment. Be it further

*Resolved*, That the Board of Trustees be authorized and requested to place sufficient funds at the disposal of the Legislative Committee to carry on this activity, and, be it further

*Resolved*, That the Legislative Committee be empowered and directed to employ a full time personnel for the purpose of carrying this work forward. Be it further

*Resolved*, That the Legislative Committee be instructed to present the proposed amendment to the Congress of the United States for consideration, when a reasonable number of local legion posts have endorsed it. Be it further

*Resolved*, That, in the interest of harmony, the Legislative Committee is empowered to make changes in the wording of this proposed amendment except that there shall be no abandonment or compromise of the fundamental and underlying principles; to wit:

1. The cessation of the hospitalization of veterans with non-service connected disabilities, except as set out in the first part of paragraph 202-10 of the World War Veterans Act, and in the proposed amendment.

2. That the veteran himself shall have the right to select his physician and hospital, subject to the reasonable regulations and approval of the Veterans' Bureau.

## Resolution on Increase of Personnel and Budget

Dr. C. S. Gorsline, Michigan, presented the following resolution on Increase of Personnel and Budget, which was referred to the Board of Trustees:

WHEREAS, It appears from the suggestion in the address of the President-Elect and from a careful perusal of the published report of the director of the Bureau of Medical Economics that an economic emergency exists in the affairs of practitioners of medicine in general, and

WHEREAS, It is apparent that substantial progress has been made in the study of medical economic problems and that it appears that certain phases of our economic problems demand the earliest possible consideration in order that the medical profession shall have placed at its disposal the necessary facts for intelligent action, and

WHEREAS, These problems are, in the order of their apparent importance, (1) workmen's compensation, (2) health insurance, and (3) contract practice; and

WHEREAS, The present personnel and finances seem to be inadequate to accomplish speedy results, therefore be it

*Resolved*, That the Board of Trustees of the American Medical Association be requested by this House of Delegates to provide such additional increase in budget and personnel as may be required to secure this important information at the earliest possible date consistent with completeness and accuracy of the data assembled.

## Resolution on the Appointment of a Committee to Study Birth Control

Dr. J. D. Brook, Michigan, presented a resolution on the appointment of a committee to study birth control. On motion of Dr. J. W. Van Derslice, Illinois, seconded and carried, the resolution was laid on the table for consideration at the executive session Tuesday afternoon.

## Resolution Requesting Reduction in the Subscription Rate

Dr. Edgar A. Hines, South Carolina, presented the following resolution requesting reduction in the subscription rate for THE JOURNAL from $7 to $5, which was referred to the Board of Trustees:

WHEREAS, Economic conditions are such that many members of the medical profession find it increasingly difficult to pay $7 subscription for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, therefore be it

*Resolved*, By the Greenville County Medical Society in Session April 4, 1932, that a request be made of the American Medical Association to reduce the subscription of THE JOURNAL from $7 to $5 as soon as practicable.

E. A. HINES.
J. H. CANNON.

NOTE.—This resolution was submitted to the House of Delegates of the South Carolina Medical Association, April 19, 1932, and the delegates to the American Medical Association are directed to transmit the same to the House of Delegates of the American Medical Association for their consideration.

## Resolution on Hospital and Health Insurance Societies in Cuba

Dr. William R. Molony, California, presented the following resolution on hospital and health insurance societies in Cuba, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The development of so-called "Hospital and Health Insurance Societies" has taken on so great a development in Cuba that the standards of medical practice seemingly have been seriously endangered through such organizations; and

WHEREAS, It is desirable that full and accurate information should be placed at the disposal of the medical profession of the United States concerning these Cuban organizations because in them there is an expression of the dangers which confront medical practice through the establishment of such institutions; now therefore be it

*Resolved*, By the Executive Committee of the California Medical Association that the California Medical Association Council be requested to instruct the delegation from this constituent state association of the American Medical Association to present this resolution to the American Medical Association House of Delegates at its next annual session at New Orleans; and be it further

*Resolved*, That the recommendation be made to the American Medical Association House of Delegates that, through appropriate action, steps be taken by the American Medical Association to secure full information concerning these Cuban so-called "Health and Insurance Societies" and clubs, inasmuch as such information could be of great value to organized medicine as represented by the American Medical Association and its constituent state units.

## Resolution on Publication of a Digest of Major Medicolegal Decisions

Dr. Molony also presented the following resolution on publication of a digest of major medicolegal decisions to be printed in annual volumes, which was referred to the Board of Trustees:

WHEREAS, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION prints in each of its issues a digest of major medicolegal decisions; and

WHEREAS, Such digests, if brought out in booklet form, year by year, with proper index and cross references, could be of very great value to members of the medical and legal profession; now, therefore, be it

*Resolved*, By the House of Delegates of the California Medical Association at its sixty-first annual session, that it requests the House of Delegates of the American Medical Association to consider the advisability of recommending to the Board of Trustees of the American Medical Association the publication, in the form of annual volumes, of these medicolegal digests which are printed in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION; and be it further

*Resolved,* That a copy or copies of such volume, as approved by the House of Delegates and by the Board of Trustees of the American Medical Association, be sent each year to each of the constituent state associations.

### Communication on Appréciation of Auxiliary

The Speaker referred to the Reference Committee on Miscellaneous Business the following communication:

If the House of Delegates would send a letter of appreciation to the Auxiliary it would do more to stimulate interest than anything that you and I and all the Auxiliary leaders put together could do. Their letter after being read at the meeting could probably be placed in the Exhibit.

The meeting adjourned at 12:20 p. m., to reconvene at 9:30 Tuesday morning, May 10.

*(To be continued)*

# *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

## ARIZONA

**State Medical Election.**—Dr. Clarence Gunter, Globe, was installed as president of the Arizona State Medical Association at its recent annual meeting, and Dr. Nelson C. Bledsoe, Tucson, was made president-elect. Dr. Delamere F. Harbridge, Phoenix, was reelected secretary. The next annual session will be held at Tucson in April, 1933.

## CALIFORNIA

**Licenses Revoked and Restored.**—*California and Western Medicine* reports the following changes in the status of licentiates made at the regular meeting of the state board of medical examiners in Los Angeles, February 1-4: Dr. George H. Bland, Fresno, license revoked, February 2, for violation of probation based on narcotic charges; Dr. William B. Hamilton, license revoked, February 2, based on revocation of his Utah license on which he obtained his California reciprocity license; Dr. Alfred G. R. Castles, Los Angeles, placed on probation for five years, February 2, based on advertising contrary to law; Dr. Cary A. Snoddy, Vallejo, and Dr. Aubrey H. Staples, Oakland, placed on probation for five years without narcotic privileges, having been found guilty, February 2, of narcotic indiscretions; Dr. Roy L. Buffum, Long Beach, whose license was restored, February 2, was placed on probation for a period of five years without alcohol or narcotic privileges; Dr. John H. Seifert, San Diego, whose license was restored, February 1, was placed on probation.

**New State Medical Library.** — The new state medical library, authorized by the 1931 legislature for the purpose of aiding physicians, particularly in rural districts, to keep up to date in their practice, was started, May 1, with the cooperation of the University of California Medical School. The library will be maintained in two branches, one at the medical school in San Francisco, and one at the medical department in Los Angeles. From these centers medical journals and books will be sent to practicing physicians in any part of the state on request. Funds for the support of the project will come from the surplus account of the state board of medical examiners which is made up from medical license fees and taxes. An advisory committee has been appointed to supervise the work of the "packet library." Members of the committee are President Robert Gordon Sproul of the university; Dr. John H. Graves, president, state board of health; Dr. Percy T. Phillips, president, state board of medical examiners; Dr. Langley Porter, dean of the medical school in San Francisco, and Dr. George H. Kress, dean of the medical department in Los Angeles. Miss Francis Van Zandt will be the librarian.

## ILLINOIS

**Society News.**—Dr. Edward S. Murphy, Dixon, was elected president of the Illinois Tuberculosis Association at its recent annual meeting in Danville.——The Livingston County Medical Society was recently addressed at Pontiac, among others, by Drs. William H. Holbrock and William A. Malcolm, both of Peoria, on urologic and obstetric subjects, respectively.

### Chicago

**Rongetti's License Revoked.** — The state department of registration and education revoked the license of Amante Rongetti, May 4, on the ground of his conviction of manslaughter (The Journal, Aug. 30, 1930, p. 668).

**Society News.**—At the meeting of the Chicago Pediatric Society, May 17, the speakers included Drs. Charles A. Aldrich, Winnetka, on "An Anomaly of the Brain," and Bert I. Beverly on "Congenital Atresia of the Duodenum."——The Chicago Society of Internal Medicine will be addressed, May 23, among others, by Drs. Chauncey C. Maher on "Effects of Intravenous Quinidine Sulphate on the Fibrillating Auricle," and Harry A. Singer, "Valvular Pneumoperitoneum."——The Chicago Gynecological Society was addressed, May 20, among others, by Dr. George F. Hibbert on "Significance of the Streptococcus in Trichomonas Vaginalis Vaginitis."

## INDIANA

**Course at City Hospital.**—Indiana University School of Medicine and the graduate committee of the Indiana State Medical Association are making arrangements for a series of courses, June 16-17, at Indianapolis City Hospital. The study will be arranged especially for the general practitioner so that he may have a review in the fundamentals and a knowledge of new technic in treatment.

**Society News.**—Dr. John R. Hurley, Muncie, addressed the Delaware-Blackford County Medical Society, April 19, on "Scarlet Fever Problem with Emphasis on Prevention."——At the meeting of the LaPorte County Medical Society, April 21, Drs. Alois B. Graham and Joseph W. Ricketts, Indianapolis, discussed "Anorectal Diseases."——Dr. Goethe Link, Indianapolis, talked on "Disturbances of the Thyroid Gland," April 11, before the Randolph County Medical Society.——"Chronic Constipation" was the subject of Dr. Arthur G. Funkhouser, Indianapolis, before the Grant County Medical Society, Marion, April 26.——Dr. Roy Lyman Sexton, Washington, D. C., addressed the Tippecanoe County Medical Society at Lafayette, May 5, on "Colon Disturbances and Involvements Including Endocrine Aspects."——The Indianapolis Medical Society will be addressed, May 24, by Dr. Ralph M. Waters, Madison, Wis., on "Carbon Dioxide Absorption from Anesthetic Atmospheres"; the society will be addressed, May 31, by Drs. Cleon A. Nafe and Homer G. Hamer on "Surgical Treatment of Acute Empyema" and "Various Causes of Perineal Swellings."——Dr. Will J. Martin, Kokomo, was elected president of the Indiana Tuberculosis Association at its twenty-first annual meeting in Indianapolis.——The Parke-Vermillion Counties Medical Society was reorganized, April 20.

## KANSAS

**State Medical Election.**—Officers of the Kansas Medical Society are Drs. Paul S. Mitchell, Iola, president, whose term expires December 31; James D. Colt, Sr., Manhattan, president-elect, whose term expires Dec. 31, 1933; Jacob F. Gesell, Wichita, vice president; George M. Gray, Kansas City, treasurer, and John F. Hassig, Kansas City, secretary. The society will hold its seventy-fifth annual meeting in Lawrence, May 2-4, 1933.

## LOUISIANA

**State Medical Election.**—Dr. Roy B. Harrison, New Orleans, was installed as president of the Louisiana State Medical Society at its fifty-third annual meeting, in New Orleans, May 9-10. Dr. Carl A. Weiss, Baton Rouge, was made president-elect. Other officers of the society are Drs. James T. Nix, Jr., New Orleans, Charles M. Horton, Franklin, and Willis P. Butler, Shreveport, vice presidents. Dr. Paul T. Talbot, New Orleans, was reelected secretary. The next annual meeting of the association will be held in Lake Charles.

## MARYLAND

**Dinner to Dr. Gardner.** — Dr. William Sisson Gardner, professor of gynecology, University of Maryland Medical School, Baltimore, and chief of the gynecological staff of Mercy and University Hospitals, Baltimore, was guest of honor at a dinner, May 5, given in recognition of his many years' service in the medical school. Dr. Frank D. Sanger was toastmaster and Dr. Thomas K. Galvin was in charge of the dinner. Speakers included Drs. James Douglas Crane, Ishpeming, Mich.; James M. H. Rowland, dean, University of Maryland Medical School; John Ruhräh, professor of pediatrics; Charles F. Blake and Julius Friedenwald. Dr. Gardner in 1885 graduated from the College of Physicians and Surgeons, Baltimore, now a part of the University of Maryland.

**Stillbirths in Maryland.**—Recent statistics indicate that of the total of 31,271 births reported in Maryland during 1931, 1,966, or 6.3 per cent of the infants, were born dead. One source of information stated that this number probably represents but a fraction of the actual number of infants still-born in a year, as some cases probably are not reported. Figures for the state last year show one stillbirth for every fifteen live births, or a rate of 67.1 per thousand live births. The infant mortality for Maryland for 1931 shows that one of every twelve children born alive died during its first year of life, or a rate of 79.6 per thousand live births. The ratio of stillbirths to live births is higher among the Negro population than among the white, the 1931 rates being 100.4 per thousand live births for Negro infants and 57.9 for white. The stillbirth rates for the individual counties range from 140.9 per thousand live births in Talbot County to 30.5 in Garrett County, with a median rate of 70.8. Maryland is the only state that requires the registration of "all products of conception."

## MASSACHUSETTS

**License Restored.**—At a meeting of the state board of registration in medicine, April 14, it was voted to restore to Dr. Charles Grapek his license to practice medicine in Massachusetts. The license had been revoked, April 2, 1931 (The Journal, May 23, 1931, p. 1804).

**Dr. Hubbard Honored.**—Dr. Frank A. Hubbard, for more than fifty-two years a practicing physician of Taunton, was given a dinner, April 6, on the occasion of his eightieth birthday. A silver pitcher and tray were presented to Dr. Hubbard by William H. Reed, editor of the Taunton Gazette. Dr. Arthur R. Crandell, Taunton, presided. The speakers were Hon. Andrew J. McGraw, mayor of Taunton; Mr. Reed, and Drs. William M. Conant, Charles G. Mixter, Philemon E. Truesdale, Ralph C. Larrabee, Zabdiel B. Adams and John W. Bartol.

**State Medical Meeting in Boston.**—The one hundred and fifty-first meeting of the Massachusetts Medical Society will be held in Boston, June 8-10, with headquarters at the Hotel Statler, under the presidency of Dr. Halbert G. Stetson, Greenfield. The Shattuck lecture will be delivered, Wednesday evening, by Dr. Frank B. Mallory, professor of pathology, Harvard University Medical School, on "Cirrhosis of the Liver." Dr. Samuel B. Woodward, Worcester, will give the annual discourse on "The Story of Smallpox in Massachusetts." Guest speakers on the program will include Drs. Frank H. Krusen, Philadelphia, on "Physical Therapy, An Aid to Routine Medical and Surgical Practice"; George A. Wyeth, New York, "Treatment of Growths by Electro-Surgery"; Irving W. Potter, Buffalo, "Elective Version, with Lantern Slide Demonstration"; Edward J. Rogers, Pittsford, Vt., "Silicosis in Vermont Granite Cutters and Slate Workers," and George P. Muller, Philadelphia, "Mortality of Acute Appendicitis." Medical and surgical clinics will be held at the Boston City Hospital.

## MINNESOTA

**Society News.**—Dr. Harry F. Bayard, Minneapolis, addressed the Hennepin County Medical Society, April 13, on "Diagnosis of Chronic Ulcerative Colitis," and Dr. Morris H. Nathanson, "Pericarditis with Effusion: Treatment with Pneumopericardium."——Dr. Owen H. Wangensteen, Minneapolis, among others, read a paper before the Minnesota Academy of Medicine, May 18, on "Therapeutic Considerations in the Management of Acute Intestinal Obstruction."——The Red River Valley Medical Society was addressed at its April meeting in Crookston by Drs. Henry O. Ruud, Grand Forks, on "Diagnosis and Treatment of Lateral Sinus Thrombosis," and Russell Gates, Minot, "Case Histories and X-Ray Diagnosis."

## MISSOURI

**Tanned with Identical Numerals.**—The use of artificial light rays to tan new-born babies and their mothers with identical numerals was adopted at the General Hospital, Kansas City, April 9. The tanning of baby and mother is done before the mother or child is taken from the delivery room, thus eliminating any chance of error in infant identification. The numerals remain visible for about ten days.

**State Medical Meeting in Jefferson City.**—The seventy-fifth annual meeting of the Missouri State Medical Association will be held in Jefferson City, May 23-26, with headquarters at Junior College, under the presidency of Dr. John F. Harrison, Mexico. The program will include symposiums on diseases of the kidney, carcinoma of the breast, syphilis, diseases of the ear, nose and throat. Guest speakers will include Drs. Edward H. Cary, Dallas, Texas, President, American Medical Association, on "Relation of the Modern Doctor to the Public"; Burton J. Lee, New York, "Indications for Surgery and the Indication for Irradiation in the Treatment of Cancer"; Elexious T. Bell, Minneapolis, "A Clinical and Pathological Study of Primary Hypertension"; William S. Middleton, Madison, Wis., "Syphilis of the Circulatory System." Other speakers on the program include Drs. Martin Hayward Post, Jr., St. Louis, "Incipient Cataract: Its Incidence and Care"; Arthur L. Anderson, Springfield, "Value of Routine Basal Metabolism in the Examination of Patients"; Benjamin Landis Elliott, Kansas City, "Diagnosis of Cerebellar Disease"; Edward Sanborn Smith, Kirksville, "Problem of the Narcoleptic"; Lloyd B. Clinton, Carthage, "Pediatric Surgery," and John F. Chandler, Oregon, "Dispensing as an Art." The twenty-fourth annual meeting of the Missouri Society of Medical Secretaries will be held, Wednesday. Among others on the program will be Dr. Edward J. Goodwin, secretary, state medical association, who will present a report on legislation.

## NEBRASKA

**Study of Intestinal Allergy.**—The University of Nebraska College of Medicine was recently given a research fund of $1,500 by Merrell and Company of Cincinnati for a special study of the flora of the intestine of individuals suffering with allergy. The work is being carried out by Dr. Charles P. Baker, under the supervision of Dr. John T. Myers, professor of bacteriology and public health, and Dr. Ernest L. MacQuiddy, who is in charge of the allergy work of the university.

**Fifty Years in Practice.**—The Thayer County Medical Society gave a dinner in honor of Dr. Charles C. Snowden, Davenport, April 21, in recognition of his completion of fifty years in the practice of medicine, all of which time has been spent in Davenport. Dr. Harry J. Newell, Alexandria, spoke in behalf of the medical society; Dr. Harry E. Potter, Fairbury, in behalf of friends, and Dr. Edward W. Rowe, Lincoln, on the advances in medicine during the last fifty years. Dr. Miles J. Breuer, Lincoln, spoke on "Types of Anemia That Do Not Respond to Standard Methods of Treatment."

## NEW JERSEY

**Illegal Practitioners Prosecuted.**—The following persons were recently prosecuted by the state board of medical examiners for practicing medicine without a license:

Sarah E. Wilson of Pitman.

Carmelo Cerina, a bone setter of Glassboro.

Ernest Palmaffy, naturopath of Newark.

Maria Capra, midwife of Union City.

Robert C. Bieri, electrotherapist, Union City.

Michael Palazzi, chiropractor, Netcong.

Albert R. Korhnack, electrotherapist of Gloucester.

Anna Fazekas of Franklin.

Voorhees G. Cheathem, licensed chiropractor of Plainfield, was convicted of practicing medicine without a license. He exceeded his chiropractic license by giving electrical treatments.

Abraham E. Sandman, electrotherapist, Atlantic City.

John F. Johnson, Atlantic City.

Frederick S. Fennel, licensed chiropractor, Morristown. He exceeded his chiropractic license by giving electrical treatments and drugs.

Mary Miller, licensed chiropractor, Paterson. She exceeded her chiropractic license by giving electrical treatments and drugs.

Nancy Kehoe. She gave electrical treatments under direction of Mary Miller, D.C., by whom she was employed as a nurse.

Wilbur Leib, druggist of Cape May.

Beverly R. McPhail, druggist, Maywood.

Dr. Krakor Tekian, Newark.

## NEW YORK

**Health at Utica.**—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended May 7, indicate that the highest mortality rate (23.4) appears for Utica, and the rate for the group of cities as a whole, 11.8. The mortality rate for Utica for the corresponding period last year was 21.9, and for the group of cities, 12.1. The annual rate for eighty-five cities for the eighteen weeks of 1932 was 12.5, as against a rate of 13.6 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large Negro population, may tend to increase the death rate.

### New York City

**Society News.**—Dr. Jacques W. Maliniak was elected president of the recently organized Society of Plastic and Reconstructive Surgery.——A symposium on the common cold constituted the meeting of the Medical Society of the County of

New York, April 25; the speakers were Drs. Alphonse R. Dochez, Anna W. Williams, Harlow Brooks, Marcus A. Rothschild, Joseph Harkavy and Samuel J. Kopetzky.

**Medical Center to Open September 1.**—The New York Hospital-Cornell University Medical Center, covering three entire blocks along the East River between Sixty-eighth and Seventieth streets, which has been under construction since the autumn of 1929, will open September 1. The present New York Hospital, the Lying-In Hospital and the Manhattan Maternity and Dispensary will close their present plants about August 1 to move into the new center. Cornell University Medical College will begin to move at the end of the present school term in June and will open the fall term in the new buildings, September 29. More than half of the 1,000 beds in the hospital will be ready for occupancy at the outset.

**Personal.**—In recognition of forty years of service to the University and Bellevue Hospital Medical College, colleagues of Dr. William J. Pulley, clinical professor of medicine, gave a dinner in his honor, April 23.——Dr. Richard T. Atkins was appointed professor of otolaryngology at University and Bellevue Hospital Medical College, it was announced, April 25; Dr. Lee M. Hurd was appointed emeritus professor of laryngology, and Dr. John McCoy, emeritus clinical professor of laryngology.——Dr. Phoebus A. Levene, member of the Rockefeller Institute for Medical Research, has been elected a member of the Deutsche Akademie der Naturforscher in Halle, on the occasion of the celebration of the centenary of the death of Goethe.

**Public Psychiatric Service.**—Results of the first year of the psychiatric service of the city department of health in the Bellevue-Yorkville Health Demonstration are disclosed in the 1931 report of the demonstration. This is the first complete mental hygiene unit established by the department; it was opened in November, 1930; last year 141 patients were treated. The objectives are to carry out an educational mental hygiene program and to be of service to patients referred by physicians or nurses in the health center clinics. The educational work has been carried on by means of group discussion meetings every two weeks and by individual conferences with nurses. The direct service to the patients has necessitated cooperation with a large number of social agencies and with district schools.

## OHIO

**Personal.**—Dr. James H. Park has been appointed health officer of Ashtabula, succeeding Dr. Azro J. Pardee, resigned. ——Dr. Floyd S. Meck, Cleveland, was appointed a member of the state board of medical examiners, April 21, to succeed Dr. Thomas H. George.

**State Medical Election.**—Dr. Herbert M. Platter, Columbus, was installed as president of the Ohio State Medical Association at its recent annual meeting; Dr. Clyde L. Cummer, Cleveland, was made president-elect; Dr. James A. Beer, Columbus, treasurer. Don K. Martin, Columbus, is the secretary.

**Medical Alumni Reunion.**—The alumni of the University of Cincinnati College of Medicine will hold its annual medical reunion, June 10. Friday and Saturday mornings, June 10-11, the hospitals of Cincinnati will provide clinics to demonstrate technic, unusual cases and methods of diagnosis. The golf tournament will be held Friday afternoon. A feature of the annual banquet this year will be the silver anniversary reunion of the class of '07, and the golden anniversary of the class of '82. Dr. Dudley W. Palmer is president of the Alumni Association, and Dr. Robert H. Kotte, secretary.

## PENNSYLVANIA

**Hospital News.**—The new $100,000 nurses' home and training school of the Delaware County Hospital was dedicated, April 24. The three-story brick building is the gift of Mrs. May F. Fitzgerald, Lansdowne, in memory of her husband, the late Thomas M. Fitzgerald.

**Health Survey in Delaware County.**—A resolution was adopted at the March meeting of the Delaware County Medical Society requesting the U. S. Public Health Service to conduct a health survey of the county. As set forth in the resolution, this survey would better provide for the present and future health of the citizens of Delaware County, create and build effective methods of combating and preventing epidemics of disease, obtain the maximum of coordination and efficiency from individuals and the voluntary health agencies, obtain accurate information on all matters pertaining to the public health, and prevent and correct overlapping of individual and organized effort.

**Society News.**—The Pennsylvania Safety Conference was held at the Penn-Harris Hotel, May 12-13, in Harrisburg. Included among the speakers were Dr. Alice Hamilton, Boston, on "Industrial Poisonings in Pennsylvania," and John B. Andrews, Ph.D., New York, "Legislation for the Prevention of Occupational Disease." "A Year of Safety" and "Occupational Diseases" were topics for discussion at this meeting also. ——Dr. George G. Ornstein, New York, addressed the Cambria County Medical Society in Cresson, May 12, among others, on "Diagnosis and Treatment of Pulmonary Tuberculosis."—— Dr. Willis F. Manges, Philadelphia, addressed the Eleventh Councilor District Medical Society, May 19, on "Relation of Sinus Infection to Pulmonary Diseases."——The Delaware County Medical Society was addressed, May 12, by Drs. Ezra A. Whitney and Horace H. Hunsicker, Elwyn, on "Studies in Epilepsy with Emphasis on Dehydration."—— Mental hygiene and child health was the general topic for discussion before the Allegheny County Medical Society, May 17, in Pittsburgh; the speakers were Drs. Charles H. Henninger and Theodore O. Elterich.——Dr. Charles Howard Marcy addressed the Erie County Medical Society in Erie, May 3, on "Collapse Therapy in the Treatment of Pulmonary Tuberculosis."——The Crawford County Medical Society was addressed in Meadville, May 9, by Dr. Joseph H. Barach, on "Focal Infection."

### Philadelphia

**Society News.**—Dr. Robert Tilden Frank, New York, will address the Philadelphia County Medical Society, May 25, on "The Hormones Controlling the Sex Functions in Women."

**Hospital News.**—The Woman's Hospital of Philadelphia opened the first unit of its new building, April 13. It contains the laboratories and also private and ward floors. The second unit will be completed in June, at which time the hospital will be able to accommodate 160 patients. This hospital is a result of the merger of the Woman's Hospital of Philadelphia, established in 1861, and the West Philadelphia Hospital for Women, established in 1889. Both institutions were managed by women, and had staffs of women physicians. Their services are available for women and children only and the institution will be carried on along the same lines.——A new surgical ward was opened at St. Luke's and Children's Homeopathic Hospital, April 4, the gift of the junior auxiliary of the hospital association.

## SOUTH CAROLINA

**State Medical Election.**—Dr. James R. Young, Anderson, was installed as president of the South Carolina Medical Association at its recent annual meeting in Columbia. Dr. Robert E. Abell, Chester, was made president-elect, and Dr. Edgar A. Hines, Seneca, was reelected secretary. The next annual session of the association will be held in Spartanburg.

**Society News.**—Drs. Paul H. Ringer and William Pinkney Herbert, Asheville, N. C., addressed the Columbia Medical Society, recently, on treatment of tuberculosis.——Dr. Charles H. Young, Anderson, addressed the February meeting of the Anderson County Medical Society on diseases of the thyroid gland.——Dr. George R. O'Daniel has been appointed health officer of Dorchester County.——The South Carolina-Savannah Valley Medical Society, comprising the counties of Allendale, Hampton and Barnwell, was recently formed. Dr. G. W. I. Loadholt, Fairfax, was made president, and Dr. Herbert A. Gross, Barnwell, secretary.——Dr. John B. Setzler, Columbia, health officer of Richland County, was elected president of the South Carolina Public Health Association, April 19, succeeding Dr. Hugh B. Senn, Beaufort.

## UTAH

**Personal.**—Dr. Louis E. Viko was recently appointed health officer of Salt Lake City, succeeding Dr. Willard Christopherson, who has returned to private practice. Extension of departmental activities in the board of health is being planned, especially in the fields of tuberculosis and child hygiene. The department is also preparing a revised sanitary code and a revised foods code for submission to the city commission.

**Joint Program to Limit Tuberculosis.**—Plans announced at the annual meeting of the Utah Tuberculosis Association, April 28, indicate that the association and health department of Salt Lake City will cooperate with other agencies in a program to improve the care and limit the incidence of tuberculosis. The plans, as outlined in an address by Dr. Louis E. Viko, health commissioner of Salt Lake City, provide that the tuberculosis association will furnish part of the time of its nurses to the city health department for the purpose of doing tuberculosis follow-up nursing in the city. It is understood that this is a demonstration by the tuberculosis association, rather than a permanent arrangement. Necessary records will be kept in the health department by the tuberculosis nurse. Cases of tuberculosis reported to the health department will be referred to the tuberculosis nurse, who will contact the reporting physician to secure his permission and instructions for aiding in the isolation and proper care of the cases.

## GENERAL

**Courses in "Sight-Saving."**—To prepare teachers and supervisors of children having seriously defective vision, summer courses will be offered by four universities, in cooperation with the National Society for the Prevention of Blindness, as follows:

University [illegible] June 18-July 26.
University [illegible] ıgo, Chicago, June 27-August 5.
Teachers [illegible] New York, July 5-August 12.
State Tea [illegible] 5-August 12.

Information concerning these courses may be secured from the respective universities or from the National Society for the Prevention of Blindness, 450 Seventh Avenue, New York.

**American Association for the Study of Goiter.**—The annual meeting of the American Association for the Study of Goiter will be held in Hamilton, Ont., June 14-16. Dr. Marcus O. Shivers, Colorado Springs, Colo., will give the presidential address on "Prophylaxis in Diseases of the Thyroid Gland." Speakers on the program will include Drs. Charles H. Mayo, Rochester, Minn., on "The Past and Possible Future of the Thyroid Gland"; Andre Crotti, Columbus, Ohio, "Etiology of Endemic Goiter—Rabbit Experimentation"; James B. Collip, Montreal, Que., "Physiology of the Parathyroid Gland"; Lewellys Barker, Baltimore, "Relationship of the Sympathetic System to Thyroid Disease," and Gordon S. Fahrni, Winnipeg, Manit., "Management of Hyperthyroidism Associated with Other Diseases." Announcement of the winner of the annual prize award essay contest will be made at this meeting.

**Health Authorities of North America.**—The State and Provincial Health Authorities of North America will hold its forty-seventh annual conference at the Willard Hotel, Washington, D. C., June 2-6. Dr. Theodore B. Beatty, state health commissioner of Utah, is president of the conference. Among the speakers at this meeting will be Dr. Wilson G. Smillie, professor of public health administration, Harvard School of Public Health, Boston, on "Field Studies in Common Colds"; Dr. Malcolm R. Bow, deputy minister of health of Alberta, Canada, "Health Work in Alberta"; Dr. Theodore B. Appel, secretary of health, state department of health, Pennsylvania, "Stream Pollution Control and Water Conservation"; Drs. Polk Richards and Len L. Culp, Minneapolis, "Trachoma," and W. F. Walker, D.P.H., of the American Public Health Association, "Appraisal of Rural Health Work." Meeting simultaneously with this group will be the health officers with the U. S. Public Health Service.

**Revised Standard for Clinical Thermometers.**—A recommended revision of the commercial standard for clinical thermometers was circulated, February 24, for acceptance by those participating in the conferences, chiefly representatives of manufacturing interests. Acceptances have been received representing a satisfactory percentage of production, an announcement states. The bureau of standards, U. S. Department of Commerce, has indicated that, in accordance with the recommendation of the standing committee, this revision of the commercial standard, to be known as CSI-32, will become effective June 1. The bureau states further: those who were active in drafting this specification believe that although it is not an excessively high standard, in that manufacturers should experience no great hardship in meeting its requirements, it does insure thermometers that meet the ordinary demands of accuracy and reliability. Furthermore, they believe that thermometers which fail to pass the required tests are inferior and unsuitable for clinical use. It is expected, the announcement continues, that these standards will be followed as far as circumstances permit.

**Medical Bills in Congress.**—*Changes in Status:* H. R. 4724 has been vetoed by the President, proposing to extend the benefits of hospitalization and the privileges of the soldiers' homes on certain persons who served in the Quartermaster Corps or under the jurisdiction of the Quartermaster General during the war with Spain, the Philippine insurrection, or the China relief expedition. President Hoover said, in part: "I cannot concur in a proposal to single out one class of civilian employees who served during certain periods of hostilities and confer upon them a right to the benefits of hospitalization and domiciliary care provided by law for veterans of our wars. Such proposal would be establishing a precedent which, in all justice, would call for similar legislation in behalf of other civilians. It would ultimately involve the government in hundreds of millions of expenditures by the usual accretions of wider spread inclusions of new and borderland groups." Hearings were begun, May 12, by a subcommittee of the Senate Committee on the Judiciary, on S. 4436, a bill introduced by Senator Hatfield to amend the existing law relating to the dissemination of information and devices for the prevention of conception. *Bill Introduced:* S. 4547, by Senator Copeland, New York, to extend to June 30, 1933, the period within which application may be made for retirement under the Disabled Emergency Officers' Retirement Act.

**Biologists Thank Mayor and City Council.**—More than 500 members of the Federation of American Societies for Experimental Biology meeting in Philadelphia signed a letter of thanks, which was presented to Mayor Cermak of Chicago, in person, May 4, by Prof. Anton J. Carlson of the University of Chicago. The members of the society expressed their appreciation of the services of the mayor and city council of Chicago in insuring a continuance of medical research in the reputable medical schools and laboratories of that city, which scientific work had been seriously handicapped last July by the efforts of certain individuals and societies opposed to animal experimentation. About that time an ordinance was passed without the knowledge of the universities and laboratories which provided that unclaimed dogs should be disposed of on the premises, thus making it impossible for the laboratories to obtain unclaimed dogs. More recently, however, an amendment was introduced by Alderman Arvey and almost unanimously passed by the city council, which provided that reputable medical schools and laboratories might apply to the president of the city board of health for a certain number of dogs which on his recommendation would be turned over to these laboratories by the chief of police. Although it has been made more difficult, the universities have been enabled thus to continue experimentation. It was for invaluable service in bringing this amendment about that the foregoing letter of thanks was presented to the mayor of Chicago.

**Society News.**—At the annual meeting of the American Physiological Society, April 29, Dr. Arno B. Luckhardt, Chicago, was elected president, and Dr. Frank C. Mann, Rochester, Minn., secretary. The next annual session will be held at Cincinnati, probably in April, 1933.——The officers for the ensuing year of the American Association of Pathologists and Bacteriologists are Drs. Elexious T. Bell, Minneapolis, president; Oswald T. Avery, New York, president-elect, and Howard T. Karsner, Cleveland, secretary. The next annual session will be held at Washington, D. C., May 2-3.——Dr. G. Canby Robinson, New York, was elected president of the Association of American Physicians at its recent annual meeting, and Dr. James H. Means, Boston, reelected secretary. The next annual session will be held at Washington, D. C., May 2-3.——At the annual meeting of the American Gastro-Enterological Association, May 2, Dr. Burrill B. Crohn, New York, was made president, and Dr. Charles G. Lucas, Louisville, Ky., reelected secretary.——Harold C. Bradley, Ph.D., Madison, Wis., was elected president of the American Society of Biological Chemistry, and Howard B. Lewis, Ph.D., Ann Arbor, Mich., secretary, at the society's annual meeting, April 29. The next annual session will be held in Cincinnati.——Dr. Arthur L. Bloomfield, San Francisco, was elected president of the American Society for Clinical Investigation, May 2, and Dr. Herrmann L. Blumgart, Boston, elected secretary. The next annual session will be held in Washington, D. C. in May.

## FOREIGN

**Dr. Mellanby Given Prize.**—The Cameron Prize of the faculty of medicine of the University of Edinburgh has been awarded to Dr. Edward Mellanby, professor of pharmacology, University of Sheffield. The prize is given for additions to practical therapeutics.

**Society News.**—The annual congress and exhibition of the Royal Sanitary Institute of England will be held at Brighton, July 9-16.——The International Congress Against Rheumatism, which was to have been held in Rome in May, has been postponed indefinitely in view of the present economic condition.——Lord Moynihan, London, will deliver the Romanes lecture for 1932 at the University of Oxford, June 1. His subject will be "The Advance of Medicine."——The Royal Institute of Public Health held its annual congress in Belfast, May 10-16. Discussions were grouped under state medicine and municipal hygiene; industrial hygiene, women and children and the public health; tuberculosis, and pathology, bacteriology and biochemistry.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

April 23, 1932.

### The Menace of Complete Medical Socialism Passes

The growth of medical socialism in England, in the form of the various free clinics for maternity and child welfare, tuberculosis and venereal diseases and in the National Health Insurance Acts, has often been commented on in previous letters to The Journal. Finally came, two years ago, the scheme of the British Medical Association of a medical service to be provided by the state for all. This scheme was produced not because of any desire of the profession or of the Association for complete medical socialism but as a lesser evil than some scheme which might be foisted on the profession by the socialist government then in office. With the crushing defeat of the socialist party when the country began to realize the ruin threatened by their prodigal expenditure, the menace of complete medical socialism has passed for the time, but it remains a possibility of the future. At the Paddington Medical Society an interesting debate took place on "A State Medical Service," which means complete medical socialism. The protagonists of all parties took part. Mr. Somerville Hastings, laryngologist and member of parliament, who may be regarded as the leader of the socialist party in the medical profession, opened the debate. He desired that everybody, without consideration of ability to pay, should receive in illness the best attention which medical science could give. He also wanted more preventive medicine. He regarded the scheme of the British Medical Association as a useful step in the right direction, but he wanted to go further—to have a complete state service, complete, unified and free. He did not want compulsion for either patient or physician, but a service so good that people would readily avail themselves of it. He thought that such a scheme should appeal to the medical profession, for it was the most socialistic of all the professions. Physicians' discoveries were by tradition broadcast to the world, and their charges were made according to the means of their patients. A desirable extension of the latter principle was that people should pay for medical services not in hard cash but in rates and taxes based on individual means. During the last fifty years the general practitioner had been continuously robbed of clinical material and of interest in his work. One group of diseases after another had been taken from him. He might diagnose an infectious disease, but its treatment was carried out in a fever hospital. Venereal diseases were treated largely in clinics, and the treatment of school children has been taken from him. In 1927 the *British Medical Journal* said: "There are no fewer than seventeen departments of clinical activity for which provision is made in this sectional way under the auspices of the local authorities." Further, as soon as a patient entered the hospital the general practitioner lost all contact with him, and the complexity of the modern treatment of disease necessitated that patients would increasingly go to the hospital. Municipal hospitals were developing side by side with the voluntary hospitals and, because of the financial backing of the state, were becoming formidable rivals. It was the spirit of the age to provide for the needs of the community by cooperative means. There was a strong case for the treatment of all sorts of disease in special clinics—rheumatism, orthopedic conditions, heart disease in children and even cancer. But more coordination was needed so as to insure that the patient fell into the right compartment. In his view the general practitioner was needed for every family, and for him to be excluded from many of the medical schemes was a disaster. Medical research was now confined to the big hospitals. If the profession were unified it could take part in it and produce better results.

Sir Ernest Graham Little (dermatologist and member of parliament) led the individualist opposition. Mr. Hastings had not described what sort of general practitioner the socialist scheme envisaged. Did it contemplate the sort of practice now known as insurance or panel? Under it the choice of physician and place to go for treatment were taken from the patient, but the British public could not be forced to go where they did not want to go. A state medical service would not be conducive to the progress of medicine but to standardization, for a state possessed neither soul nor mind. Loss of independence and of competition were serious drawbacks. Moreover, the cost would be prohibitive. What was the great advantage of the voluntary hospital system? Mr. Hastings admitted that most of the research had been done there. What distinguished it from state-controlled institutions? First, individual management. How much better was their status than that of the municipally managed hospitals? Economy would certainly not be secured by handing them over to government management.

Dr. G. C. Anderson, deputy-medical secretary of the British Medical Association, did not agree with either of the previous speakers, but he went further with the socialistic idea, because now that the state had provided a medical service for the country, he felt sure that it would be extended. The British Medical Association had sketched out a complete scheme, not because it imagined that the socialist government (in power at the time) would introduce a whole-time state medical service, but because it feared that the developments which were going on might proceed on wrong lines, by an extension of the "clinic" rather than of the "panel" system. What was wrong with the insurance system was its limitations; but it was out of the question to revert to the previous order of things. He wanted the insurance physician to have further opportunities for extending his knowledge by contact with the hospitals in his area. In all its negotiations with the government the association had tried to make insurance practice approximate as closely as possible to private practice.

### Proposal to Abolish the Patenting of Discoveries

The council finds that the present state of the law with regard to patenting discoveries is unsatisfactory. The view generally held in this country is that discoveries for the treatment of disease should not be patented but available to every one to use for the benefit of humanity. But this voluntary abstention from patenting has the result that British medical research may be exploited in other countries and patented in this country. This has occurred in the case of vitamin D. By means of British research it was produced in a potent form by ultraviolet irradiation of ergosterol. But when our manufacturers wanted to apply the discovery, a British patent, granted to Professor Steenbock of Wisconsin, was found to be an obstacle. The council says that this patent is founded on the earlier and unpatented discoveries of other workers, particularly British, and holds that it is unreasonable that Professor Steenbock should be able to control the results of so much previous and subsequent work. It seems that he has transferred his rights to the University of Wisconsin and that these rights are granted in respect of a somewhat vague process for the irradiation of any foodstuffs. The council's remedy is to abolish the patenting of therapeutic discoveries entirely, as has been done in some countries. A previous attempt was made to get over the difficulty by a proposal for the compulsory dedication in the public interest and under state administration of all therapeutic discoveries. But a committee appointed by the board of trade to consider the matter would not agree to this. They found that medical opinion was not unanimous on the undesirability of patenting. It was suggested that it was not ethically worse to reward research that reduced human suffering than to pay a surgeon a fee. Moreover, some manufacturing chemists urged that the proposed restriction would discourage research and encourage secrecy as a method monopoly. In the end, the committee decided against compulsory dedication because it would operate adversely on British industry and discriminate against British research workers.

### Irish Hospitals and Sweepstakes

The immense sum, mostly from other countries, derived by the Irish hospitals from sweepstakes has aroused attention in England to this method of raising money, which at present would be illegal. In the House of Commons the home secretary, Mr. Samuel, stated that there had been five of these sweepstakes between November, 1930, and March, 1932, and the public in the United Kingdom and throughout the world had subscribed to them no less than $69,000,000, of which they had received back in prizes $38,500,000. The expenses and commissions of the sweepstakes involved an expenditure of $16,500,000, and out of the total sum subscribed the Irish hospitals received $14,000,000. As far as Great Britain was concerned, calculation showed that her people had subscribed $47,500,000 and received back in prizes $25,000,000. The commission of sellers of tickets in Great Britain amounted to $8,000,000, and thus there had been transferred from Great Britain to Ireland about $13,750,000. The view has already been expressed that if the British public is willing to supply such a large sum for being allowed to gamble it should be retained for the benefit of the country. The difficulty is the strong feeling against the legalizing of gambling and the obtaining of money for hospitals in this way. However, the sum involved is so large that the home secretary announced in the House of Commons that he was about to appoint a commission to inquire into the subject.

## PARIS

*(From Our Regular Correspondent)*

April 6, 1932.

### The Heart and Athletic Training

Professor Vaquez, heart specialist, considered the question as to the effects of intense physical training and of sport activities on the functioning of the heart. He made experiments on the mean arterial pressure, at the special school at Joinville, for the training of athletic instructors in the army, and studied the effects of various forms of exercise on the heart of subjects who had received systematic training. After the 300 meter dash, he measured in many subjects the acceleration of the pulse, the maximum and the mean arterial pressure, and the time required for a return to normal circulatory conditions. He made the following observations:

1. Subjects who have received systematic training have, after a severe test, about the same acceleration of the pulse as subjects who have not had such training. The pulse cannot, therefore, be considered as a sign of aptitude or inaptitude for sport activities. It should be, however, regarded as a suspicious sign if the pulse requires more than five minutes to return to its normal rhythm.

2. The maximum arterial pressure must not exceed 150 mm. of mercury. But one need not consider as a dangerous sign the instability of the pulse after an effort, nor the time required to regain normal frequency. Likewise, one need not be disturbed if the maximum pressure declines for from ten to fifteen minutes after the effort.

3. The mean pressure, which is so important in Vaquez's opinion, must not exceed 110 mm., after the effort, irrespective of the age of the subject. If it is higher than that, radioscopy of the heart should be applied. As for the variations, they must not be more than 30 mm. above normal or from 10 to 20 mm. below normal, whatever the departures from the maximum pressure may be. Undue slowness of the return of the mean pressure to normal is also a bad sign. To sum up, the best characteristic of a good training in subjects with a good constitution is the stability of the mean pressure. Its return to equilibrium after the effort should be immediate, or, in any event, should not require more than two minutes.

### Typhoid Infection from Oysters in Paris

The fear of typhoid still prevents many persons from eating oysters. However, the strict regulations adopted, during the past ten years, with regard to the supervision of the oyster beds of France, and the mode of conservation and the method of marketing these mollusks, appear to have had a good effect. Cases of typhoid derived from oysters are now rarely observed, and, if they do occur, the fault lies with the merchants and not with the management of the oyster beds. Professor Tanon and Mr. Neveu examined, between November, 1931, and March, 1932, 550 samples of oysters taken at random from lots offered for sale in the markets of Paris. In none of the various kinds of oysters examined did they find pathogenic organisms. The shells were, however, contaminated with Bacillus coli. Mr. Tanon recommends avoiding a common source of infection that arises from impurities existing on the outside of the shell. It is advisable to wash and to brush the shell carefully, holding it in pure water, before opening the oyster, in order that possible germs may not be carried within the shell by the knife used in opening the oysters. This precaution is always neglected by the small oyster merchants, and by the restaurants of the populous sections of the city, which often have the habit, in order to keep their baskets of oysters fresh, of placing them in running water at the side of the streets, in spite of administrative orders to the contrary. This water, which is designed only for street cleaning purposes, is always contaminated.

### Decisions of Council of the Federation of Medical Syndicates

Although the ethical order of physicians has not yet been legally established, the council of the Fédération des syndicats médicaux endeavors to assume such a rôle under all circumstances in which it is possible to intervene. The imposition of indirect penalties has become possible owing to the law pertaining to social insurance. This cannot function except as a result of agreements entered into between the regional health insurance societies and the medical syndicates. It is sufficient, therefore, for the syndicate to declare that a given physician, found guilty of misdemeanors affecting the medical profession, may not be permitted to participate in the care of the socially insured, on pain of revocation of the entire agreement, in which case the syndicate would refuse to care for any of the members insured in the health insurance societies. The latter have tacitly accepted this procedure because they consider that this mode of control exercised by the syndicates over the members constitutes a certain guaranty as regards the character of the physician they employ. The recent meeting of the council of the Fédération des syndicats médicaux furnished several examples of this. The council denied to three physicians, who it declared had failed to conduct themselves in accordance with the duties imposed on them by the ethics of their profession, the right to participate in the care to be given to the socially insured. One of them, the director of a clinic, allowed himself to be assisted by a foreigner who not only had no French diploma but had falsely assumed the title of "doctor." A second physician was connected with a chiropractic institute where all he did was to sign the prescriptions of a person who treated all the patients by a peculiar method, although he held no medical diploma. The third physician was found guilty of having, for some undetermined disorder of no significance, during two consecutive months, applied ultraviolet rays and daily subcutaneous injections to a patient. During the past three months, 116 complaints against physicians were addressed to the council, but only 46 of these appeared well founded; the others were manifestly without foundation. As a result of this inquiry, fourteen formal complaints against these confrères were sent to the prefect of the Seine, and in addition fourteen reproofs or warnings were addressed to the physicians in question. Fifteen further cases are being inquired into. The present active control exercised by the council over the members of the federation is sure to have a favorable effect on parliament and will serve to hasten the enactment of the law establishing the ethical order of physicians. The physicians are not obliged to become affiliated with the syndicates, and, in spite of the various advantages that they derive from such affiliation, about one fourth of the physicians of the department of the Seine are not enrolled.

### Creation of a Blood Transfusion Center

Under the influence of a committee of women of the old aristocracy and of the newer, rich bourgeoisie, a permanent service has been created at Paris, in the Hôpital St. Antoine, where persons ready to furnish blood for emergency transfusions are at the disposal of patients at any hour of the day and night. The service has developed from 220 transfusions in 1929 to 779 in 1930 and to 2,038 in 1931, the transfusions having been given in the 178 different services of the 31 hospitals of the Assistance publique. The chief event of the past year has been the creation of a permanent center at the Hôpital St. Antoine. The services of the center are available at any hour of the day or night. The secretary assures prompt service with the aid of a list of immediately available physicians ready to do blood transfusion, and a complete list of blood donors. Furthermore, there is always a donor present for extremely urgent cases. In response to a telephone call, the physician and the donor will arrive in a few minutes in an automobile, which makes it possible to save many a life menaced by a sudden hemorrhage. Also small repeated transfusions are given, and, as Professor Gosset explained in his address delivered at the opening of the center, this movement includes also a center for scientific research. Owing to recent research, immunotransfusion has been used in the treatment of such diseases as typhoid and septicemias.

## BERLIN

*(From Our Regular Correspondent)*

April 4, 1932.

### Observations on Bromine in the Blood of Mental Patients

Prof. H. Zondek announced in an address delivered before the Berliner Medizinische Gesellschaft that he believes that he has found new and promising ways of treating certain mental diseases. Through skilful combination of chemical, physiologic, anatomic and clinical observations, Zondek became convinced that changes in the bromine content of human blood play a part in cyclic insanity or in manic-depressive conditions. In such cases, he found a considerable diminution of the bromine content of the blood. He successfully treated forty cases of melancholia with small quantities of bromine. This remarkable announcement awakened great interest. Zondek stated that he discovered in the hypophysis a bromine-containing hormone, from which he produced a preparation soluble in water. In experiments on the dog, one can reduce the motor power with this hormone and induce fatigue and apathy. The manner in which this hormone acts on mental patients must be carefully investigated. But even at this stage Zondek feels that he is justified, on the basis of his observations, in advancing a new theory of sleep. In the course of his experiments, he, in collaboration with Arthur Bier, found that with the onset of sleep a shifting of the minute quantities of bromine within certain parts of the brain takes place; for example, in the medulla oblongata, bromine is activated. It develops again in the hypophysis, which with the onset of sleep throws its bromine into the brain fluids. When the sleep is ended and the waking condition is restored, this transference of bromine ceases. The gland begins again to produce and to store up bromine, in order to pour out its hormone again when sleep is renewed. This is certainly a masterful idea. What measure of truth it contains will require long and thorough experiments. Unfortunately, as so often happens, the daily press obtained a report of the lecture and is publishing the statements of Zondek with varying degrees of accuracy, depending on its attitude, and with or without a picture of the speaker. Sensational presentation is not compatible with scientific research.

### Professor Sauerbruch on Traumatic Surgery

At the invitation of the Verein der Berliner Vertrauensärzte, Professor Sauerbruch delivered in his clinic in the Charité Hospital an address on the surgery of accidental injuries and the determination of the degree of disability. At the universities, advances in abdominal and thoracic surgery have forced surgery of the extremities somewhat into the background. A baneful effect on the surgery of accidents is brought about by roentgenologic surgery, because it leads to a neglect of clinical surgery. The trained physician can diagnose every typical luxation or fracture with the aid of his senses. The roentgenogram should serve only purposes of control. As a basis of diagnosis and treatment the roentgenogram easily leads to serious errors, since important secondary injuries, such as paralysis of the nerves, may be overlooked. The physician must be so trained in the clinic that he can diagnose with eye and hand and does not need to rely on the roentgenogram.

For the outcome of accidents, importance attaches to the psychic influence of the physician who first treats the injured person. Sauerbruch's many years of experience in Zurich, where he formerly held the chair of surgery, proved to him that the results following accidental injuries are better in Zurich than in Berlin; not that it is to be assumed that the physicians there are better but that it is better for the injured person to receive a single lump sum in the adjustment of compensation than an annuity. The physician, the patient and the central government have a common interest in freeing social insurance from the influence of the bureaucracy. To concentrate the treatment of accidents in a few special "accident hospitals," Sauerbruch regards as dangerous, because the treatment of accidents loses through such concentration all touch with general surgery. The adjustment of compensation claims is an art and not a bureaucratic affair. It requires an extensive experience with all classes of patients, which can be acquired only in general hospitals. For that reason, the general practitioner should not be eliminated in the treatment of injuries due to accidents, or in the determination of the amount of compensation to which the injured are entitled.

### When Should the Tonsils Be Removed?

The question as to whether diseased tonsils should be removed is a common one; especially patients who suffer frequently from sore throat ask to have the tonsils removed. The relatively simple intervention causes certain eventualities to be forgotten that should not be lost sight of, but which are often ignored owing to the influence of modish tendencies in medicine. Frequently, disorders of remote organs or even general diseases have their origin in the tonsils, which complicates the question considerably. Prof. O. Bruhns, director of the Medizinische Universitäts-Poliklinik in Königsberg, in the *Deutsche medizinische Wochenschrift,* states his opinions on the subject.

The routine removal of the tonsils solely on account of chronic inflammation is contraindicated. This operative intervention is advisable only when the tonsils show a predisposition to disease, which leads to ever recurring attacks, or when internal disorders appear in association with inflammation of the tonsils. In any event, one should wait from four to six weeks with the intervention after disappearance of the acute pathologic manifestations, for then the danger of immediate recurrences is slight. The danger is much greater if one operates immediately or during the acute febrile stage. Then, too, recurrences are more easily avoided with late than with early operations. An early operation should be undertaken only when the disease of internal organs, which originated in the tonsils, is continually flaring up anew or when there is danger that a septic condition may result. It is unquestionably true that complications sometimes arise in association with the removal of tonsils. Pneumonia, sepsis, suppurations of the throat, and still more threatening conditions have been observed. Hence every case must be judged on its own merits.

## ITALY

*(From Our Regular Correspondent)*

March 15, 1932.

### Professor Pianese, the New Academician

Prof. Giuseppe Pianese, professor of anatomy and pathologic histology at the University of Naples, was recently appointed academician of Italy. Pianese was born at Civitanova del Sannio in 1864, and his teaching and scientific career has been confined to the Istituto di anatomia patologica at Naples, where he became professor extraordinarius in 1903 and director in 1917. He is passionately fond of microscopic technic. During his forty years of activity, he has devoted himself to the solution of problems of general biology, normal histology and pathology. In the field of bacteriology may be mentioned his research on Bacillus anthracis. He studied the development of Coccidium oviforme. In the opinion of the Boston Commission, these last researches have thrown light on the question of the biology of the coccidium and on the lesions that this parasite causes in the liver. From 1894 to 1899, Pianese stood almost alone in contending that the so-called cancer bodies were not coccidia but products resulting from changes in the protoplasm, the nucleus and the plasmosome. He demonstrated that blastomycetes do not produce cancer or sarcoma but granuloma. His research found universal confirmation. Pianese was the first to support the infectious nature of Sydenham's chorea, and his name is connected particularly with the discovery that infantile splenic anemia, a disease that is widespread in southern Italy, is produced by a protozoan.

### Nonvenereal Ulcers of the Female Genitalia

Addressing recently the Associazione medica Triestina, Professor Freund discussed the various forms of nonvenereal ulcers of the female genitalia. He considered recent research on certain cutaneous manifestations that not infrequently are associated with ulcus vulvae acutum; for example, erythema nodosum. This research led to the discovery by Samek, of the Clinica Kreibich in Prague, that Bacillus crassus, which is the etiologic agent of ulcus vulvae acutum, is found not only in ulcers of the genitalia but also in cutaneous lesions and even in the circulating blood.

Dr. De Grisogono referred to several tuberculous ulcers: herpes genitalis menstrualis, which may appear other than during the menstrual period; vulvar furunculosis, which, while it is not a pyodermitis peculiar to the external genitalia, nevertheless may assume peculiar characteristics when it occurs on that part of the body. He mentioned ulcers that may appear in the course of such diseases as diphtheria, dysentery and typhoid. Although rare, vulvar diphtheria may appear also in children immune to diphtheria of the throat. Ulcus vulvae acutum of Lipschütz, aside from the presence of B. crassus and its typical location on the inner surface of the labia minora, is characterized by a grayish yellow color at the base, which presents also numerous minute nodules, and which is bordered by undermined and arcuate edges. The inguinal glands, different from all other ulcerative processes, are rarely swollen. Schugt, however, from an accurate study of a case complicated with ulcers of the mouth and tongue, is inclined to question the specificity of B. crassus and thinks that an angioneurotic gangrenous process, with secondary invasion of B. crassus, is involved. As to ulcus vulvae chronicum and its etiology, there are many theories. In addition to syphilis and tuberculosis, constitutional factors have been incriminated; also local circulatory disorders and chronic inflammatory processes. Histologic research reveals only chronic inflammatory conditions and parvicellular infiltrations, sometimes with giant cells of unknown or doubtful origin.

Professor Gacchia remarked that from the case cited by Professor Freund, in which B. crassus was cultivated from ulcers of the female genitalia and from tissue excised from a simultaneous erythema nodosum, one cannot deduce an analogous etiology for the frequent cases of nodular erythemas in persons of the two sexes, since nonvenereal ulcers due to B. crassus are rare and found only in women. Professor Freund replied that the erythema nodosum was observed not only in several cases of ulcus vulvae acutum (Lipschütz) but also in many other infectious disorders, the most peculiar observation being an erythema nodosum containing the Ducrey bacillus following an infection with soft ulcers.

### The Novara Medical Society

The Società di cultura medica of Novara met recently in that city, under the chairmanship of Professor Pietra. Dr. Borrella spoke on subserous cholecystectomy, which he regards as the best method of intervention on the gallbladder. During 1931, in the department of surgery, under the direction of Professor Ferrero, of nineteen cases, seventeen were subjected to intervention by the subserous route, with 85 per cent of favorable results. The method presents advantages over the ordinary transperitoneal method.

### The Inaugural Address of Professor Bastai

Professor Bastai, recently appointed to a chair of pathology at the University of Florence, delivered recently the inaugural lecture of his course, taking as his subject "Anemia Due to Lack of Hormones." He discussed the pathogenesis of pernicious anemia and of chlorosis, considering the latter to be due to ovarian insufficiency and the former to be in relation to changes in endocrine functioning affecting the stomach. The treatment of this subject awakened particular interest, since the pathogenesis of pernicious anemia, as outlined by Professor Bastai, was based on the observation of the efficacy in this disorder of liver and stomach extracts.

### In Honor of Professor Economo

At a recent session of the Associazione medica Triestina, memorial exercises were held in honor of Prof. Costantino Economo. Professor Sai, director of the Istituto provinciale neuropsichiatrico, spoke of the scientific work of Economo, particularly his studies on the cyto-architectonic arrangement of the cortex in man. These studies, which cost Economo thirteen years of continuous research, culminated in the publication of the atlas containing 112 large photographic plates, a unique work in this field. The speaker projected the designs of the five fundamental types of cortex as established by Economo and explained the arrangement in the cortex. Economo brought out the conception of progressive cerebration; namely, of the progressive development of the brain in the phylogenetic series and in the individual species, not only in man but also in dogs and horses. Since the dawn of history there has been a progression in cerebration, as is shown by the development in music through the centuries. The ancient Greeks, though having a high artistic sense, had primitive musical conceptions. Modern music, as understood today, is a recent acquisition of the human cortex.

A study that brought fame to Professor Economo was the discovery, in 1917, of epidemic encephalitis. In the very first cases that came under his observation, he succeeded in pointing out the peculiar clinical, anatomic and biologic characteristics of the disease. The symptomatology of the disease, which is accompanied by peculiar psychic disturbances and disorders of sleep, which range from lethargy to incoercible insomnia, induced Economo to study thoroughly the problems of physiologic sleep and the localization of mental functions. He advanced the theory of the regulatory center of sleep, locating it in the walls of the third ventricle. This theory has the support of clinical, pharmacologic and experimental evidence. The great scientist refused many offers of directorships of neuropsychiatric clinics, preferring to devote all his energy to research. Death overtook Professor Economo suddenly at the age of 56, apparently as the result of thrombosis of the coronary arteries, a few days after the last International Neurologic Congress, held at Berne in 1931, at which he presented a paper.

### Ambulatorium for Diabetic Patients

An ambulatorium for diabetic patients has begun to function in Milan. It will serve as a diagnostic center for the various clinical forms of diabetes, its complications and concomitant diseases, and will constitute a therapeutic guide for the patient. It will also furnish financial aid to the diabetic patient in modest circumstances. In every case, after taking the personal history and the clinical examination, laboratory examinations are carried out: glycemia, basal metabolism, azotemia, tolerance for carbohydrates, and the like. In the matter of diet, two principles that experience has shown to be useful are emphasized: a sparse diet but sufficient for the maintenance of the body weight in relation to height, age and constitution; and avoidance of an excess of proteins, which diminishes the tolerance for carbohydrates and gives rise to the formation of toxic waste material.

## JAPAN

*(From Our Regular Correspondent)*

March 26, 1932.

### Lepers Win over Politics

The largest lepers' sanatorium in Japan is in Kumamoto city. It can accommodate over 500 lepers, men and women, and is under the charge of the local government. In this city Miss Helen Riddel, the celebrated American missionary, who died last month, worked among lepers all through her life. When the principal of this sanatorium was to be dismissed, for political reasons, about 500 lepers undertook to march through that city, March 12. They broke the gate and walked out toward the city, to be halted on the outskirts by police and ex-service men who had been hastily mobilized. There was a deadlock for two hours. The police would not let the lepers march on, and the lepers would not go back. In the end, officials from the prefectural office promised to see that the principal should keep his job. The principal is much loved by the lepers, and they were indignant when told that he was to be dismissed.

### Eight Physicians Obtain Seats in the House

In the general election, February 20, sixteen practitioners ran for the diet, and just half of them were elected, a decrease of five compared with the general election in 1929. The tendency toward a decrease in the number of medical candidates for the diet is inevitable, because the members are obliged to stay in Tokyo during the session for three months, which is inconvenient for medical practitioners. On the other hand, in the election for the prefectural assembly last winter, medical candidates were more successful, increasing their number by about 40 per cent, because it is much more convenient and suitable for them.

### Celebration of Discovery of Tubercle Bacillus

Under the auspices of the Japanese Society for Tuberculosis, the fiftieth anniversary of the discovery of the tubercle bacillus was celebrated, March 24, in Tokyo. The Japanese friends of Koch, knowing that the "Koch-Stiftung" had suffered in the economic crisis in Germany and has nothing left, are anxious to make contributions. The effort has been supported by many philanthropic persons and societies in Japan. Many prominent persons were present on this occasion, including Mr. Inukai, prime mimister, who gave an address. Prince Tokugawa, president of the house of peers, presented the sums raised for the Koch-Stiftung to Dr. Foreztch, the German ambassador to Japan.

### Airplane Ambulance

The Japanese Association of Physicians is planning to construct an airplane ambulance, which will be given to the Imperial Japanese Army. The sum of 100,000 yen needed will be raised soon by contributions from members. Dr. Terashi, the well known army surgeon for aeronautics, is said to be making the plan for the ambulance.

## VIENNA

*(From Our Regular Correspondent)*

March 15, 1932.

### The Crusade Against Alcoholism

At the seventh Oesterreichischer Alcoholgegner-Tag, the chairman of the "abstinent teachers in Austria" explained the importance of the training of youth in the crusade that is being waged against alcoholism. He pointed out that, according to the large majority of psychiatrists, alcoholism is to be regarded as a mental disease. In this disease, as in all diseases, prophylaxis is the most practical and serviceable measure, because young people trained from early youth to oppose and to reject alcoholic beverages constitute the best weapon in the crusade against alcoholism. What is needed is: (*a*) the training of the oncoming generations of teachers to abstain from alcoholic beverages; (*b*) course on the alcohol question and instruction in abstinence for the teachers of all grades of schools; (*c*) migratory teachers to give instruction in temperance; (*d*) elimination of alcoholic beverages from school festivities and outings—also in the schools of higher learning; (*e*) prohibition of alcoholic beverages in all schools and educational institutions; (*f*) winning over of the schools of domestic science and economy for the prohibition movement.

### Sudden Death of Professor Saxl

Dr. Paul Saxl, an eminent authority in internal medicine, died suddenly, a few days ago, during a ski outing, apparently from a heart attack brought on by overexertion, at the age of 52. As a young physician he attracted the attention of Professor von Noorden, who recognized his unusual qualities. Under von Noorden's successor, Professor Wenckebach, he continued at the clinic as first assistant and up to the time of his death was still serving in that capacity. His scientific articles on septic disorders, on the action of metals and on rheumatism served to make his name still further known, but still more his method for the dehydration of the body by means of mercury salts. This is a highly effective method in grave cases of hydrops. The strength of the deceased scientist lay in his stupendous grasp on experimental technic and his unusual powers of observation. His standing was such that he was about to be called to a German university.

### Vacant Chairs at the University of Vienna

There are a number of vacant chairs at the University of Vienna that must be filled before the beginning of the winter semester. A worthy successor to the deceased roentgenologist Holzknecht must be found. It is planned to transform his laboratory, which has functioned heretofore only as a "Zentral-Röntgen-Institut" for the General Hospital, into a research and pedagogic institute connected with the university. No proposals as to a successor have yet been made. Furthermore, new directors for the surgical clinic, the clinic for internal medicine (as Professor Chvostek has resigned), and the gynecologic clinic, must be appointed. Professor Halban was chosen to fill the last mentioned position, but a religiopolitical intrigue has prevented him, thus far, from assuming the duties of the post. At the end of this academic year, two other chairs will become vacant. Professor Hochstätter, of the chair of anatomy, and Dr. Schaffer, professor of histology, will retire in accordance with the law, by reason of having attained the age of 70. These vacant chairs will doubtless all be filled by Austrians. In view of the severe retrenchments necessitated by Austria's financial position, it is not likely that foreign scientists would care to accept a call to Vienna.

### Dr. Gerson's Address on Diet Therapy

At a special meeting of the Vienna Medizinisches Doktoren Kollegium, Dr. Gerson delivered an instructive address on his salt-free diet. By means of roentgenograms he showed that also in cases of pulmonary tuberculosis satisfactory results may be obtained, although many investigators do not share his opinion. The progressive contraction of the lung foci could be plainly shown. Dr. Gerson showed how he succeeded, without injuring the organism, in reducing the daily chlorine elimination to from 1.5 to 2.0 Gm., thus bringing about decisive changes in the organism. His absolutely salt-free diet he was able to apply for years to himself, his family and to more than a thousand persons without noting any disadvantages. The most difficult part of his diet therapy is connected with the protein intake. At the beginning of his research he observed that by drastic reduction of the protein intake many chronic dermatoses (eczemas), and also asthma and migraine, clear up. By adding again animal proteins to the diet they can, however, be brought out again. He uses now the following method: He gives, the first week, no protein at all, then slowly increases the amount up to from six to eight egg yolks. Afterward, he allows the patient a little liver for breakfast, and after from four to six hours another small amount. Later soft cheeses are given, for breakfast, from 3 to 10 Gm., and afternoons, from 10 to 30 Gm. Finally, he goes over to kefir and buttermilk. Potatoes with unsalted butter, and also oatmeal, are allowed. A little later, fish and meat may be given once or twice a week. Dr. Gerson explains his success as due chiefly to the "antiphlogistic" factors that his diet produces. A diet rich in potassium, but salt-free and poor in proteins, acts favorably, according to his experience, in lupus and in the presence of keloids; also in about 45 per cent of the cases of migraine. In about 55 per cent, however, there remains a hypersensitiveness to salt or protein. The action of the new diet therapy in migraine is based, in his opinion, on an overcoming of the spasm of the blood vessels and thus of the central nervous system. In itching eruptions, associated with high blood pressure (angina pectoris), the ingestion of large quantities of vegetable juices is especially important. Also in mental diseases excellent results have been recorded, so that Gerson urged his audience to experiment in that direction, stating that he would give written advice on the subject to any one requesting it. During the discussion that followed Dr. Gerson's address, Professor von Noorden (who now resides in Vienna) stated that, in his opinion, limitation of sodium chloride intake suffices (without elimination of protein) to secure therapeutic results. Professor Neumann pointed out that, in spite of the pulmonary cases in which cures had been effected by Gerson's diet, new foci sometimes appeared during the dietary treatment, so that the treatment could hardly be regarded as an absolutely reliable therapeutic method.

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## *Marriages*

William S. Dininger, Winchester, Ind., to Miss Lela Green of Cincinnati, at Hamilton, Ohio, April 25.

Francis J. Quinlan, New York, to Mrs. Elizabeth Maurer at Kitchawan, N. Y., April 17.

Cecil E. Johnson to Miss Mary May, both of Rensselaer, Ind., at Hammond, April 27.

Robert Reagles, Arlington, Wis., to Miss Nellie M. Chase, April 21.

## *Deaths*

**John Alden Lichty** ⊕ Clifton Springs, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1893; member of the American Gastro-Enterological Association, American College of Physicians, American Climatological and Clinical Association and the American Psychiatric Association; past president of the Ontario County Medical Society; at one time associate professor of medicine, University of Pittsburgh School of Medicine; for many years on the staffs of the Columbia Hospital, Wilkinsburg, and the Mercy Hospital, Pittsburgh; since 1923 superintendent of the Clifton Springs Sanitarium and Clinic; trustee of the Mount Union College, Alliance, Ohio, and the Colgate-Rochester Divinity School, Rochester; aged 66; died, May 2.

**Walter John Kremer** ⊕ Minneapolis; University of Minnesota Medical School, Minneapolis, 1911; fellow of the American College of Surgeons; formerly instructor in urology at his alma mater; served during the World War; associate urologist to the Minneapolis General Hospital and on the urological staff of the Asbury, St. Mary's and St. Barnabas hospitals; consulting urologist to the U. S. Veterans' Bureau; aged 53; died, April 2, in the Veterans' Administration Hospital, Fort Snelling, of heart disease.

**Merlin Chauncey Johnston** ⊕ Aberdeen, S. D.; Rush Medical College, Chicago, 1896; formerly assistant professor of pathology, Minneapolis College of Physicians and Surgeons; councilor of the first district of the South Dakota State Medical Association; city and county health officer; past president of the city board of health; aged 59; on the staff of St. Luke's Hospital, where he died, April 2, of valvular heart disease and embolism.

**Otto Tiger Freer** ⊕ Chicago; Rush Medical College, Chicago, 1879; secretary of the Section on Laryngology and Otology, American Medical Association, 1903-1905, chairman, 1905-1906, and delegate, 1907-1908; formerly associate professor of laryngology and otology at his alma mater; aged 74; for many years on the staff of the Henrotin Hospital, where he died, April 21, of heart disease, chronic myocarditis and paralytic ileus.

**Charles Lybrand Bonifield** ⊕ Cincinnati; Medical College of Ohio, Cincinnati, 1886; professor of gynecology, University of Cincinnati College of Medicine; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and the Southern Surgical Association; on the staffs of the Cincinnati General Hospital and the Christ Hospital; aged 69; died, April 23, of cerebral hemorrhage.

**Frank Spencer Pomeroy,** Chardon, Ohio; University of Wooster Medical Department, Cleveland, 1881; University of the City of New York Medical Department, 1885; member of the Ohio State Medical Association; past president of the Geauga County Medical Society; for many years county coroner; aged 76; died, April 12, of pneumonia and cerebral hemorrhage.

**Marc Ray Hughes,** St. Louis; Barnes Medical College, St. Louis, 1898; member of the Missouri State Medical Association; at one time professor of nervous diseases and psychology at his alma mater; formerly member of the state board of health; served during the World War; aged 54; died, April 5, in the Evangelical Home and Deaconess Hospital, of pneumonia.

**William G. Kemper** ⊕ Manitowoc, Wis.; Rush Medical College, Chicago, 1882; past president of the Manitowoc County Medical Society; for many years county coroner; formerly mayor and city health officer of Manitowoc; aged 72; on the staff of the Holy Family Hospital, where he died, April 8, of septicemia.

**John Ernest Watson,** Anderson, S. C.; University of Georgia Medical Department, Augusta, 1899; member of the South Carolina Medical Association; past president of the Anderson County Medical Society; on the staff of the Anderson County Hospital; aged 54; died, April 13, of heart disease.

**Jay B. Brewer,** Jefferson, Wis.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1893; member of the state board of medical examiners; for ten years mayor of Jefferson; aged 72; died, April 13, in a hospital at Milwaukee, of hypostatic pneumonia, myocarditis and cerebral thrombosis.

**Searle Bewley Gillespie,** Johnson City, Tenn.; University of Tennessee Medical Department, Nashville, 1905; member of the Tennessee State Medical Association; on the staff of the Jones Eye, Ear, Nose and Throat Hospital; aged 47; died suddenly, April 7, of acute dilatation of the heart.

**Benjamin Franklin Shuttleworth** ⊕ Clarksburg, W. Va.; Jefferson Medical College of Philadelphia, 1905; formerly member of the Public Health Council; fellow of the American College of Physicians; on the staff of St. Mary's Hospital; aged 54; died suddenly, March 31, of heart disease.

**Eugene A. Crouse**, Grundy Center, Iowa; University of Pennsylvania School of Medicine, Philadelphia, 1870; member of the Iowa State Medical Society; past president of the Grundy County Medical Society; aged 85; died suddenly, April 8, of cerebral hemorrhage.

**Jefferson D. Kiser** ⊕ Bartlesville, Okla.; Kentucky School of Medicine, Louisville, 1894; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staff of the Washington County Memorial Hospital; aged 63; died, April 14, of heart disease.

**John William Landgraf** ⊕ Seneca, Ill.; Northwestern University Medical School, Chicago, 1909; aged 45; died, April 18, in the Ryburn-King Hospital, Ottawa, of injuries received when his car, which he was having greased, overturned on him from a hydraulic lift.

**William E. Connor** ⊕ Cumby, Texas; University of Louisville (Ky.) School of Medicine, 1894; past president of the Hopkins County Medical Society; bank president; aged 59; died, April 7, in a hospital at Dallas, of heart disease, following an operation.

**Earl Lester Hall**, Princeton, Minn.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1902; aged 54; died, April 8, in the Veterans' Administration Hospital, Fort Snelling, of bronchopneumonia.

**Martin Van Buren Dunham**, Greenfield Hill, Conn.; Harvard University Medical School, Boston, 1867; member of the Connecticut State Medical Society; Civil War veteran; aged 91; was found dead in bed, April 21, of heart disease.

**John William Hopkins**, Maryville, Mo.; Rush Medical College, Chicago, 1931; member of the faculty of the Northwest Missouri State Teachers' College; aged 28; died, April 8, in a local hospital, of a self-inflicted bullet wound.

**Cyrus Monroe Easton**, Davenport, Neb.; Rush Medical College, Chicago, 1872; formerly member of the board of education of Hebron; aged 89; died, February 21, of cerebral hemorrhage while on a visit in Oklahoma.

**George T. Hannah**, Toledo, Ohio; Ohio Medical University, Columbus, 1906; member of the Ohio State Medical Association; aged 51; died, April 15, in the Mercy Hospital of cholelithiasis and intestinal obstruction.

**Jacob T. Cramer**, Muskegon, Mich.; Rush Medical College, Chicago, 1904; member of the Michigan State Medical Society; formerly city and county physician; aged 50; died, April 5, of cerebral hemorrhage.

**Oliver R. Eylar**, Waverly, Ohio; Starling Medical College, Columbus, 1900; member of the Ohio State Medical Association; county health officer; aged 71; died, April 17, in Circleville, of cerebral hemorrhage.

**Henry Schell Kimmell**, Somerset, Pa.; Jefferson Medical College of Philadelphia, 1880; for many years county coroner; formerly member of the school board; aged 74; died suddenly, March 31, of heart disease.

**Elliott R. Hatfield**, Charleston, W. Va.; Hospital College of Medicine, Louisville, Ky., 1898; member of the West Virginia State Medical Association; aged 59; was found dead, April 20, of heart disease.

**Partee Harris Mangrem**, Columbia, Tenn.; University of Tennessee Medical Department, Nashville, 1894; member of the Tennessee State Medical Association; aged 65; died, April 12, of angina pectoris.

**Charles Leopold Barewald**, Davenport, Iowa; State University of Iowa College of Medicine, Iowa City, 1891; formerly mayor of Davenport; aged 61; died suddenly, April 14, of heart disease.

**William R. Reves** ⊕ Alma, Ark.; University of Tennessee Medical Department, Nashville, Tenn., 1892; aged 72; died, February 7, in Fort Smith, of angina pectoris, cholelithiasis and myocarditis.

**Robert H. Wicker**, Rome, Ga.; University of Georgia Medical Department, Augusta, 1878; member of the Medical Association of the State of Georgia; aged 74; died, April 10, of pneumonia.

**Franklin Henry Staley**, Vienna, S. D.; Rush Medical College, Chicago, 1886; member of the South Dakota State Medical Association; aged 72; died, April 2, of carcinoma of the stomach.

**C. K. Tillison**, Ramona, Okla.; Northwestern Medical College, St. Joseph, Mo., 1893; member of the Oklahoma State Medical Association; aged 62; died, April 13, of cerebral hemorrhage.

**Albert Lee Yocom**, Chariton, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1886; city health officer; aged 76; died, in March, at the Yocom Hospital, following an operation.

**Elmer F. Brown** ⊕ Groveton, N. H.; Baltimore Medical College, 1897; aged 63; died, April 10, in the Lancaster (N. H.) Hospital, of strangulated ventral hernia and paralytic ileus.

**James Claude Fortenberry**, Zavalla, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907); aged 53; died, April 6, in a sanatorium at San Antonio.

**Ezra Dwight Chase** ⊕ Chicago; Northwestern University Medical School, Chicago, 1905; on the staff of the Garfield Park Hospital; aged 50; died, May 2, of chronic myocarditis.

**Louis A. Mehler**, Louisville, Ky.; University of Louisville School of Medicine, 1908; member of the Kentucky State Medical Association; aged 60; died, March 30, of heart block.

**Joseph William Pecony** ⊕ Denver; John A. Creighton Medical College, Omaha, 1914; aged 43; was found dead, April 7, of strychnine and morphine poisoning, self-administered.

**Carlton Monroe McGuire**, Humeston, Iowa; Rush Medical College, Chicago, 1891; formerly coroner of Huerfano County, Colo.; aged 69; died, March 27, of cerebral hemorrhage.

**Joseph Ernest Maunders**, Detroit; Detroit College of Medicine, 1911; member of the Michigan State Medical Society; aged 52; died suddenly, April 13, of cerebral hemorrhage.

**John C. Hayward** ⊕ Marshfield, Wis.; Chicago Medical College, 1882; past president of the Wood County Medical Society; aged 74; died, April 11, of chronic myocarditis.

**David Napoleon Haydon**, Mount Dora, N. M. (licensed, Indiana, 1897); also a druggist; aged 78; died, in February, at a hospital in Las Vegas, of cerebral hemorrhage.

**Louis Henry Fleck** ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1896; on the staff of St. Catherine's Hospital; aged 56; died, April 18, of heart disease.

**Benjamin W. Tilford**, Martinsville, Ind.; Butler University Medical Department, Indianapolis, 1881; formerly a druggist; aged 72; died, in April, of heart disease.

**George M. Galley**, Cincinnati; Medical College of Ohio, Cincinnati, 1905; aged 60; died, April 10, in St. Mary's Hospital, of acute dilatation of the heart.

**Merrit B. Hook**, Denver; Rush Medical College, Chicago, 1900; member of the Colorado State Medical Society; aged 57; died, April 12, of heart disease.

**Carol Skinner Cole** ⊕ St. Louis; Washington University School of Medicine, St. Louis, 1922; aged 43; was killed, March 21, in an airplane accident.

**John William Dobson**, Moweaqua, Ill.; University of Michigan Medical School, Ann Arbor, 1892; aged 67; died, April 15, of coronary thrombosis.

**Burr Hamilton Emerson**, Stockton, Mo.; Kansas City Medical College, 1899; aged 56; died, April 10, of injuries received when he fell downstairs.

**William Edward Reller**, Twin Falls, Idaho; Hahnemann Medical College and Hospital, Chicago, 1885; aged 68; died, March 27, of heart disease.

**John B. Wear**, Poteau, Okla.; University of Arkansas School of Medicine, Little Rock, 1888; aged 76; died, March 10, of cerebral hemorrhage.

**Joseph Cooper Densten**, Scranton, Pa. (licensed, Pennsylvania, 1869); aged 83; died, April 8, of pneumonia, following burns received in a fire.

**Hermon C. Hill**, Benton Harbor, Mich.; Rush Medical College, Chicago, 1892; aged 65; died, April 17, of a self-inflicted bullet wound.

**John Anderson Burris**, Riverside, Ky.; University of Louisville School of Medicine, 1907; aged 54; died, April 17, of cardiac asthma.

**Mary E. Barnes Ray**, Ponca City, Okla.; Homeopathic Hospital College, Cleveland, 1887; aged 68; died, April 12, of heart disease.

**Brock E. Brush** ⊕ Port Huron, Mich.; Detroit College of Medicine, 1896; aged 66; was found dead, April 15, of cerebral hemorrhage.

**Thomas J. Walsh**, Chicago; Rush Medical College, Chicago, 1896; aged 55; died, April 21, of coronary thrombosis.

# *Correspondence*

## VEIN LIGATION IN THE TREATMENT OF ARTERIOSCLEROTIC AND DIABETIC GANGRENE

*To the Editor:*—In THE JOURNAL, March 12, Herman E. Pearse, Jr., gives a comprehensive discussion of vein ligations in the treatment of arteriosclerotic and diabetic gangrene. Since the publication of my first case (THE JOURNAL, April 13, 1929, p. 1264), vein ligation was performed in two patients. The indications in all three cases were the same: an impending gangrene, but no break in the continuity of the skin, absence of peripheral pulses below the popliteal artery, excruciating pain both after exercise and at rest. These patients would more or less fit into group 3 of Dr. Pearse's classification.

The immediate results (two popliteal veins and one femoral vein were ligated) were very gratifying, in that there was relief from pain and marked increase in surface temperature. Nevertheless, all three cases came to amputation within six months. Edema, which according to Dr. Pearse occurred only once in thirty cases, was present in all three patients. It did not come on immediately after the operation or when the patient first got out of bed, but weeks or months later. Thus, the first patient, when examined four months after the operation, was still free from edema. The appearance and intensity of the edema due to vein ligation depends on the extension of the clot into tributaries and not so much on the venous obstruction at one point (Zimmermann and de Takáts, *Arch. Surg.* **23**:937-953 [Dec.] 1931). It is just possible that such vein ligations favor the production of massive thromboses that may occur with arterial occlusions. In the first case, in which I performed amputation six months later, there was an extensive thrombosis distal to the ligature extending into smaller tributaries. The other two patients had amputation done elsewhere.

While the immediate relief in these cases is obvious, the late results have not encouraged me to continue this procedure. Conservative treatment in this group has arrested the disease in at least as large a proportion (60 per cent) as vein ligation in Dr. Pearse's series.

GÉZA DE TAKÁTS, M.D., Chicago.

## THALLIUM PREPARATIONS DANGEROUS TO WILD BIRDS AND ANIMALS

*To the Editor:*—So much has appeared in THE JOURNAL during the past year regarding thallium poisoning, principally from the use of depilatory creams, that it may be of interest to note that probably the largest users of thallium are the state and federal governments in an effort to control wild rodents.

In California, during 1928, 7,739,070 acres of land was treated for ground squirrels. More than 2,000,000 pounds of poisoned grain was used, of which 602,728 pounds was thallium treated (Linsdale, Jean M.: Facts Concerning the Use of Thallium in California to Poison Rodents—Its Destructiveness to Game Birds, Song Birds and Other Valuable Wild Life, *Condor* **33**:95 [May] 1931). The amount of thallium in this large amount of grain is not stated but it must be considerable. The other poison used is strychnine.

As may be inferred from the title of Linsdale's article, naturalists are gravely concerned over this wholesale distribution of poison, as many other forms of wild life besides the ground squirrels apparently are killed. Joseph Grinnell in an editorial in the *Condor* (**33**:131) makes the statement that "in the last four years not less than 50 *million* animals *other than* ground squirrels have been killed in California through these operations." Most of the members of national societies interested in birds and mammals (American Ornithologists' Union, National Association of Audubon Societies for the Protection of Wild Birds and Animals, American Society of Mammalogists) are rather strongly opposed to this wholesale use of poisons and view with alarm further destruction of our fast vanishing wild life.

M. W. LYON, JR., M.D., South Bend, Ind.

## HYSTERECTOMY AND PANHYSTERECTOMY

*To the Editor:*—THE JOURNAL for April 2 contains a specimen of faulty orthography that it seems to me should not be allowed to go entirely unchallenged. In the article on "Chorionepithelioma of the Uterus," by Lackner and Leventhal, on page 1138, first column, ninth line from the top, the statement is made that "a panhysterectomy was rapidly performed." On page 1139, beginning at the fourteenth line, the following occurs: "When the vaginal metastases occurred, the question arose as to whether the cervix should be removed. We had not performed a total hysterectomy . . ."

Now, to my mind, the word "panhysterectomy" means one thing, and only one thing, the complete removal of the uterus, body and cervix, and has nothing to do with the adnexa or other structures. Used thus, properly, the two statements are of course incompatible. Unfortunately, I find that among nurses and others there is an unfortunate tendency to misuse the term "panhysterectomy" to refer to the removal of the corpus uteri with the adnexa, but it seems strange to find it thus totally misapplied in a scientific article appearing in a publication of the standing of THE JOURNAL.

GEORGE W. OUTERBRIDGE, M.D., Philadelphia.

# *Queries and Minor Notes*

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### TEMPERATURE OF THE LIVER

*To the Editor:*—For some time I have been carrying on clinical researches in the thermic treatment of the liver, produced by means of high frequency currents. 1. I am anxious to know whether the temperature of the liver itself or the temperature of the blood leaving the liver is higher than that of the other tissues, the brain perhaps, excepted. I am aware of the metabolic rise that takes place during the digestive phase of the liver. I know that Dr. Crile believes that the tissues of the brain and liver are of higher temperature. 2. Do you know of any experiments or investigations along this line that would give me the information I desire? 3. Is the circulation in the liver of such volume that practically the entire blood of the body would pass through the hepatic circulation in a few minutes? Please omit name.

M.D., Kentucky.

ANSWER.—1. The liver is by no means the hottest organ of the body. Ito (*Ztschr. f. Biol.* **38,** 1899) found the duodenum the hottest organ—higher than the liver—in a large series of readings on various organs (both in normal animals and in animals after heat puncture). It is generally conceded that the liver and the skeletal musculature contribute most of the heat of the body. The liver, of all organs, is the first to experience an increased temperature when hibernating animals awaken. The liver is hotter than aortic blood. However, into the liver there is poured blood from various internal organs—a venous blood not subjected to cooling before reaching the liver. What is more significant, blood in the hepatic veins has a higher temperature than the blood reaching the liver through the portal vein, indicating an active heat production by the liver. Denervation (or enervation) of the liver results in a marked diminution in the ability of the animal to regulate body temperature in the absence of shivering (destruction of the plexus hepaticum in dogs, described by Plaut: *Ztschr. f. Biol.* **76,** *1922*).

2. Cloetta and Waser (*Arch. f. exper. Path. u. Pharmakol.* **79,** 1915) made extensive thermo-electric measurements of various parts of the body during the action of intravenously *injected* epinephrine.

3. The experiments of K. Hürthle on two dogs and two rats demonstrate the significant capacity changes which the liver is

capable of showing. This organ, perfused with blood through the portal vein under a pressure of from 20 to 50 cm. of water, can hold from 15 to 50 per cent of its weight in blood, which amounts to a fifth or a sixth of the total blood of the animal, exclusive of the blood coming to the liver by way of the hepatic artery (*Handb. d. normal. u. path. Physiol.* **7**:1486, 1927). On the basis of observations made independently by three different observers, the rate of blood flow through the liver amounts to from 85 to 100 cc. per hundred grams of liver a minute. Only Burton-Opitz measured directly the rate of flow through the hepatic artery and portal vein (*Quart. J. Exper. Physiol.* **4**:113, 1911). From this it would appear that the entire blood of the body can theoretically pass through the liver in a short time even if not "in a few minutes."

## BLOOD GROUPS AND GROUP TESTING

*To the Editor:*—Will you please give me information on the following: Is the blood of children always of the same group as that of the father? Suppose the mother belongs to a different group from the father, will the children still have the same group as the father? If not, how does it work out? How much blood is needed for group testing? What is the best vehicle: Test tube, clot on slide or smear? Please omit name.

M.D , New York.

Answer.—The blood of children is not always of the same group as that of the father. Ottenberg and Beres, who have been much interested in the question of inheritance of blood groups, write as follows in Jordan and Falk's "Newer Knowledge of Bacteriology and Immunology," pages 911 and 912: "It is clear that not the groups as such are inherited but the presence or absence of the agglutinogens A and B (Landsteiner International Classification). Von Dungern and Hirschfeld in 1910 observed that: (1) A or B never occurs in the red cells of a child if not present in one of the parents. (2) When one of these substances is present in both parents it occurs in most of the children. (3) When only one parent has one of these particular substances some of the children inherit it. (4) When a particular substance is absent from both parents no child ever has it." Although a number of workers have repeatedly confirmed the statements of Ottenberg and Beres, the subject is still one of controversy.

Although the determination of the blood group can be made with only a few drops of red blood cells, it is preferable to have at least 0.5 cc. of whole blood and 0.25 cc. of blood in sodium citrate (2 per cent) or in some other anticoagulant.

It is convenient to have a test tube for the whole blood and another test tube containing the anticoagulant for the red blood cells.

## UNDULANT FEVER

*To the Editor:*—I have under treatment a case of undulant fever. The patient is a married woman, aged 21. She has been acutely ill since Oct. 17, 1931, when I first saw her, and has been hospitalized since that time. It took several weeks to make a definite diagnosis, but a positive blood culture for Brucella abortus, bovine type, was obtained the latter part of November. Positive cultures have never been obtained from the stools or urine. Early in December she had very acute gallbladder symptoms; these did not abate and cholecystectomy was done. This was followed by a two weeks' remission of fever, but the temperature went up again. Early in January she had acute symptoms referable to the left ovary (the right ovary had been removed several years before). Left oophorectomy was done and smears from the ovary showed the organisms in great abundance. This operation was also followed by a ten day remission of fever, but since then the temperature has ranged from 101 to 105 F. every day. The treatment at present is almost entirely symptomatic. She is getting ultraviolet radiation daily. I have given various tonics, hematinics and protein injections. I also tried methyl violet as recommended in an article by Leavell, Poston and Amoss in The Journal, Sept. 20, 1930, but with no benefit. In spite of the long illness, her general condition appears good. Hemoglobin is 79 at this time. Recent textbooks do not offer anything helpful, nor have I found much help in the literature. It seems that there is no vaccine or serum available and intravenous medication is not advised. Can you offer any suggestions? I will watch The Journal with interest. Please omit name.

M.D., Virginia.

Answer.—Several observers (Simpson, Harbinson, Angle, Helwig, Bassett-Smith, Auricchio, Cumston, de Finis, Giuffrè, Khaled and Prausnitz in the articles listed below) have reported favorable therapeutic results with specific Brucella melitensis (abortus) vaccine therapy. The intravenous administration of mercurochrome-220 soluble or acriflavine hydrochloride has been advocated by a few physicians, while others have reported that such therapy was ineffective. The transfusion of whole blood of a person who has made a satisfactory recovery from undulant fever has been employed in a few instances with apparently satisfactory results. Two Brucella melitensis variety abortus vaccines have been accepted for New and Nonofficial Remedies (The Journal, February 6, p. 480, and May 14, p. 1744).

1. Simpson, W. M.: Undulant Fever (Brucelliasis): A Clinicopathologic Study of Ninety Cases Occurring in and About Dayton, Ohio, *Ann. Int. Med.* **4**: 238 (Sept.) 1930; The Clinical Picture of Undulant Fever, *Ohio State M. J.* **27**: 21 (Jan.) 1931; Undulant Fever (Brucelliasis), *U. S. Nav. M. Bull.* **29**: 581 (Oct.) 1931. Simpson, W. M., and Frazier, Eunice: Undulant Fever: Report of Sixty-Three Cases Occurring in and About Dayton, Ohio, The Journal, **93**: 1958 (Dec. 21) 1929.
2. Harbinson, J. E.: Undulant Fever in California, *Ann. Int. Med.* **4**: 484 (Nov.) 1930.
3. Angle, F. E.: The Treatment of Undulant Fever with Vaccine, *J. Kansas M. Soc.* **30**: 323 (Oct.) 1929.
4. Helwig, F. C.: Undulant Fever, *J. Missouri M. A.* **26**: 449 (Sept.) 1929.
5. Bassett-Smith, P. W.: Undulant Fever, *J. Trop. Med. & Hyg.* **24**: 173 (July 1) 1921.
6. Auricchio, L., cited by Evans, A. C.: Studies on Brucella (Alkaligenes) Melitensis, Bull. 143, Hyg. Lab., U. S. P. H. S., p. 3.
7. Cumston, G. C.: The Treatment of Malta Fever, *M. J. & Rec.* **121**: 219 (Feb. 18) 1925.
8. de Finis, G.: L'immunoterapie dei tifo, dei paratifi a della febbre mediterranea con i vaccini lisizzati di Cristina e Caronia, *Pediatria* **31**: 11 (Jan. 1) 1923.
9. Guiffrè, M.: Osservationi sulla vaccinoterapia nella febbre mediterranea, *Pediatria* **35**: 345, 1927.
10. Khaled, Z., cited by Evans.
11. Prausnitz, C.: Infektionen des Menschen durch des Bacterium Abortus Bang, *Med. Klin.* **25**: 135 (Jan. 25) 1929.

## PULMONARY ANTHRAX

*To the Editor:*—A white girl, aged 18, with pulmonary anthrax, has been under my care since Sept. 14, 1931. Her temperature continues to range between 97 and 103 F., usually between 97 and 100.3. She has chills occasionally. She has had 650 cc. of antianthrax serum intravenously, the last injection, October 6, causing an anaphylactic reaction. The right lung had to be drained seven times between September and November but has not needed attention since. The constant fever and occasional chill with a higher fever are very discouraging and it is thought that another course of serum might be beneficial. Would this be possible and if so how would one go about desensitizing the patient? She is getting salicylates, iodides and sodium cacodylate. Would you recommend any other course of treatment? Please omit name.

M.D., Nebraska.

Answer.—No special recommendations for treatment will be made, but it may be suggested that special efforts be put forth to determine whether any secondary infection has developed. It is possible that the case no longer is one of pure anthrax infection. It is difficult to prescribe exactly how desensitization should be carried out. Assuming that the antianthrax serum to be used has been developed in the horse, desensitization would better be begun with not more than 0.01 cc. of the serum subcutaneously and if no symptoms appear this dose might be doubled every half hour or so until 1 cc. has been given; then in another half hour 0.1 cc. should be given intravenously and this doubled every fifteen to twenty minutes until the required amount of serum has been injected. The serum given intravenously should be diluted with an equal amount of physiologic solution of sodium chloride and injected as slowly as possible. Dyspnea, cyanosis, coughing, restlessness, swelling of the face, erythema and urticaria are the symptoms to be watched for. Needless to say, before desensitization is begun, preparation should be made for the prompt administration of epinephrine if necessary. The symptoms may come on immediately on introduction of the serum, or soon after.

## VERTIGO AND INTERNAL EAR

*To the Editor.*—A man is struck on the point of the jaw and develops dizziness, which lasts for more than three years. Tests show impaired hearing on the left side of nerve deafness type and impaired labyrinthine function, as evidenced by a response to a caloric test on the right side after thirty seconds' douching, and no response on the left side after three minutes' douching. As the blow seemed hardly violent enough to produce such severe symptoms, some other possible cause is being looked for. Do you think that a focus of infection in the teeth could explain his affliction? Disregarding this accident, would you consider that a vertigo which improved after a generous dosage of sodium salicylate was most likely due to toxins of bacterial origin? In other words, would sodium salicylate dosage be a therapeutic test to determine whether vertigo was due to a focus of infection? Please omit name.

M.D., New York.

Answer.—A blow on the head may cause severe injury to the inner ear, so that impairment of the inner ear with disturbance of the vestibular function may result. Everything else being equal, the cochlea, or hearing portion, is the more likely to be damaged and, if acute hemorrhage occurs, both the hearing and the vestibular mechanism may entirely lose their function. This is what probably happened in the case cited. It is doubtful whether any infection of the teeth could suddenly produce such a lesion. In some instances an apical abscess may produce a toxemia, which in turn causes a temporary change in the cochlear function with tinnitus or noises in the head or, on the other hand, disturbance of the vestibular mechanism may occur with resulting vertigo. After the removal of the infected tooth, these symptoms usually subside. It is doubtful whether sodium salicylate will eliminate a vertigo or that it could be used as a therapeutic test when the vertigo is due to a focus of infection.

### PARESIS OF ORBICULARIS PALPEBRAE MUSCLE THROUGH INJECTION OF PROCAINE

*To the Editor:*—A dentist recites an experience in which the injection of a few cubic centimeters of 1 per cent procaine into the lingual canal caused a marked dilatation of the palpebral fissure of the left eye. This occurred five minutes after injection. He kept the patient in the office thirty-five minutes, at the end of which time the fissure returned to normal. There were no other signs or symptoms of shock or idiosyncrasy or complaints that would make one think it was due to the type of fluid injected. I would be pleased to receive an explanation of this. Mac. D. Campbell, M.D., Detroit.

Answer.—The widening of the palpebral fissure was undoubtedly due to a temporary paresis of the orbicularis palpebrae muscle by nerve block by the procaine, with subsequent drooping of the lower lid from gravity. The lower part of the muscle is innervated by the zygomatic branch of the facial nerve, which ordinarily is given off immediately after emergence of the nerve from the stylomastoid foramen. But in some instances the zygomatic or second branch of the facial nerve accompanies the cervicofacial or third branch for a short distance along its course, and probably in the case referred to the somewhat abnormally located second branch was blocked by procaine that must have escaped into the tissues around the "lingual canal." Any drug used for nerve blocking would have produced the same results under identical circumstances.

### "GLUCOSIN"

*To the Editor:*—Please advise me as to whether the product "Glucosin" is a recognized one. One of my patients, with a blood sugar of 350 mg., has been promised a "sure cure" in six months with this product by this Dr. A. Casagrande, the distributor of the product. Is Dr. Casagrande a doctor of proper standing and qualified to practice medicine in this country? M. F. Lehman, M.D., Little Neck, L. I.

Answer.—The advertising circular referred to is a typical example of pseudoscientific polyglandular therapeusis. The name of the promoter is not a familiar one to those in authority in the field of diabetes in America, and it is doubtful whether his Italian colleagues regard him as an authority. It should be evident that any one promising a "sure cure" of diabetes in six months must be a charlatan.

### BORIC ACID HARMFUL INTERNALLY

*To the Editor:*—One of my patients is interested in knowing whether boric acid taken in pill or capsule form, 20 grains daily, for reducing purposes would be harmful. Please omit name. M.D., Wisconsin.

Answer.—Boric acid, 1.3 Gm. (20 grains), taken internally for reducing purposes, would be decidedly harmful. A number of deaths from boric acid have been reported. A few years ago The Journal discussed editorially the deaths of six infants in a hospital resulting from the nurses having inadvertently mistaken a bottle containing boric acid for one containing water (The Journal, March 12, 1927, p. 841).

### OBSESSION FOR EGGS IN DIET

*To the Editor:*—I have had under observation a man who suffers from cerebral arteriosclerosis and who has an obsession for eggs, eating from six to eight daily. As a result of this he has had a foul sulphide breath, which I have been unable to eliminate. The family of my patient can hardly put up with this odor and the patient refuses to eat anything except milk and eggs. He is not troubled with constipation. He takes acidophilus milk twice a day, but this had not helped him. The teeth and throat are normal. Please advise me whether you know what can benefit this man. Kindly omit name. M.D., New York.

Answer.—It is difficult to see what can benefit the patient if he persists in limiting his food intake to milk and eggs. This procedure results not only in the excess of eggs but naturally produces a marked disturbance of the nutritional balance. This, of course, cannot be rectified except by an entire change in the diet. However, it might be of some avail to add milk sugar to his milk so that there is an excess of available lactose in the gastro-intestinal canal. Also, some form of alkali, such as sodium bicarbonate or magnesia magma, might be of help. These suggestions are, of course, merely palliative.

# *Council on Medical Education and Hospitals*

## COMING EXAMINATIONS

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

Arizona: Phoenix, July 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave., Phoenix.

California: *Reciprocity.* Los Angeles and San Francisco, June 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

Colorado: Denver, July 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

Connecticut: *Basic Science.* New Haven, June 11. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

Delaware: Wilmington, June 14-16. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

District of Columbia: *Basic Science.* Washington, June 29-30. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

Florida: Tampa, June 13-14. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

Georgia: Atlanta, June 15-16. Joint Sec., Mr. R. C. Coleman, 111 State Capitol Bldg., Atlanta.

Illinois: Chicago, June 28-July 1. Supt., Mr. Paul B. Johnson, Springfield.

Indiana: Indianapolis, June 21-23. Sec., Dr. William R. Davidson, 413 State House, Indianapolis.

Iowa: Iowa City, June 7-9. Dir., Mr. H. W. Grefe, Capitol Building, Des Moines.

Kansas: Kansas City, June 21-22. Sec., Dr. C. H. Ewing, Larned.

Kentucky: Louisville, June 8-10. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

Louisiana: New Orleans, June 9-11. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

Maine: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

Maryland: *Homeopathic.* Baltimore, June 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore. *Regular.* Baltimore, June 21-24. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

Michigan: Ann Arbor and Detroit, June 7-9. Sec., Dr. Nelson McLaughlin, 1010 Maccabee Bldg., Detroit.

Minnesota: *Basic Science.* Minneapolis, June 7-8. Sec., Dr. J. Charmley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, June 21-23. Sec., Dr. E. J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

Missouri: St. Louis, June 14-16. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City.

National Board of Medical Examiners: Examinations in Parts I and II will be held at all centers where there are five or more candidates, but not at Durham, Minneapolis, nor New Haven, June 27-29. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

Nebraska: *Regular.* Omaha, June 9-11. Dir., Mrs. Clark Perkins, Lincoln.

New Jersey: Trenton, June 21-22. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

New York: Albany, Buffalo, New York, Syracuse, June 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315, State Education Bldg., Albany.

North Carolina: Raleigh, June 20. Sec., Dr. John W. MacConnell, Davidson.

North Dakota: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

Ohio: Columbus, June 7-10. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

Oklahoma: Oklahoma City, June 8-10. Sec., Dr. J. M. Byrum, Shawnee.

Oregon: Portland, July 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

Pennsylvania: Philadelphia and Pittsburgh, July 5-9. Sec., Mr. Charles D. Koch, Dept. of Public Instruction, Harrisburg.

Rhode Island: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

South Carolina: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Texas: Marlin, June 21-23. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

Utah: Salt Lake City, July 6-8. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

Vermont: Burlington, June 22-24. Sec., Dr. W. Scott Nay, Underhill.

Virginia: Richmond, June 15-18. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

Washington: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

Wisconsin: Milwaukee, June 28-30. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

Wyoming: Cheyenne, June 6. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

## Washington January Report

Mr. George L. Berger, assistant director, Washington Department of Licenses, reports the written examination held at Seattle, Jan. 18-19, 1932. The examination covered 8 subjects. A grade of 60 per cent was required in each subject. Twenty-one candidates were examined, all of whom passed. Seven physicians were licensed by reciprocity with other states and 2 physicians were licensed by endorsement. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent |
|---|---|---|
| George Washington University School of Medicine | (1931) | 78* |
| Northwestern University Medical School | (1931) | 76, 79† |
| Rush Medical College | (1923) 82, (1931) | 79, 80 |

| | | |
|---|---|---|
| University of Minnesota Med. School | (1931) 74, 77,† (1932) | 75, 80 |
| Washington University School of Medicine | (1931) | 78* |
| University of Nebraska College of Medicine | (1931) 72,* | 77 |
| University and Bellevue Hospital Medical College | (1920) | 75 |
| University of Oregon Medical School | (1930) 76, (1931) 76,* 77,* | 78* |
| University of Manitoba Faculty of Med. | (1926) 78, (1927) | 74 |
| University of Toronto Faculty of Medicine | (1931) | 80* |

| College — LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University Medical School | (1909) | California |
| University of Louisville School of Medicine | (1931)* | Kentucky |
| University of Minnesota Medical School | (1931) | Minnesota |
| Barnes Medical College, Missouri | (1908) | Idaho |
| Creighton University School of Medicine | (1926) | Nebraska |
| University of Oregon Med. School | (1928) Missouri, (1930) | Oregon |

| College — LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| Northwestern University Medical School | (1915), (1926) | N. B. M. Ex. |

* Certificates are being withheld pending completion of internship.

† The M.D. degrees and certificates are being withheld pending completion of internship.

## North Dakota January Report

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, Jan. 5-8, 1932. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, all of whom passed. One physician was licensed by reciprocity and 1 by endorsement. The following colleges were represented:

| College — PASSED | Year Grad. | Per Cent |
|---|---|---|
| Northwestern University Medical School | (1929) 83, (1931) | 84, 84.3 |
| Indiana University School of Medicine | (1929) | 75 |
| University of Minnesota Medical School | (1930) 78.8, (1931) | 77.6 |

| College — LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University Medical School | (1925) | Illinois |

| College — LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| University of Minnesota Medical School | (1930) | N. B. M. Ex. |

# *Book Notices*

**Laboratory Technique.** By R. B. H. Gradwohl, M.D., Director, Gradwohl School of Laboratory Technique. With the collaboration of I. E. Gradwohl, B.A., Associate Director, and A. S. Gradwohl, Assistant Director, Gradwohl School of Laboratory Technique, St. Louis, Mo. Cloth. Price, $8. Pp. 462, with 148 illustrations. St. Louis: Gradwohl School of Laboratory Technique, 1932.

The authors have compiled a manual of laboratory tests used in medical and surgical diagnoses. The tests are described clearly and concisely, and the directions are explicit. The chapters of the book cover the usual range of subjects discussed in the more comprehensive books on laboratory methods, with added features of chapters on photomicrography, mycology and parasitology. The methods given in the last mentioned chapter are those in vogue at the Hamburg Institute of Tropical Medicine. In the chapter on hematology, special stress is given to the methods and interpretations of blood examination sponsored by Schilling. The illustrations are grouped in the back of the book as a concise atlas of common microscopic subjects encountered in routine laboratory examinations. Instead of the conventional diagrammatic sketches, the authors present photomicrographs in an effort to picture the natural appearance under a microscope. The purpose of the authors is excellent, but unfortunately the ideal has not been accomplished in the pictures of some of the leukocytes where nuclear detail is of paramount importance in successful identification. A chapter on basal metabolism is of great value, containing explicit directions and various tables on different standards and data sheets. Bacteriology and serology are unusually complete for a manual of laboratory technic. The bulk of the book might have been sacrificed for one of more convenient size, especially where methods are presented and it is important to follow the text closely. The authors have made no attempt to offer any interpretative conclusions but desire merely to develop a working manual of standard methods now in use. While they present a comprehensive treatise of medical laboratory methods intended for the profession, the book will serve those best who are actually engaged in laboratory work.

**Die theoretischen Grundlagen und die praktische Verwendbarkeit der gerichtlich-medizinischen Alkoholbestimmung.** Von Prof. Dr. E. M. P. Widmark, Mediz.-chem. Institut der Universität Lund, Schweden. Neue Folge, Heft 11. Fortschritte der naturwissenschaftlichen Forschung. Herausgegeben von Prof. Dr. Emil Abderhalden. Paper. Price, 14 marks. Pp. 140, with 59 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This monograph deals with the methods and results of recent work by the author on the determination of alcohol in the blood for medicolegal purposes. The work is based on the demonstration by the author that the concentration and conversion of alcohol in the organism may be followed as closely and accurately as the course of a reaction in vitro. The organism simply acts as a solvent of the ingested alcohol. First there is described a micromethod for the determination of ethyl alcohol in the blood, which does not require more than 100 mg. of blood, that is, no more than can easily be obtained in a capillary glass tube from the puncture of a finger tip. The principle of the micromethod is that of the commonly used bichromate method. Next come chapters on the diffusion of alcohol in the tissues, into the fluids of the body and the expired air, and on the kinetics of the conversion of alcohol and acetone in the organism. Then is described the Swedish official system of determining alcohol in the blood for medicolegal purposes on an extended scale. Police stations everywhere have at hand boxes with glass capillary tubes for the use of physicians in taking blood from persons suspected of being under undue alcoholic influence, as in motor traffic accidents. Boxes with blood-filled tubes and the data required are sent to the central laboratory. From the middle of May, 1930, to March, 1931, about 700 samples of blood were obtained in this way from the routine investigation of traffic accidents. The results of the general examinations and the alcohol determinations in these cases are presented in detail. Thus the proportion of the coarser symptoms of alcoholic intoxication to varying concentration of alcohol in the blood has been worked out: when the alcohol in the blood reached 1 per cent by weight, a considerable proportion of the cases showed definite symptoms of intoxication. In about three fourths of the cases the blood contained more than 1.4 per cent of alcohol. Full reports of especially interesting cases are given. The value of alcohol determination of the blood and urine in necropsies is considered on the basis of experiments and of results in medicolegal necropsies. In the presence of decomposition the determination of alcohol is not worth while—alcohol is broken down by decomposition. If the amount of alcohol in the urine is about the same as that in whole blood, the indications are that the consumption took place shortly before death; but if the amount in the urine exceeds that in the blood by 30 or 40 per cent, the indications point to little or no consumption since two hours before death. More has been said than necessary to show that Widmark's book is a contribution of fundamental importance in the work on the medicolegal problems of alcohol. The presentation is a model of clearness and order. Again a small country has demonstrated how practical progress may be made through well organized cooperation between officials, physicians and the scientific expert.

**Methods in Physical Education.** By Jesse Feiring Williams, M.D., Professor of Physical Education at Teachers College, Columbia University, John I. Dambach, M.A., Professor of Physical Education at the University of Pittsburgh, and Norma Schwendener, M.A., Associate in Physical Education at Teachers College, Columbia University. Cloth. Price, $2.25. Pp. 222. Philadelphia: W. B. Saunders Company, 1932.

This book seems to be designed for students who are preparing to be teachers of physical education and presents considerable material that has appeared in other works by Dr. Williams, together with new material having to do more specifically with methods of presenting and supervising physical activities. Neither material nor subject is of as much importance as in most of the other Williams books, and one suspects that its appeal will be much more limited. The bases of method in physical education teaching, anatomic, physiologic, psychologic and sociological, are presented; the principles of Dewey and Thorndike are applied again to this field of education; the essentials of learning and the stimuli for learning are discussed; and then applications of general principles are made to various phases of the physical education program, such as programs for young children, class efficiency, discipline, swimming, dancing and athletics. Many persons who are working with children would be glad if they could accept in toto this optimistic quotation from the chapter on discipline: "Children should wish to do those activities in which they engage. The teacher who studies the problem can control and direct the drives within his pupils; for him there are no disciplinary problems." A later statement in the same chapter presents a timely qualification, however: "Interest is a personal matter and one can never be assured that all the pupils in a class have been touched by the activity." On the whole, the book does not appear to be of great significance even to students of physical education.

**Leitfaden der Pathologie und Therapie der Kampfgaserkrankungen.** Von Dr. med. Otto Muntsch, Stabsarzt im Reichsheere, komdt. zum Reichsgesundheitsamt. Paper. Price, 10.50 marks. Pp. 94, with 28 illustrations. Leipzig: Georg Theme, 1932.

This monograph on the pathology and therapy of gas poisoning has as its objective the awakening of a wider interest on the part of the general medical profession toward the treatment of gas poisoning. The author seeks to bring this subject to the attention of the general practitioner, because, as he sadly admits, the probability not only of military but also of civilian exposure to war gases becomes ever greater. Under a pall of diplomatic pleasantries and assurances, every war department of the great military powers has systematically developed its gas service; the technic of the next war will merely magnify the lethal effects of a weapon which was just in its developmental strides at the end of the last one. The Chinese population of Shanghai has had a foretaste of military regard for civilian populations. Muntsch takes up in detail the effects of the commoner gases used in warfare and develops the rationale of therapy so far available. The book will be of some interest to members of the medical corps, but fortunately in our country there is no particular reason why the practitioner should devote time to this field. The subject matter is handled in a concise and clear fashion, the therapeutic suggestions are logical and practical, and the illustrations, many of which are in color, are excellent. There is a bibliography covering some of the pertinent literature.

**Psychological Racketeers.** By Dorothy Hazeltine Yates. Cloth. Price, $2. Pp. 232. Boston: Richard G. Badger, 1932.

Each new discovery in the field of science is likely to be adapted by quacks and exploiters for personal gain. One of the most recent developments has been the manner in which the new psychology of Freud and the practical psychology of many American teachers is being exploited by charlatans of one type or another. Obviously, the sexual side of the freudian psychology makes for the charlatan a special appeal. The quacks who work in this borderland include all sorts of psychologists, psychoanalysts, astrologers, phrenologists, spiritualists, graphologists, hypnotists, mental mystics, mind readers, mediums and mental scientists. Many of these charlatans have been described by the Bureau of Investigation of the American Medical Association. The usual "come on" is the free lecture with a special appeal to women. Frequently much is made of Hindu mysticism and magic. The great prizes offered are success in love and in business. A special appeal promises superiority to those who feel themselves inferior. In the book here under discussion, the author seems to be concerned with methods rather than with individuals, since most of the charlatans considered are not mentioned by name. One, Orlando Edgar Miller, has been repeatedly exposed in THE JOURNAL, and the author adapts this exposé to her presentation. The book contains much that is of interest, although amateurish in form and poorly published.

**Handbuch der normalen und pathologischen Physiologie mit Berücksichtigung der experimentellen Pharmakologie.** Herausgegeben von A. Bethe, G. v. Bergmann, G. Embden und A. Ellinger. Band XV, Hälfte 2: Correlationen 1/2. Arbeitsphysiologie II, Orientierung, Plastizität, Stimme und Sprache. Bearbeit von A. Bethe, W. v. Buddenbrock und anderen. Paper. Price, 80 marks. Pp. 835-1545, with 188 illustrations. Berlin: Julius Springer, 1931.

The last half of volume XV completes (except for the general index) this marvelous working tool in the field of normal and pathologic physiology. Twenty-three stout books make up this encyclopedic textbook of physiology in seventeen volumes. The entire set costs in the neighborhood of $460, a formidable price. However, no institution engaged in biologic research can well afford to be without it, if it is solicitous about conserving the time of its researchers. For many years to come this encyclopedia will be the standard set for rapid and authoritative references (especially of European literature). The present volume contains sections on respiration and circulation during muscular work; orientation in space among invertebrates, vertebrates and man; the sensory and motor apparatus of man as a whole; plasticity of the nervous system; plasticity of the organism on the basis of experiences in man with nervous lesions; plasticity and the doctrine of nervous centers; speech and the musical apparatus of animals and their mode of functioning; the vocal apparatus of man; the physical analysis of the voice and speech sounds; aphasia. All institutions are urged on this final occasion to favor themselves and their workers by having the entire "Handbuch" on their shelves. Its individual volumes may, however, be bought separately.

**Elementary Bacteriology.** By Joseph E. Greaves, M.S., Ph.D., Professor of Bacteriology, Utah Agricultural College, Logan, and Ethelyn O. Greaves, M.S. Second edition. Cloth. Price, $3.50. Pp. 535, with 138 illustrations. Philadelphia: W. B. Saunders Company, 1932.

This is essentially a reprinting of the first edition, since the changes are of minor importance. These include the mention of the electrophoretic method for determining relative virulence of certain organisms, the introduction of Bergey's classification of bacteria, a paragraph on diphtheria toxoid, and a few additions to the chapters on applied bacteriology. The book is truly a "general" bacteriology. The authors are particularly happy in their presentation of the relation of bacteria to the cycles of the various chemical elements.

**Leçons cliniques sur les maladies du sang et des organes hématopoïétiques.** Par Ch. Achard, professeur de clinique médicale à la Faculté de médecine de Paris. Paper. Price, 34 francs. Pp. 271, with 15 illustrations. Paris: Masson & Cie, 1931.

The interest among the profession in diseases of the blood-forming organs is reflected in the numerous works on this subject in the past few years. Many of these have dealt particularly with laboratory diagnosis and relatively few have stressed the clinical aspect. With the more accurate classification afforded by the improved methods of diagnosis, clinical observations and treatment have undergone changes. This book treats particularly the clinical phases of blood dyscrasias. The first two chapters are devoted to the hemorrhagic diseases. While the author presents a few departures in accepted methods of treatment, the pathogenesis is so incompletely understood that little advance has been made in this field. Pernicious anemia is considered with particular emphasis on some of the newer advances in therapy. Leukemia, agranulocytic angina and other blood dyscrasias are next considered. The organization of the book is essentially clinical. The author illustrates his discussion by presenting typical case histories with physical and laboratory observations. The work, while not exhaustive, is a comprehensive treatise on the clinical aspect of blood dyscrasias.

**Surgical Errors and Safeguards.** By Max Thorek, M.D., Surgeon-in-Chief, the American Hospital, Chicago. With a foreword by Arthur Dean Bevan, M.D., Professor and Head of the Department of Surgery, Rush Medical College of the University of Chicago. Cloth. Price, $10. Pp. 696, with 668 illustrations. Philadelphia: J. B. Lippincott Company, 1932.

The human being who is unable to learn from his mistakes is obviously little above the animal in intelligence. Indeed, this is probably the chief feature in differentiating between the human and the animal. It is quite human, however, to hide one's mistakes so that only the one who has erred benefits by the knowledge. Dr. Thorek has been exceedingly bold in the presentation of common surgical errors and analysis of their causation. He begins with a consideration of errors and safeguards in connection with surgical operations in general, including under this heading wound infections, acidosis, pulmonary complications and similar subjects. He points out the dangers of spinal anesthesia and the indications for its use and deprecates particularly snapshot diagnosis. The second chapter considers one of the most frequent alibis in medical work; namely, the bad risk patient. After a brief consideration of blood transfusion, the author discusses operations on the various parts of the body, concluding with a special chapter on defective instruments and foreign bodies left in the body during surgical procedures.

The volume is didactic, the sentences sharp and the pages frequently interspersed with heavy type, emphasizing significant points in anatomy or procedure. The illustrations are profuse, some of them borrowed but many taken from the author's own experience. A good bibliography supplements each chapter, and two excellent indexes make reference easy. Certainly every young surgeon should benefit by the experience here set forth.

## Medicolegal

### Civil Liability for Results of Criminal Abortion

*(Andrews v. Coulter (Wash.), 1 P. (2d) 320)*

Gene Raligh died after having been operated on with a view to procuring an abortion. The plaintiff, as administratrix of her estate, sued the physician who operated, to recover the expenses of the last illness and the burial of her intestate. A general demurrer, interposed by the physician, was sustained by the trial court. The plaintiff then appealed to the Supreme Court of Washington.

In the state of Washington, any one who unlawfully produces a miscarriage of a woman is guilty of abortion and may be punished by imprisonment in the penitentiary. The law provides, too, that a woman who submits to her own criminal miscarriage may be punished by imprisonment in like manner. Relying on these laws and on the general rule that courts will not aid either party in litigation growing out of criminal acts, the defendant physician contended for judgment in his favor, because the cause of action was founded on an illegal act on the part of the decedent.

There is a conflict of authority, said the Supreme Court, as to whether the rule that courts will not aid either party in litigation growing out of criminal acts shall be applied in favor of one who performs an abortion, when the woman consents and participates in the act. The court held, however, that in the state of Washington the rule is applicable. But, said the court, the complaint in this case does not charge simply an abortion and the consequent death of the woman. It contains further allegations that will permit proof that, on becoming aware that the patient on whom the abortion was performed was suffering from septicemia and peritonitis, the defendant physician wholly failed and neglected to prescribe for or treat her, and that, knowing that she was so suffering and that her life was in danger, and without letting her family know of her true condition, he wholly abandoned her. It was alleged, too, that had the defendant physician made known her true physical condition at the time it became known to him and had he given her proper attention, her death would not have occurred. Proof of the facts thus alleged would establish a cause of action. A physician and surgeon has no more right to abandon his patient under the circumstances of this case than he would had she become his patient under ordinary circumstances and in the best of faith.

The facts stated in the complaint were held to be sufficient to constitute a cause of action, and the cause was therefore reversed and remanded, with directions to the trial court to overrule the demurrer of the defendant physician.

### Buerger's Disease Aggravated by Trauma

*(Hall v. State Compensation Com'r. (W. Va.), 159 S. E. 516)*

Hall injured the great toe of his right foot. Two amputations followed, the second removing the entire toe. The wound did not heal, but Hall undertook to work, favoring his injured foot. While doing so, he rubbed the great toe on his left foot. Infection followed, which resulted in several progressive amputations, the last just below the left knee. In the meantime, the condition of his right foot became aggravated, necessitating a series of amputations, ending just below the right knee.

After his first injury and the consequent removal of the great toe of his right foot, Hall claimed and received compensation on a 10 per cent partial disability rating. Later, after the several amputations to which he had to submit, he sought supplementary compensation for the loss of both legs. Such compensation was refused, but on appeal the Supreme Court of Appeals of West Virginia remanded the case for a further hearing. The hearing was given, but a supplemental award was again denied, on the ground that the amputations to which Hall had been subjected were due to Buerger's disease, and not to the injury that he had suffered. The case was again appealed to the Supreme Court of Appeals of West Virginia.

The physicians were in agreement, said the Supreme Court, that Hall was suffering from Buerger's disease, or thromboangiitis obliterans, an inflammatory disease of unknown origin, affecting all the coats of the arteries and the veins. Practically all the medical witnesses expressed the opinion that the disease is not caused by trauma. They admitted, however, that such an injury as the claimant suffered might excite the condition and result in a loss of parts of the body several years earlier than they would be lost if no injury occurred. If the loss of Hall's legs were due to disease, and that disease was not aggravated nor accelerated by anything that might be denominated an accident, the loss would not be compensable under the workmen's compensation act of West Virginia. On the other hand, if the injury to Hall's great toe lighted up the disease from which he was suffering and incapacitated him for the performance of his duties, he was entitled to compensation. The several amputations to which Hall was subjected were, in the opinion of the Supreme Court, due primarily to the accident. The case was therefore remanded to the state compensation commissioner, with directions to fix the percentage of disability in accordance with the statute, based on the loss of both legs.

## Society Proceedings

### COMING MEETINGS

American Association for the Study of Goiter, Hamilton, Ontario, June 14-16. Dr. J. R. Yung, 670 Cherry St., Terre Haute, Ind., Secretary.

American Association for the Study of the Feeble-Minded, Philadelphia, May 26-29. Dr. Groves B. Smith, Godfrey, Illinois, Secretary.

American Association of Genito-Urinary Surgeons, Niagara Falls, Ontario, Canada, May 26-28. Dr. Henry L. Sanford, 1621 Euclid Avenue, Cleveland, Secretary.

American Gynecological Society, Quebec, May 30-June 1. Dr. Otto H. Schwarz, 630 South Kingshighway, St. Louis, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, May 23-25. Dr. Robert L. Loughran, 33 East 63d Street, New York, Secretary.

American Neurological Association, Atlantic City, June 6-8. Dr. Henry Alsop Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

American Orthopedic Association, Toronto, Canada, June 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.

American Pediatric Society, Rochester, Minnesota, May 26-28. Dr. Hugh McCulloch, 500 South Kingshighway, St. Louis, Secretary.

American Psychiatric Association, Philadelphia, May 30-June 3. Dr. Clarence O. Cheney, 722 West 168th Street, New York, Secretary.

American Urological Association, Toronto, May 30-June 2. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., June 2-6. Dr. A. J. Chesley, State Board of Health, St. Paul, Minnesota, Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Charles W. Comfort, Jr, 27 Elm Street, New Haven, Secretary.

Maine Medical Association, Rangeley, June 16-18. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Boston, June 8-10. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Minnesota State Medical Association, St. Paul, May 23-25. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.

Missouri State Medical Association, Jefferson City, May 23-26. Dr. E. J. Goodwin, 634 North Grand Boulevard, St. Louis, Secretary.

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

National Tuberculosis Association, Colorado Springs, June 6-9. Dr. Charles J. Hatfield, 7th and Lombard Streets, Philadelphia, Secretary.

Nebraska State Medical Association, Lincoln, May 24-26. Dr. R. B. Adams, Center McKinley Building, Lincoln, Secretary.

New Jersey, Medical Society of, Atlantic City, June 15-17. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

New York, Medical Society of the State of, Buffalo, May 23-25. Dr. Daniel S. Dougherty, 2 East 103d Street, New York, Secretary.

North Dakota State Medical Association, Grand Forks, June 1-2. Dr. Albert W. Skelsey, 18 Broadway, Fargo, Secretary.

Oklahoma State Medical Association, Tulsa, May 24-26. Dr. Claude A. Thompson, Manhattan Building, Muskogee, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

Rhode Island Medical Society, Providence, June 2. Dr. J. W. Leech, 369 Broad Street, Providence, Secretary.

South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.

# *Current Medical Literature*

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Surgery, New York

**15:** 435-638 (March) 1932

Prostate at Crossroad. J. F. McCarthy, New York.—p. 435.
*Bone Sarcoma: Intramedullary Injections of Virus of Filtrable Fowl Endothelioma Tumor. R. F. Berg, Portland, Ore., with Foreword by W. B. Coley, New York.—p. 441.
Combined Roentgenologic and Clinical Differential Diagnosis of Benign and Malignant Lesions of Stomach. B. R. Kirklin and G. B. Eusterman, Rochester, Minn.—p. 462.
*Factors Influencing Prognosis in Medical Treatment of Duodenal Ulcer. Sara M. Jordan and E. D. Kiefer, Boston.—p. 472.
Diarrhea of Unknown Origin. P. W. Brown, Rochester, Minn.—p. 483.
Diagnosis of Jaundice: Value of Clinical and Laboratory Data. J. F. Weir, Rochester, Minn.—p. 494.
Psychiatric Aspects of Gastro-Enterology. A. Meyer, Baltimore —p. 504.
Acute Pancreatitis: Acute Hemorrhagic Pancreatic Necrosis. C. R. Jones, Pittsburgh.—p. 510.
*Unusual and Common Forms of Bacterial Dysentery Observed in the South. D. N. Silverman and W. H. Harris, New Orleans.—p. 515.
Studies in Gastric Secretion: Preliminary Note on New Method of Therapy for Peptic Ulcer. A. Winkelstein, New York.—p. 523.
*Combined Oral and Intravenous Cholecystography. P. B. Davidson, F. Biguria and J. Rosenthal, Boston.—p. 525.
A Urinary Antiseptic: Clinical Report. C. Rusche, Hollywood, Calif. —p. 545.
Tidal Irrigation and Suction Apparatus for Empyema. R. H. Overholt, Boston.—p. 548.
Unusual Case of Tuberculosis of Trochanteric Region: Bone Infection Near the Joint. E. D. W. Hauser, Chicago.—p. 551.

**Bone Sarcoma.**—In summarizing the results of his experiments, Berg calls attention to his artificial production of malignant tumors derived from filtrates of dried tumor tissue. From the artificially produced tumor tissue filtrates, other malignant tumors were produced which were dissimilar in respect to morphology, histology and dissemination of metastatic nodules. Culture of dried tissue, and filtrate on usual mediums showed no growth, but on special mediums positive cultures were obtained in all tubes with the dried tumor tissue, and one showed growth with the filtrate. The tumors produced were classified from roentgen, gross, histologic and clinical examinations in the following types: (1) endotheliomas, (2) endothelial myeloma, (3) osteogenic sarcoma, (4) giant cell tumor and (5) epithelial tumor.

**Prognosis in Medical Treatment of Duodenal Ulcer.**—Jordan and Kiefer report that nearly half of all cases of duodenal ulcer treated medically have one or more recurrences within a period of five years after treatment. About one fifth of the recurrences can be ascribed to carelessness on the part of the patient. A little over one fourth of the remaining recurrences are characterized by gross hemorrhage, which is not associated with pain or other important symptoms. Among the clinical features that are manifest in the examination and treatment of cases of duodenal ulcer, there are some with important prognostic significance, others with suggestive but inconclusive prognostic value, and others which give no aid whatever in estimating the probability of success or failure of medical treatment. The two features that are important enough to be useful in planning treatment for the individual patient are, first, the history of two or more gross hemorrhages, and, second, the demonstration of a marked intolerance to alkali therapy. Among the features characteristically more common in cases that are ultimate failures on medical treatment but are not sufficiently important to make them conclusive indication for or against medical management are failure of the duodenal cap to show improvement in outline after treatment, the six-hour retention of barium in the stomach particularly if still present at the end of three weeks' hospital treatment, a history of one gross hemorrhage, a marked resistance to neutralization of the gastric contents with alkali therapy, occult blood in the stools particularly if there is a tendency to persist on treatment, and the physical observations of hypertension and epigastric tenderness. The features that have little or no prognostic value are age, sex, age at the onset of symptoms; duration of the disease, severity of pain, degree of deformity of the duodenal cap at the first examination if there is no six-hour residue, and the degree of hyperacidity after an Ewald meal. Improvement in the roentgen appearance of the duodenal cap was found to be the most reliable single objective test as a guide to medical management. Alkalosis was found to be associated in a large proportion of cases with hypertension, other evidences of chronic vascular nephritis, and obstructive surgical lesions in the urinary tract.

**Bacterial Dysentery Observed in the South.**—Silverman and Harris have encountered several varieties of bacterial dysentery in a survey of approximately 100 cases of this disease. The bacillary types, especially the strains of Flexner, Shiga and Duval, are endemic in the South and appear to be increasing in incidence. Recent reports from northern sections of the country would warrant careful investigation of suspicious cases for the possible determination of a wider dissemination of bacillary dysentery than is at present suspected. Several unusual types of bacterial dysentery, in some instances with few previous clinical or bacteriologic descriptions, are found to exist in the South.

**Combined Oral and Intravenous Cholecystography.**—According to Davidson and his associates, cholecystography by the combined oral and intravenous method presents an accuracy comparable to that of the intravenous method. It produces a higher incidence of filling and denser shadows than the oral method. Reactions are infrequent; those present are apparently due to the dose taken by mouth. It is time saving, requiring but little more than the oral method yet requiring no repeat examinations. Cholecystography by the combined oral and intravenous method is the most satisfactory means of studying ambulatory cases.

### Archives of Ophthalmology, Chicago

**7:** *357-498 (March) 1932*

Ocular Injuries: Their Treatment. G. H. Cross, Chester, Pa.—p. 357.
Prognosis of Certain Eye Injuries. E. S. Sherman, Newark, N. J.—p. 361.
Workmen's Compensation Problems. V. A. Zimmer, New York.—p. 367.
*Ophthalmologic Importance of Focal Infective Prostatitis. P. S. Pelouze, Philadelphia.—p. 372.
Ioskiascopy Test. J. I. Pascal, Boston.—p. 378.
Ways in Which Distance of Test Field Affects Determinations of Retinal Sensitivity. C. E. Ferree and G. Rand, Baltimore.—p. 383.
*Homatropine and Atropine Cycloplegia: Comparative Study. L. Bothman, Chicago.—p. 389.
Correction of High Myopia by Mueller's Contact Glasses. N. Blatt, Targu-Mures, Roumania.—p. 399.
Orbital Metastases from Malignant Tumors of Suprarenal Gland. F. E. Burch, St. Paul.—p. 418.
Eyes of Irradiated Human Embryos: Further Observations. I. Goldstein and D. Wexler, New York.—p. 434.

**Focal Infective Prostatitis.**—Pelouze believes that the general focal infective triad in the male is teeth, tonsils and prostate. In eye conditions the facial sinuses also play a part. Focal infective eye conditions occasionally are due solely to infections of the prostate. They commonly are kept up by prostatic infections after the removal of foci in the teeth, tonsils and sinuses. Such prostatic infections usually are secondary to tonsillar or dental infections and only rarely have any relation to gonococcal infection. At least 35 per cent of all men beyond the age of 35 have a prostatic infection. At least 72 per cent of all men with focal infective symptoms have an infected prostate. These prostatic infections cannot be permanently cured so long as their causal foci in the teeth or tonsils persist. An increase in ocular symptoms usually follows one of the first digital manipulations of the gland. If no such increase occurs, the gland is practically acquitted as a factor in the causation of the eye lesions. This increase in ocular symptoms is analogous to a vaccine reaction with marked specificity for the distant lesion caused by the prostatic infection. Treatment of the gland, therefore, must be viewed from the standpoint of ocular tolerance to toxin. To exceed this threshold of toxin tolerance is to incur great risk. Recovery from such ocular conditions is retarded by severe reactions and hastened by treatment causing the slightest or no reaction. Prostatic massage should not be carried out oftener than twice a week. It should not be repeated within three days of the subsidence of a reaction caused by a previous treatment. If the eye condition improves as the result of prostatic massage and then remains stationary, there probably is a recurrent dental infection, the supposedly normal tonsils are in reality infected ones, or there is further trouble in a facial sinus. If the eye condition becomes worse as the result of prostatic massage of the gentlest type, it is evident that the toxin threshold is so low that the prostatic manipulations should be stopped until the eye condition reaches a stationary stage or definitely improves. Few methods of treatment require more judgment and restraint than does the attack of a prostatic infection in the presence of a focal infective eye lesion.

**Homatropine and Atropine Cycloplegia.** — Bothman describes experiments in which he demonstrated that atropine is a better cycloplegic than homatropine. He believes that it should be used more in refraction, especially in myopia. When persons with good unaided vision accept weak minus corrections under homatropine, refraction should be done under atropine.

## Canadian Medical Association Journal, Montreal

**26:** 273-392 (March) 1932

Diagnosis and Treatment of Milder Affective Disorders (Depressions and Elations). L. F. Barker, Baltimore.—p. 273.
Relation of Tuber Cinereum to Gastric and Cardiac Functions: Preliminary Note. J. Beattie, Montreal.—p. 278.
*Glycosuria in Pregnancy. Lillian A. Chase, Regina, Sask.—p. 279.
*Pregnancy Glycosuria and Prenatal Care. V. J. Harding and D L. Selby, Toronto.—p. 283.
*Discussion on Etiology and Specific Treatment of Arthritis. F. T. Cadham, Winnipeg, Manit.—p. 287.
Intestinal Erepsin and Phosphatase of Infants with Acute Intestinal Intoxication. G. E. Hall, E. J. King, J. R. Ross and M. M. Shaw, Toronto.—p. 293.
*Effect of Irradiated Foods on Calcium and Phosphorus Metabolism. T. G. H. Drake and F. F. Tisdall, Toronto—p. 296.
Phlyctenular Conjunctivitis in Relation to Tuberculosis in Children. H. I. Kinsey, Toronto.—p. 298.
What Can Be Done in Some Cases of Advanced Malignant Disease? L. J. Carter and R. P. Cromarty, Brandon, Manit.—p. 302.
Tularemia: Report of Case. R. M. Shaw and H. C. Jamieson, Edmonton, Alta.—p. 305.
Chest Radiography and the Practitioner. P. M. Andrus, London, Ont. —p. 308.
Amebic Liver Abscess. Florence J. Murray and P. K. Koh, Ham Heung, Korea, Japan.—p. 312.
Thrombosis of Cerebral Vessels in Infants. R. Simpson, Toronto.—p. 317.
Iodine Poisoning and Iodism from Lipiodol. D. A. Carmichael, Ottawa, Ont.—p. 319.
Modified Tonsillectomy Procedure. C. K. Fuller, Yarmouth, N. S.—p. 321.

**Glycosuria in Pregnancy.**—Chase found sugar in 66 of 100 urinalyses of pregnant patients. One patient who did 100 urinalyses found sugar 47 times. The earliest time in pregnancy that sugar was found was two months. Sugar tolerance curves were done on three pregnant patients and on three patients in whom glycosuria had persisted after delivery; the curves were similar to those found in persons with renal glycosuria. On the basis of her observations, the author concludes that glycosuria in pregnancy is normal. Its frequency depends on how thoroughly it is sought. It does not require dietetic treatment and probably does not predispose to the development of diabetes. It is differentiated from diabetes by the small amount of sugar present, by the absence of thirst, and by the presence of normal blood sugar curves.

**Pregnancy Glycosuria and Prenatal Care.**—Harding and Selby believe that if all pregnancies or a high percentage of pregnancies show glycosuria and are physiologic in character it seems unnecessary from the purely clinical standpoint to distinguish between a glycosuria and a lactosuria, as usually recommended. If the distinction between dextrose and lactose were readily and clearly made, the authors would advise otherwise, on the grounds of completeness of data. In view of the uncertainty of the distinction by the present suggested tests, they think the wiser course is to assume the presence of a glycosuria.

**Etiology and Specific Treatment of Arthritis.**—Cadham has had the opportunity to observe the effects of treatment with autogenous vaccines of some ninety patients suffering from chronic polyarthritis. In over eighty of these patients the use of the vaccine was followed by some amelioration of the symptoms, and in many cases by complete relief; a few patients showed no benefit.

**Effect of Irradiated Foods on Calcium and Phosphorus Metabolism.**—Drake and Tisdall report that the administration of vitamin D in the form of irradiated muffets and farina to children from 9 to 11 years of age on a low calcium diet resulted in an increased efficiency in the utilization of calcium and phosphorus. Also the results furnish further evidence of the importance of vitamin D in human metabolism at periods other than infancy.

## Illinois Medical Journal, Chicago

**61:** 181-268 (March) 1932

*Correlation of Clinical Manifestations and Pathologic Changes in Nephritis. J. P. Simonds, Chicago.—p. 201.
Complete Separation of Mucosa of Gallbladder from Overlying Structures: Report of Case. E. S. Judd, Rochester, Minn., and C. B. Puestow, Chicago.—p. 204.
Disease of Orbit. M. Goldenburg, Chicago.—p. 205.
Nonvenereal Prostatitis. M. J. Freeman, Chicago.—p. 211.
The Old and the New in Medicine and Surgery. W. S. Bainbridge, New York.—p. 213.
Thyroidectomy, with Especial Reference to Factors Concerning Mortality. R. F. Weissbrenner, Chicago.—p. 216.
History of Development of Physiology in United States. C. I. Reed, Chicago.—p. 220.
Spinal Anesthesia in Gynecology. A. Gabrielianz, Chicago.—p. 226.
Precipitating Factors in Mental Disorders. S. N. Clark, Jacksonville. —p. 230.
Postoperative Patient. N. N. Crohn, Chicago.—p. 235.
*Atypical Scarlet Fever. A. I. Love, Chicago.—p. 238.
Arthritis: Systemic Disease. E. F. Traut, Oak Park.—p. 241.
Tularemia in Chicago: Report of Six Surgical Cases. H. Jackson and B. Seid, Chicago.—p. 243.
*Edema of Larynx: Its Etiology and Treatment. C. D. Sneller, Peoria. —p. 246.
Etiologic Relationship of Certain Grain Fungi to Acrodynia, Thrombo-Angiitis Obliterans and Related Conditions. J. Klein, Chicago.—p. 254.
Cervical Phlegmon Following Local Tonsillectomy: Report of Four Cases. J. W. Hayden, Chicago.—p. 257.
Traumatic Lesions of Urogenital Tract. C. M. McKenna, Chicago.—p. 259.
Rôle of Orthopedic Surgery in Infantile Paralysis. J. L. Porter, Evanston.—p. 262.

**Correlation of Clinical Manifestations and Pathologic Changes in Nephritis.**—Simonds believes that for practical purposes, both clinical and pathologic, nephritis can be conveniently divided into two main groups: the cases in which the primary damage is to the secretory portion of the kidneys, and those in which the primary lesion is in the smaller arteries and arterioles. Cases of the first type may be acute, subacute or chronic and have been variously termed parenchymatous nephritis, glomerulonephritis and nephrosis; those of the latter group are practically always chronic and include the so-called chronic interstitial nephritis and arteriosclerotic, primary and genuine contracted kidneys. These two groups are each characterized by definite morphologic changes in the kidneys and each affects the functions of these organs in a different manner. In the first type the secretory portion of the kidneys is primarily damaged. The effect of this on the functions of these organs is to increase the permeability of their filtration apparatus. There is no retention of waste products in the blood or of dye in renal function tests, but a retention of crystalloids in the tissues, perhaps as a sort of compensatory mechanism, with resultant edema. In the second type the secretory portion is not primarily damaged. The alteration in function is due to disturbances in the circulation through the arterioles with reduction in blood volume and blood pressure, and, therefore, of available filtration pressure, within the glomeruli. An increase in systemic blood pressure temporarily compensates for this condition, but sooner or later retention of waste products in the blood occurs. The increased quantity of urine of low specific gravity is the result of inadequate absorption by the tubules because of interference with their nutrition. In the treatment of these two types, quite different methods would appear to be rational. In the first type a high protein diet should aid in restoring the depleted serum albumin. Reduction of water intake and of salt in the diet should aid in relieving the edema. In the second type a high protein diet would add to the nitrogenous waste products, which the kidneys are already unable adequately to excrete. Normal or abundant water intake might aid in flushing out the accumulated waste products.

**Atypical Scarlet Fever.**—Love calls attention to the fact that the character of scarlet fever has changed in recent years and a mild atypical form is very prevalent. Careful examination and prolonged observation is often necessary to diagnose these cases. Early diagnosis and recognition of the mild atypical case is a great factor in preventing the spread of scarlet fever.

**Edema of Larynx.**—According to Sneller, laryngeal edema, producing acute laryngeal obstruction, is caused by or associated with a great variety of conditions and diseases. It is the most frequent cause of acute laryngeal obstruction. An early diagnosis of the cause is essential for the most efficient treatment of the laryngeal obstruction. The degree of acute laryngeal obstruction has no direct relation to the seriousness of the condition or disease. Tracheotomy is preferable, particularly in acute laryngotracheobronchitis, when secretions become tenacious and abundant. Intubation may be preferable if edema is not great, if duration of intubation is short, and if tracheobronchial secretions are not tenacious and abundant. The prognosis is more dependent on the general toxemia than on the laryngeal obstruction itself, provided this is relieved fairly early.

## Journal of Clinical Investigation, Baltimore

**11:** 249-454 (March) 1932

*Intravenous Injections: Study of Composition of Blood During Continuous Trauma to Intestines When No Fluid Is Injected and When Fluid Is Injected Continuously. J. W. Beard and A. Blalock, Nashville, Tenn.—p. 249.

Id.: Study of Effects on Composition of Blood of Injection of Various Fluids into Dogs with Normal and with Low Blood Pressures. A. Blalock, J. W. Beard and C. Thuss, Nashville, Tenn.—p. 267.

Study of Effects of Hemorrhage, Trauma, Histamine and Spinal Anesthesia on Composition of Blood When No Fluids Are Injected and When Fluids Are Introduced Intravenously. J. W. Beard, H. Wilson, B. M. Weinstein and A. Blalock, Nashville, Tenn.—p. 291.

Effects on Composition of Blood of Subcutaneous Injection of Normal Salt Solution into Normal Dogs and into Dogs Subjected to Intestinal Trauma, Graded Hemorrhages and Histamine Injection. A. Blalock and J. W. Beard, Nashville, Tenn.—p. 311.

*Studies in Metabolism of Sodium r-Lactate: I. Response of Normal Human Subjects to Intravenous Injection of Sodium r-Lactate. A. F. Hartmann and M. J. E. Senn, St. Louis.—p. 327.

Id.: II. Response of Human Subjects with Acidosis to Intravenous Injection of Sodium r-Lactate. A. F. Hartmann and M. J. E. Senn, St. Louis.—p. 337.

Id.: III. Response of Human Subjects with Liver Damage, Disturbed Water and Mineral Balance, and Renal Insufficiency to Intravenous Injection of Sodium r-Lactate. A. F. Hartmann and M. J. E. Senn, St. Louis.—p. 345.

*Celluloid Capsule for Measuring Venous Pressures. A. Krogh, A. H. Turner and E. M. Landis, Copenhagen, Denmark.—p. 357.

Cutaneous Respiration in Man: IV. Rate of Carbon Dioxide Elimination and Oxygen Absorption in Normal Subjects. A. C. Ernstene and Marie C. Volk, Boston.—p. 363.

Id.: V. Rate of Carbon Dioxide Elimination and Oxygen Absorption in Subjects with Diseases of Skin. A. C. Ernstene and Marie C. Volk, Boston.—p. 377.

*Id.: VI. Effect of Drugs on Rate of Carbon Dioxide Elimination and Oxygen Absorption. A. C. Ernstene and Marie C. Volk, Boston.—p. 383.

Id.: VII. Effect of Venous Congestion on Rate of Carbon Dioxide Elimination and Oxygen Absorption. A. C. Ernstene and Marie C. Volk, Boston.—p. 387.

Studies of Calcium and Phosphorus Metabolism: XIV. Relation of Acid-Base Balance to Phosphate Balance Following Ingestion of Phosphates. W. T. Salter, R. F. Farquharson and Dorothy M. Tibbetts, Boston.—p. 391.

*Studies in Parathyroid Physiology: III. Effect of Phosphate Ingestion in Clinical Hyperparathyroidism. F. Albright, W. Bauer, Dorothy Claflin and Jessie Reed Cockrill, Boston.—p. 411.

Specific Dynamic Response to Protein of Individuals Suffering from Disease of the Hypophysis. Margaret Woodwell Johnston, Ann Arbor, Mich.—p. 437.

*Stimulation of Gastric Pepsin by Histamine. W. S. Polland, San Francisco.—p. 449.

**Intravenous Injections.**—Beard and Blalock performed all their experiments on dogs that were deeply anesthetized by sodium barbital. Shock was produced by continuously passing the intestine between the fingers. Blood serum and the fluid that escaped into the peritoneal cavity were collected frequently for the studies. In the first group of experiments, studies were performed on the blood serum and the peritoneal fluid during continuous trauma to the intestine. No fluid was administered. Among the observations were the following: 1. There was a great diminution in the volume of plasma in the circulation. 2. The protein content per unit volume of serum remained approximately the same throughout the experiments. 3. The total protein content of the blood serum and of the peritoneal fluid was approximately the same in all instances. 4. The content in albumin of the peritoneal fluid was usually greater than that of the blood serum and the content in globulin was less. In the second group of experiments, various solutions were injected intravenously at a constant speed while the intestine was being traumatized. Among the observations were the following: 1. The total protein content of the blood serum and of the peritoneal fluid that were collected simultaneously was approximately the same in all experiments. 2. The albumin content of the peritoneal fluid was usually greater than that of the blood serum, while the globulin content was less. 3. The injection of solutions of sodium chloride and dextrose was usually associated with a decrease in the percentage of protein per unit volume of serum, a diminution of the volume of plasma in the circulation and a great decrease in the absolute plasma protein. 4. When solutions of acacia were injected, there was a decrease in the percentage of protein, an increase in the plasma volume and a decrease in the absolute amount of plasma protein. 5. The injection of blood serum was usually associated with comparatively small alterations in the percentage of protein, the volume of plasma and the absolute amount of plasma protein. 6. When whole blood was injected, there was very little alteration in the percentage of protein in the blood serum. Since there was a tremendous increase in concentration of the blood, there was probably a rather large reduction in the plasma volume and in the absolute amount of plasma protein.

**Studies in Metabolism of Sodium r-Lactate: I.**—In seven essentially normal children Hartmann and Senn studied the effects of the intravenous injection of from 4 to 7 cc. of molar solution of sodium r-lactate per kilogram of body weight, with the following results: 1. The racemic mixture is practically completely metabolized in from one to two hours. 2. The conversion of lactate into dextrose is apparent from the uniform rise of the latter in the blood. 3. The liberation of the sodium ion is practically quantitative, the base appearing in the body fluids chiefly as sodium bicarbonate. 4. Excretion of excess base into the urine takes place promptly, and alkalosis is usually of short duration. 5. During the period of alkalosis, no signs of tetany were noted.

**Celluloid Capsule for Measuring Venous Pressures.**—Krogh and his associates describe a celluloid capsule for the determination of venous pressures. This is easily made, and notches can be cut so that it will fit any arrangement of veins. It is cemented to the skin with collodion. When with high venous pressures the necessarily high intracapsular pressure would cause distortion of the skin and erroneous readings, the error can be avoided by the use of a counter-weighting clamp, also described. Such a counterweight is usually needed for the measurement of venous pressures above 30 cm. water pressure.

**Cutaneous Respiration in Man: VI.**—Ernstene and Volk made measurements of the effect of epinephrine, pituitary posterior lobe extract, histamine and pilocarpine on the rate of cutaneous respiration in three normal subjects. None of the drugs significantly altered the rate of carbon dioxide elimination and oxygen absorption through the skin. The failure to affect the rate of cutaneous respiration indicates that the drugs did not significantly alter the metabolic rate of the skin or the tension of the gases in that portion of the blood in equilibrium with the tissues.

**Studies in Parathyroid Physiology.**—Albright and his associates treated three patients with clinical hyperparathyroidism by ingestion of phosphates with beneficial results. The metabolic sequelae of such treatment are: (1) almost complete absorption of phosphates into the blood stream; (2) rapid excretion of the absorbed phosphates by the kidneys; (3) a rise of the previously low serum phosphorus; (4) a fall of the previously elevated serum calcium; (5) a rise at first of the calcium × phosphorus product in the serum; and (6) a fall of the urinary calcium excretion. The net result is an increase in the balances of calcium and phosphorus and a return of the serum levels of both in the direction of normal. The rapidity with which the absorbed phosphorus is excreted in the urine and the resistance which the low serum phosphorus exhibits to being raised suggest that the threshold for phosphorus excretion into the urine is lowered in hyperparathyroidism, and the authors consider this the most fundamental change in the calcium and phosphorus metabolism in this condition. It appears that in long standing hyperparathyroidism there is increased absorption of calcium and phosphorus from the gastro-intestinal tract and that excretion of calcium into the gastro-intestinal tract is not a threshold phenomenon dependent on the level of serum calcium.

**Stimulation of Gastric Pepsin by Histamine.**—Polland presents evidence to show that, in human subjects, histamine stimulates secretion of gastric pepsin. The character of the pepsin curve and the similarity of the response after the second and third injections of histamine can be interpreted satisfactorily only by assuming that histamine stimulates the peptic cells. The effect after the first stimulus is probably best explained by a mechanical lavaging of pepsin which has accumulated in the furrows and tubules of the gastric mucosa plus an actual stimulating effect by the histamine. Therefore it appears that, in studying gastric secretion in human subjects, histamine is suitable for determining the capabilities of the pepsin-secreting glands as well as the acid-secreting glands. Although the two processes are independent, they are influenced by the same stimulus.

## Journal of Experimental Medicine, Baltimore

**55**: 325-504 (March) 1932

- *Carbohydrates Adsorbed on Colloids as Antigens. J. Zozaya, Glen Olden, Pa.—p. 325.
- *Immunologic Reactions Between Dextran Polysaccharide and Some Bacterial Antiserums.* J. Zozaya, Glen Olden, Pa.—p. 353.
- *Determination of Lung Volume by Respiration of Oxygen Without Forced Breathing. J. Sendroy, Jr., Alma Hiller and D. D. van Slyke, New York.—p. 361.
- Factors Affecting Yield of Specific Enzyme in Cultures of Bacillus Decomposing Capsular Polysaccharide of Type III Pneumococcus. R. Dubos, New York.—p. 377.
- *Action of Specific Enzyme on Dermal Infection of Rabbits with Type II Pneumococcus. K. Goodner, R. Dubos and O. T. Avery, New York.—p. 393.
- Brain to Brain Transmission of Submaxillary Gland Virus in Young Guinea-Pigs. N. P. Hudson and F. S. Markham, Chicago.—p. 405.
- *Vessels Involved in Hydrostatic Transudation. P. D. McMaster and* S. Hudack, New York.—p. 417.
- Gradient of Permeability of Skin Vessels as Influenced by Heat, Cold and Light. S. Hudack and P. D. McMaster, New York.—p. 431.
- Properties of Causative Agent of Chicken Tumor: II. Inactivation of Tumor-Producing Agent by Monochromatic Ultraviolet Light. E. Sturm, F. L. Gates and J. B. Murphy, New York.—p. 441.
- *Association of Pneumococci, Hemophilus Influenzae and Streptococcus Hemolyticus with Coryza, Pharyngitis and Sinusitis in Man. L. T. Webster and A. D. Clow, New York.—p. 445.
- Effect of Testis Extract on Growth of Transplantable Mouse Tumors. R. C. Tanzer, New York.—p. 455.
- Studies on Nature of Agent Transmitting Leukosis of Fowls: I. Its Concentration in Blood Cells and Plasma and Relation to Incubation Period. J. Furth, Philadelphia, with assistance of C. Breedis and Ruth Klingelhofer.—p. 465.
- Id.: II. Filtration of Leukemic Plasma. J. Furth and A. K. Miller, Philadelphia, with assistance of C. Breedis.—p. 479.
- Id.: III. Resistance to Desiccation, to Glycerin, to Freezing and Thawing; Survival at Ice Box and Incubator Temperatures. J. Furth, Philadelphia, with assistance of Clara B. Taylor and C. Breedis.—p. 495.

**Carbohydrates Adsorbed on Colloids as Antigens.**—Zozaya presents evidence that polysaccharides can be rendered antigenic by haptogenic adsorption on a colloid carrier. The polysaccharides studied were those of Bacillus anthracis, the meningococcus, Streptococcus viridans (Bargen), Bacillus proteus, Bacterium morgani, Bacillus dysenteriae, both the Shiga and Hiss types, and the pneumococci. With the polysaccharide of type III pneumococci, the author was unable in six weeks to produce any detectable protective antibodies, but he was able to produce anticarbohydrate antibodies. All the bacterial carbohydrates were nonantigenic alone when used in the doses indicated, though containing some nitrogen. Dextran, which was free from nitrogen, was also rendered antigenic by the adsorption method.

**Determination of Lung Volume by Respiration of Oxygen Without Forced Breathing.**—Sendroy and his associates describe a method for estimating the volume of air in the lungs by the familiar principle of mixing this air with a measured volume of oxygen, and determining the extent to which the nitrogen of the pulmonary air is diluted. By employing a scrubber to remove carbon dioxide, and by measuring the volume of gas in the extrapulmonary part of the system at the end instead of the beginning of the respiratory period, it is possible to prolong the period to as many minutes as are necessary for complete mixture of the gases, and thereby to carry out the estimation without forced breathing. The determination can be carried out with the Roth-Benedict or Krogh spirometer, described by the authors, assembled from ordinary laboratory equipment. The method gives the same results as the hydrogen method of Van Slyke and Binger, and obviates the use and analysis of hydrogen. The relative advantages of the two methods are discussed.

**Action of Specific Enzyme on Dermal Infection with Type II Pneumococcus.**—The action of the enzyme which specifically decomposes the capsular polysaccharide of type III pneumococcus was tested by Goodner and his associates in type III pneumococcus dermal infections in rabbits. When injected in sufficient amounts, this enzyme is capable of bringing about a favorable and early termination of the experimental disease, which ordinarily is fatal in nearly all instances. The results of the study yield further evidence that the capsular substance is of great importance in pneumococcus infection, since, in so far as known, the only action of which the specific enzyme is capable is that of decomposing the capsular polysaccharide.

**Coryza, Pharyngitis and Sinusitis in Man.**—According to Webster and Clow, persons free of pneumococci, Hemophilus influenzae and Streptococcus hemolyticus are in general free of coryza, sore throat, and influenzal and sinus attacks; persons who are occasional or periodic carriers of these organisms may be negative on tests over long healthy periods but generally become positive during or following attacks and subsequently become negative again; finally, persons who are chronic carriers show during these illnesses increasing numbers of organisms in the throat and extension of the organisms to the nose. The authors made an addition to the knowledge of the mode of spread of these organisms. A focus of growth and dissemination was determined in the nasal passages and throat of individuals with chronic disease of the upper respiratory tract, and increases in numbers of the organisms at the focus and their spread to contacts were related to the winter season and to the occurrence of symptoms in the carrier. The observations suggest that the dosage of these organisms in a community is controlled by the resistance of the carrier and of the contacts. This view is in agreement with the facts derived from studies of native animal infections.

## Michigan State M. Soc. Journal, Grand Rapids

**31**: 173-242 (March) 1932

- Specialism: Its Ideals and Standards. J. M. Robb, Detroit.—p. 173.
- Transurethral Prostatic Resection: Recent Development in Genito-Urinary Surgery: Preliminary Report. R. M. Nesbit, Ann Arbor.—p. 176.
- Sociological Aspects of Contraception. H. S. Collisi, Grand Rapids.—p. 178.
- Gallbladder Surgery in Aged. W. L. Hackett, Detroit.—p. 182.
- Bone Grafting: Some Fundamental Principles. V. L. Hart, Ann Arbor.—p. 184.
- *Appendicitis Under Two Years. R. M. Kempton, Saginaw.—p. 188.
- *Rehabilitation of Patients with Infantile Paralysis. N. Capener, Ann Arbor.—p. 191.
- Sodium Amytal in Treatment of Toxemia of Pregnancy. R. Kennedy, Detroit.—p. 197.
- Renal Tuberculosis with Anuria Due to Calculus Disease. G. Sewell, Detroit.—p. 199.
- Famous Men in Medical History: John Shaw Billings. H. J. Faul.—p. 204.
- Michigan's Department of Health. C. C. Slemons, Lansing.—p. 212.

**Appendicitis Under Two Years.**—Kempton emphasizes the fact that the possibility of appendicitis should be kept in mind regardless of age. Appendicitis is a rare disease in the first year of life, somewhat more frequent in the second year, and gradually increases in frequency during the years of early childhood and young adult life. Owing to indefinite symptoms, difficulty of careful abdominal palpation and failure to have the condition in mind, it is likely that many cases go undiagnosed during the first two years of life. Abdominal palpation, together with white and differential blood counts, should be routine in all cases with symptoms of vomiting or abdominal pain. Rectal examination and examination under light anesthesia may be useful aids in making the diagnosis.

***Rehabilitation of Patients with Anterior Poliomyelitis.***—Capener believes that every case of anterior poliomyelitis demands, in its treatment, the cooperation of an orthopedic surgeon at the earliest possible date. Careful anatomic and physiologic studies must be made if adequate measures are to be taken in the prevention of deformities and loss of function.

In the reeducation of paralyzed muscles, the most valuable physical therapeutic measure is the warm brine bath. In the acute stage, irritative physical therapy is to be condemned. The optimum position of joints for the return of muscle function is discussed and apparatus described for the retention of these positions. In the later stages of the disease, operative treatment is used to correct deformities, stabilize joints and reestablish muscle balance.

## Missouri State M. Assn. Journal, St. Louis

**29:** 51-104 (Feb.) 1932

Suprapubic Prostatectomy Under Vision with Reconstruction of Bladder Neck. C. K. Smith and J. M. Nisbett, Kansas City.—p. 51.
Orthopedics and General Practitioner. G. K. Coonse, Columbia.—p. 55.
Chemistry of Dehydration: Its Relation to Practical Treatment of Gastro-Intestinal Disturbance in Early Childhood. F. C. Neff, Kansas City.—p. 58.
Cosmetics. N. Tobias, St. Louis.—p. 63.
Problem of State Care of the Mentally Sick: Urgent Need of Efforts for Preservation of Mental Health. M. P. Overholser, Harrisonville.—p. 69.
The Manic-Depressives: Further Plea for Their Clinical Recognition. F. R. Fry, St. Louis.—p. 74.
Reduction of Edemas by Novasurol. W. M. Whitaker, Quincy, Ill. —p. 75.
Social Insurance. E. H. Ochsner, Chicago.—p. 79.

**29:** 105-154 (March) 1932

Modern Treatment of Cancer of Cervix Uteri. H. S. Crossen, St. Louis.—p. 105.
Technic of Breech Presentation. E. L. Dorsett, St. Louis.—p. 109.
Epithelioma. O. H. McCandless, Kansas City.—p. 111.
Carcinoma of Colon. C. J Hunt, Kansas City.—p. 114.
*Management of Acute Otitis Media and Its Complications. J. B. Costen, St. Louis.—p. 118.
*Hyperpyrexia in Treatment of Dementia Paralytica. G. W. Robinson, Jr., and P. A. Johnson, Kansas City.—p. 121.
Achlorhydria. E. W. Willhelmy, Kansas City.—p. 125.
Etiologic Incidence of Organic Heart Disease. L. H. Fuson, St. Joseph.—p. 128.
*Bacterium of Acute Rheumatism: Report of Fatal Case. W. M. Whitaker, Quincy, Ill.—p. 134.

**Acute Otitis Media and Its Complications.**—Costen states that the red drum without tympanic fluid or bulge is the one that responds to general measures. The bulging drum with tympanic fluid under pressure has the best chance of recovery without incident if incised early under careful aseptic precautions. Frequent irrigation with sterile physiologic solution of sodium chloride is a good localizing and therapeutic agent and can be handled at home, where most ear infections are treated. Simple mastoidectomy is without shock and is promptly to be advised if otitic sepsis is progressive. A residual headache or pain over the eye on the side of the ear infection, even if drainage from the ear has subsided, should be regarded with grave concern, especially in adults or people of advanced age. Frequent, small transfusions of whole blood, used early, continuously and late, are of the greatest value in any case of severe otitic sepsis.

**Hyperpyrexia in Treatment of Dementia Paralytica.**—Robinson and Johnson believe that no one form of treatment should be rigidly adhered to in private practice in dementia paralytica. Hyperpyrexia is the type of treatment that gives the best results in dementia paralytica and should be given early before ganglion cell death has become too widespread. Of all hyperpyrexic methods, diathermy is the most easily controlled, has fewer complications, can be used in cases in which all other forms of treatment are contraindicated, and is as efficient as any other method. A hopeless prognosis in the individual case should never be given; early heroic methods may help in cases that are seemingly hopeless.

**Bacterium of Acute Rheumatism.** — According to Whitaker, investigations both of human subjects and of experimental animals point to the incidence of the streptococcus as the sole organism in acute rheumatism. Different strains of streptococci are responsible. This is evidenced by the results of blood and tissue cultures isolated from rheumatic cases. A case of acute, fulminant rheumatic disease with involvement of the heart, cerebral and spinal meninges, lungs and pleurae, is presented. A diplococcal organism, analogous in cultural reactions and microscopic morphology to the Diplococcus rheumaticus of Poynton and Pain, was isolated from this case. Such observations and past and present studies tend to dispute the nonhemolytic Streptococcus cardioarthritidis as being the sole cause of rheumatic fever.

## New England Journal of Medicine, Boston

**206:** 429-490 (March 3) 1932

Diagnosis and Treatment of Carcinoma of Colon. E. L. Young, Jr., Boston.—p. 429.
Convalescent Serum Therapy in Preparalytic Poliomyelitis. S. D. Kramer, Roslindale, Mass.; W. L. Aycock, Boston; C. I. Solomon, Brooklyn, and C. L. Thenebe, Hartford, Conn.—p. 432.
Present Status of B C G Vaccination. S. A. Petroff, Trudeau, N. Y. —p. 436.
Administrative and Economic Aspects of Rural Hospital as an Agency of Social Service. J. A. Hamilton, Hanover, N. H.—p. 442.
The Medical Practice Act. S. Rushmore, Boston.—p. 449.

**206:** 491-544 (March 10) 1932

*Intracistern Serum Treatment of Neurosyphilis. H. R. Viets, Boston. —p. 491.
Prostatic Pitfalls. A. H. Crosbie, Boston.—p. 500.
*Pathologic-Physiologic Studies on Changes in External Secretions of Pancreas and Liver. C. W. McClure and Mildred E. Huntsinger, Boston.—p. 507.
Progress in Proctology. E. P. Hayden, Boston.—p. 516.

**Intracistern Serum Treatment of Neurosyphilis.**—Viets believes that there are distinct advantages to the intracisternal serum method of treatment in neurosyphilis over other modes of therapy. The pain and sphincter weakness, often noted after intraspinal treatment, are avoided. By a careful checking of the tests in the cerebrospinal fluid each time an injection is made, the amount of treatment necessary to bring the spinal fluid to normal and the general prognosis of the case can be accurately gaged. The method may be used as an office procedure, thus keeping the patient at his normal occupation. The results obtained are better than with most other forms of treatment, especially in selected cases. Often rapid changes take place in the spinal fluid as the result of intracistern serum and as much is accomplished in a few months as is usually accomplished in a few years of intravenous treatment. The technic is not difficult to learn, but there are distinct dangers from the method in the hands of a careless operator. Treatment should be given not oftener than once in two weeks and should be continued until the spinal fluid has approached normal or is in its normal state.

**Changes in External Secretions of Pancreas and Liver.**—McClure and Huntsinger report that investigation of the literature shows that the great majority of observers have used analytic methods and experimental conditions for the study of the pancreatic fraction of duodenal contents which render problematic the clinical interpretation of the results obtained. However, a system of duodenal analysis has been developed which permits estimations to be made of both the pancreatic and the biliary fraction of duodenal contents, which are sufficiently accurate for reliable clinical interpretation. Using this system, the authors made a study of patients with cirrhosis of the liver, toxic jaundice, cholecystitis, cancer of the pancreas, uncomplicated duodenal ulcer and a smaller number forming a miscellaneous group, together with a series of patients who had undergone cholecystectomy. The observations warrant the following conclusions: Qualitative changes in the bile, interpreted as resulting from hepatic dysfunction, are the rule in organic diseases of the liver and gallbladder. The observations suggest that functional disturbances of the liver cells play an important part in the development of clinical jaundice. They indicate that toxic jaundice results from hepatic dysfunction rather than from occlusion of the common bile duct. In the absence of demonstrable lesions affecting the common bile or pancreatic ducts, mild pancreatic dysfunction occurred in the large majority of patients with hepatic cirrhosis, toxic jaundice and after cholecystectomy. This observation was interpreted as a result of hepatic functional disturbance, affecting interrelated pancreatic function. Hepatic dysfunction occurs in duodenal ulcer in the absence of demonstrable organic biliary lesions, as evidenced by qualitative changes in the bile. Pancreatic dysfunction may be the earliest objective evidence of malignant involvement of retroperitoneal lymph nodes. The observations confirm previous ones and show that abnormal pancreatic and biliary fractions of duodenal contents occur, respectively, when lesions obstruct the pancreatic or biliary ducts, in the presence of destructive lesions of either organ, in circulatory disturbances of them, and in the presence of functional disturbances without demonstrable organic basis.

## New Orleans Medical and Surgical Journal

**84:** 663-740 (March) 1932

Widening Horizon of Child Health. W. W. Butterworth, New Orleans. —*p. 663.*
Doctor Frederick Loeber: 1839-1901. A. E. Fossier, New Orleans. —*p. 667.*
Word Concerning Elliot's Trephine Operation. H. D. Bruns, New Orleans.—p. 671.
Diagnostic Importance of Roentgenology in Medicine. L. J. Menville, New Orleans —p. 674.
Headaches of Gastro-Intestinal Origin. D. C. Browne, New Orleans. —*p. 680.*
Cystocele and Prolapse. H. E. Miller, New Orleans.—p. 687.
Problem of Psychopathic Personality. G. F. Roeling, New Orleans. —*p. 693.*
Multiple Myeloma: Report of Case. W. R. Wirth, New Orleans. —*p. 698.*

## Pennsylvania Medical Journal, Philadelphia

**35:** 279-346 (Feb ) 1932

Fads and Fancies in Present Day Pediatrics. J. L. Morse, Boston. —p. 279.
Pyonephrosis. G. P. Muller, Philadelphia —p 286.
Symposium on Bone Marrow Reactions. Granulopenia. G. M. Piersol, Philadelphia.—p. 287.
Leukemoid Blood Reactions: Differential Diagnosis of Conditions Which May Stimulate Leukemias. T. Fitz-Hugh, Jr., Philadelphia.—p. 290.
Diagnosis and Treatment of Polycythemia. S. S Leopold, Philadelphia.—p. 293.
Mental Defective and His Needs. W. C Sandy, Harrisburg.—p. 295.
Critical Comment on Usual Treatment of Hypertension. A. H. Colwell, Pittsburgh.—p. 298.
Asteroid Hyalitis: Report of Two Cases. H. M. Griffith, Johnstown. —p. 301.
Symposium on Relation of Dental Surgeon, Oral Surgeon and Rhinologist in Antrum Infections: Anatomy of Maxillary Sinus. R. M. Walls, *Bethlehem.—p. 302.*
Maxillary Sinus as Viewed by Rhinologist. S. R. Skillern, Jr., Philadelphia.—p. 306.
Oral Surgeon. L. Curtis, Philadelphia.—p. 308.
Some Diseases of Skin Offering Difficulties in Diagnosis. F. C. Knowles, *Philadelphia.*—p. *312.*

## Rhode Island Medical Journal, Providence

**15:** 39-56 (March) 1932

*Resuscitation. A. H Miller, Providence.—p. 39.
Communicable Sore Eyes in the New-Born. A. B. Ingels, Providence. —p. *43.*

**Resuscitation.**—Miller states that resuscitation is possibly effective thirty minutes after the heart has ceased to beat. It should be persisted in for another thirty minutes before one loses courage. Infants have been resuscitated and have recovered when there had been no voluntary respiratory movements for two and a half hours. As long as the circulation is maintained, there is hope. When there is need for resuscitation, time must not be wasted in moving the patient or waiting for the arrival of an inhalator. Artificial respiration by one of the manual methods should be instituted as soon as possible and continued while the inhalator is on the way. When the inhalator arrives, it should be used even if respiration has been established by manual methods. In cases treated with carbon dioxide and oxygen, pneumonia does not develop, which was the regular sequence of carbon monoxide poisoning before the introduction of the inhalator. When artificial respiration must be performed for a long period, as in the paralysis of anterior poliomyelitis or in poisoning from morphine or alcohol, the Drinker respirator is invaluable. It produces efficient artifical respiration over periods of days or weeks without strain on the operator or damage to the patient.

## Surgery, Gynecology and Obstetrics, Chicago

**54:** 477-604 (March) 1932

*Studies of Gallbladder Function: III. Study of Alleged Impediment in Cystic Duct to Passage of Fluids. C. G. Johnston and C. E. Brown, Philadelphia.—p. 477.
*Histology of Case of Ovarian Pregnancy at End of Second Month.* H. E. Jordan, Charlottesville, Va.; B. C. Garrett and W. J. Norfleet, Shreveport, La.—p. 485.
*Relationship of Carcinoma of Body of Uterus and of Ovaries. S. R. Offutt, Rochester, Minn.—p. 490.
**Abdominal and Pelvic Fascias with Surgical Applications.* J. W. Davies, New York.—p. 495.
*Retroperitoneal Syndrome and Relation Between Kidney and Gastro-Intestinal Reflexes. L. Tixier and C. Clavel, Lyons, France.—p. 505.
*Pathologic Studies on Injected Varicose Veins. N. H. Lufkin and H. O. McPheeters, Minneapolis.—p. 511.
Clinical Surgery: Thyroidectomy. R. V. B. Shier, Toronto, Canada. —p. 518.
Further Suggestion for Operative Treatment of Pilonidal Sinuses. F. H. Lahey, Boston.—p. 521.
Fibroblastoma (Fibroma) of Kidney: Report of Case with Review of Literature. H. L. Kretschmer, Chicago.—p. 524.
Development of Mercurochrome Technic in Obstetrics: Report of Ten Thousand Cases, Five Thousand of Which Were Studied During Experimental Stage. H. W. Mayes, *Brooklyn.—p. 529.*
Carcinoma of Tonsil. Review of One Hundred and Twenty-Two Histologically Proved Cases Treated from 1921 to 1928, Inclusive. J. J. *Duffy, New York.*—p. *539.*
Thyroidectomy for Thyrotoxicosis. H. M. Richter, Chicago.—p. 551.
Acute and Chronic Infections of Parotid Gland: *Treatment by Dilation* of Stenson's Duct. W. H. Hobbs, H. Sneierson and C. L. Faust, Binghamton, N. Y.—p. 555.
Intussusception: Surgical Treatment in Reducible Cases. O. F. Lamson, Seattle.—p. 564.
*Epilepsy. G. W. Swift, Seattle.—p. 566.
*Marching Fractures of Metatarsal Bones: Report of Pathology. F. H. Straus, Chicago.—p. 581.
Observations in Raynaud's Disease: Histopathologic Studies. R. G. Spurling, F. Jelsma and J. B. Rogers, Louisville, Ky.—p. 584.
Anomaly of Right Recurrent Laryngeal Nerve. J. de J. Pemberton and M. G. Beaver, Rochester, Minn.—p. 594.

**Alleged Impediment in Cystic Duct to Passage of Fluids.**—In experiments on seven dogs, Johnston and Brown could find no impediment to the passage of fluid through the cystic duct at pressures usually found in the biliary tract. At lower pressures there is, in some animals, an impediment to the passage of fluid from the gallbladder through the cystic duct, which is overcome at pressures of from 10 to 80 mm. of water. In three well preserved human cadavers the authors found no resistance offered to the flow of fluid through the cystic duct, nor were they able to demonstrate any in five fresh necropsy specimens.

**Relationship of Carcinoma of Body of Uterus and of Ovaries.**—Offutt reports that, in a series of 520 cases of adenocarcinoma of the body of the uterus, there was associated carcinoma of the ovary in 11.9 per cent, and in 616 cases of papillary cystadenocarcinoma of the ovary there was associated carcinoma of the body of the uterus in 8.6 per cent. The fallopian tube should be considered as one of the means through which transplantation takes place. Because of the similarity of the adenocarcinomatous cells in the embryologically similar tissues, it is often difficult to determine which carcinoma is primary and which is secondary and whether or not there may originally have been two independent carcinomas. In cases of carcinoma of the ovaries, the possibility of metastasis to the uterine endometrium, even when there is no gross peritoneal evidence of extension of the malignant growth, must be borne in mind. Because of this possibility, hysterectomy at the time of removal of the ovaries must be seriously considered.

**Abdominal and Pelvic Fascias with Surgical Applications.**—According to Davies, two systems of fascia are found in the abdominal and pelvic regions, the one a thick fibrous sheet which ensheathes voluntary muscle, and the other a fibro-areolar layer which surrounds involuntary muscle and organs. Organs and structures related to the skin develop in the subcutaneous layer, while organs and structures related to the abdominal and pelvic cavities develop in the subperitoneal layer. Areas subjected to pressure by distention of the organ or structure are protected by an increased deposit of adipose tissue in the areolar layer. Vessels traversing the fibro-areolar layer are surrounded by an increase of the fibrous tissue. The mesenteroid to each muellerian duct forms the lateral support of the adult uterus and vagina. The vagina, like the rectum, is a muscular tube composed of an inner circular and an outer longitudinal layer of involuntary muscular fibers. It is covered by fibro-areolar tissue. A delicate areolar tissue connects the vagina to the bladder and to the rectum, except in the region of the hemorrhoidal mesenteroid of the vagina. The lateral ligament of the uterus is thinner and wider than the corresponding lateral ligament or mesenteroid of the vagina. The lateral mesenteroid of the vagina is a trapezoid support formed by the vaginal vessels as they traverse the fibro-areolar tissue lateral to the vagina. The anteroposterior flattening of the uterus and the vagina is due to the lateral attachments. The cylindric shape of the cervix is due to the absence of a lateral attachment and the preponderance of circular fibers. The round and uterosacral ligaments are fibromuscular bundles in which the muscular tissue predominates. Side-to-side closure of the vaginal vault following complete hysterectomy will increase the efficiency of the lateral attachments. Plastic operations increase the general pelvic tone by increasing the tone of the lateral mesenteroid of the vagina. The passage of the middle hemorrhoidal vessels from the anterior surface of the rectum to the posterior wall of the vagina forms a distinct mesenteroid, which divides the rectovaginal area into a proximal four fifths and a lower one fifth. Postpartum cervical inspections are facilitated by traction, which is exerted laterally rather than anteriorly and posteriorly. Sulcus tears are often serious, because of a laceration of the vaginal plexus.

**Retroperitoneal Syndrome and Relation Between Kidney and Gastro-Intestinal Reflexes.**—From the point of view of their gastro-intestinal effects, renal reflexes are classified by Tixier and Clavel according to the organ in which they predominate, thus: 1. Renogastric reflexes. They are motor, secretory and vasomotor. Sometimes they are phenomena of stimulation, sometimes of inhibition. The pyloric sphincter is particularly sensitive to these stimuli. 2. Reno-intestinal reflexes. Some reflexes are secretory and vasomotor, others motor. Sometimes spasm is produced, sometimes paralysis. The large intestine is particularly sensitive to these reflexes; the rectum may be the site of similar phenomena, particularly in the course of violent ureteral irritation. 3. Peritonism of renal origin. These different reno-intestinal reflexes may be associated with one another or combined with cardiac, respiratory or vasomotor reflexes to cause a group of symptoms resembling those of peritonitis. The clinical picture is then made up of pain, contracture of the wall, distention, vomiting, arrest of feces and gas, and rapid pulse without fever. This, in the authors' opinion, is the pathogenesis of the retroperitoneal syndrome.

**Studies on Injected Varicose Veins.**—Lufkin and McPheeters state that thrombus formation in varicose veins treated by injection of even "mild" solutions depends on an injury to the endothelial lining of the vessel. Deposition thrombus usually forms the smaller portion of the total occluding mass developed after treatment. The larger mass consists of simple clot. Recurrence probably results from retraction of the clotted portion of the mass from the vessel wall between tributaries of the main channel, with reestablishment of circulation through the new channel.

**Epilepsy.**—Swift believes that the periodic convulsive seizures associated with so-called idiopathic epilepsy begin with a gradual accumulation of cerebrospinal fluid over the cortex and in the cisterns of the brain, causing a constant irritation to the cortex, particularly to the motor areas. The blocking of the cerebrospinal fluid may be due to inflammatory conditions of the arachnoid or pacchionian bodies, or be produced by pressure on any of the venous channels from the superior longitudinal sinus to the heart itself. A general state of hydration is essential for the convulsive seizure in all instances. Anomalous development of the venous dural sinuses is an important factor in epilepsy. Of these sinuses, the transverse sinus is of the most importance. In those cases of anomalous development it is possible, by mobilization of the transverse sinus, to restore a sufficient venous return to prevent, under normal conditions, an accumulation of cerebrospinal fluid in the subarachnoid spaces. The only complication that may arise during the course of this operation is postoperative hemorrhage. This can be avoided by careful attention to all vessels at the time of operation. Indications for this operation are the presence of anomalous venous sinuses in true epileptic patients with otherwise normal physical conditions. Contraindications for this operation are the presence of disturbances due to inflammatory conditions, resulting in obliteration of the openings into the superior longitudinal sinus (pacchionian bodies). Localized accumulations of cerebrospinal fluid over the cortex are, of course, not benefited by this operation. The results of this mobilization bring about a marked improvement in the mental condition of the patient, as well as a decrease to a large proportion of the grand mal attacks and, to a less degree, the petit mal attacks. The operation is applicable in only 20 per cent of cases.

**Marching Fractures of Metatarsal Bones.**—Straus calls attention to the fact that insidious fractures of metatarsal bones may occur after exhaustion of the normal muscle and tendon support to the foot. Such fractures occur without obvious trauma, and without sufficient immediate pain to notify the patient of the injury. Weeks later the developing callus becomes painful and calls attention to the lesion, but by this time the swelling is apt to be considered a neoplasm unless the observer is familiar with the picture of a marching fracture. Search of the literature shows that the problem has engaged several European authors, but no American and only one English article refers to it. The author reports a characteristic case of the lesion. The patient had been previously seen by good surgeons and roentgenologists, who had said she was suffering from a sarcoma, and she had been sent to the hospital to have an amputation of the leg. The author suggests that some cases of Deutschlander's disease may belong in this group of fractures of metatarsal bones.

## Virginia Medical Monthly, Richmond

58: 773-836 (March) 1932

Moral Subnormality as an Expression of Mental Unsoundness. O. B. Darden, Richmond.—p. 773.
Practical Application of Modified Aschheim-Zondek Test for Pregnancy: Demonstration with Test Animals. W. K. Lloyd, Christiansburg.—p. 776.
Value of Hormone Test for Early Pregnancy. W. B. Martin, Norfolk.—p. 780.
Cancer of Cervix: Observations Drawn from Study of One Hundred Cases Treated with Radium. W. L. Peple, Richmond.—p. 782.
Diet in Disease. J. A. Reed, Washington, D. C.—p. 786.
Chronic Cervicitis and Its Treatment. J. W. Henson, Richmond.—p. 788.
*Total Rupture of Kidney: Report of Cases. W. C. Stirling, Washington, D. C.—p. 793.
Hunger Pain Syndrome of Functional Origin and Its Treatment. W. H. Higgins, Richmond.—p. 795.
General and Focal Signs of Intracranial Tumors. T. N. Spessard, Roanoke.—p. 797.
Problems in Relation of Streptococci and Diphtheroid Bacilli to Chronic Infectious Arthritis. A. Straus, Richmond.—p. 801.
*Association of Angina Pectoris and Anemia. W. B. Porter, Richmond.—p. 806.
Traumatic Industrial Surgery. E. T. Trice, Richmond.—p. 808.
Pellagra. J. G. Cox, Hillsville.—p. 811.
Why Always Appendectomy? M. B. Hiden, Warrenton.—p. 812.
Removal of Tonsil by Electrocoagulation. J. B. H. Waring, Cincinnati.—p. 813.
Snake-Bite Poison. O. Marshall, Washington, D. C.—p. 816.

**Total Rupture of Kidney.**—According to Stirling, traumatic injuries of the kidney are relatively infrequent as compared with injuries in other parts of the body. The relative proportion is approximately 1 to 1,000. A prompt and thorough examination, including cystoscopy, should be done in all cases in which injury to the kidney is suspected, in order to lower the mortality and reduce complications to a minimum. Hematuria is the sign seen oftenest, though one or more of the classic signs may be absent. The amount of trauma may bear no relationship to the extent of the injury, as complete rupture of the kidney has been known to follow simple injuries. Complications include injury to the peritoneum, with rupture of the liver, spleen and, in many instances, fracture of one or more ribs. In cases in which one or both poles of the kidney are torn off, nephrectomy should be done to prevent exsanguination. General supportive treatment, including blood transfusion, is of much help in combating the shock. Early exploration, with conservative surgery, offers the patient the best chance of recovery. This includes suture of the torn kidney and packing, if needed, for hemorrhage, together with drainage. The mortality when this has been done is low.

**Association of Angina Pectoris and Anemia.**—Porter studied two cases of megaloblastic anemia and angina pectoris. In each instance, relief was obtained by restoring the normal qualitative state of the blood by liver feeding. In the study of angina pectoris the possibility of an associated anemia as a possible precipitating factor must be considered; or a valuable therapeutic approach to the situation may be omitted. The author's study adds additional evidence to the "myocardial ischemia" conception of the pathogenesis of angina pectoris as opposed to the aortic theory.

## West Virginia Medical Journal, Charleston

28: 97-144 (March) 1932

Certain Aspects of Immunity, Especially as Applied to Tuberculosis: Oration on Medicine. G. H. Barksdale, Charleston.—p. 97.
Studies of White House Conference on Child Health and Protection. S. M. Hamill, Philadelphia.—p. 102.
Practical Methods in Handling of Diabetes. W. M. Sheppe, Wheeling.—p. 113.
Retina in Hypertension: Hypothetical View as to Its Cause. K. G. Khorozian, Pineville.—p. 117.
Romance of Paternalism. W. F. Donaldson, Pittsburgh.—p. 121.
Should Uncle Sam Render Medical Care to Veterans, and How? W. E. Whiteside, Parsons.—p. 124.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

**1**: 363-410 (Feb. 27) 1932

*Clinical Study of Achlorhydria. H. Moore.—p. 363.
*Some Clinical Aspects of Coronary Disease. T. F. Cotton.—p. 368.
Diagnosis of Neurotic Conditions in General Practice. D. Forsyth.—p. 370.
*Use of Vitamin B in Cases of Edema. D. W. Carmalt-Jones.—p. 374.
Shortening an Elongated Uvula for Cure of Cough. J. Dundas-Grant.—p. 375.
Diverticulum of Male Urethra, with Suggestion as to Its Origin. C. H. Carlton.—p. 376.
Human and Bovine Tuberculosis. N. Raw.—p. 377.

**Clinical Study of Achlorhydria.**—For more than ten years Moore has been interested clinically in achlorhydria, and about five years ago his interest in this connection became acute when some peculiar cases of anemia in middle-aged women presented themselves. The anemia in these patients appeared at first sight to be pernicious in type, since there was atrophy of the lingual papillae associated with superficial glossitis and achlorhydria, and the patients had a sallow or subicteroid complexion. The blood examination, however, showed an anemia with a color index well below unity; megalocytosis was absent, and, although there was anisocytosis and poikilocytosis, the average size of the erythrocytes was not greater than normal; the anemia, therefore, was not addisonian in type. As the standard textbooks did not give any information about this syndrome, and as a superficial search of the journals furnished but little, it was evident that it was a form of anemia not generally recognized. During the following years the author endeavored to collect, and when possible to study, cases of this form of anemia —that is, cases of nonmegalocytic anemia presenting a low color index and achlorhydria; he succeeded in collecting thirty-three such cases, in each of which the hemoglobin content of the blood was under 70 per cent. During the same period he did fractional test-meal analyses on as many other patients as was possible, with the idea of obtaining some information relative to the incidence of achlorhydria in other diseases. Out of forty-seven cases of so-called secondary, hypochromic, or nonmegalocytic anemia, thirty-three, or 70 per cent, presented achlorhydria. Therefore this particular form of anemia is probably one of the commonest types of anemia encountered; it is certainly surprising that so little attention has been paid to it in the literature and that it has been so seldom recognized in practice. Out of eighty-three patients with diabetes mellitus, thirty-three, or over 39 per cent, had achlorhydria, and out of forty-seven patients with hyperthyroidism, thirty-seven, or over 78 per cent, had achlorhydria. There were 100 gastro-intestinal cases and 74 miscellaneous cases showing achlorhydria. Out of a total of 1,228 patients tested by the fractional test-meal method during three and a half years, 272, or 22 per cent, had achlorhydria, as judged by this technic. On the basis of his observations the author concludes that achlorhydria, besides being found in a certain proportion of apparently healthy persons, in many cases of gastro-intestinal disease, and in odd cases of miscellaneous disorders, is a frequent observation in diabetes mellitus and a still more frequent occurrence in hyperthyroidism and in the nonmegalocytic "hypochromic" anemia described. In the latter disease it seems to have caused relationship, direct or indirect, but in the light of recent work on pernicious anemia even this surmised causal relationship may ultimately prove to be incorrect. At any rate, this form of anemia is of frequent occurrence, and its adequate treatment with iron in the ferrous form, by mouth, gives satisfactory results.

**Clinical Aspects of Coronary Disease.**—Cotton emphasizes the fact that the indications for treatment of coronary thrombosis and angina pectoris are essentially different. Coronary thrombosis is an acute illness, sudden in its onset, and there may be rapidly developing symptoms of a grave heart condition. Morphine should be given in doses large enough to relieve the pain, which is an early and conspicuous feature of the occlusion syndrome. Rest in bed for at least a month is essential, preferably for six weeks; and every unnecessary movement should be avoided for two weeks, or longer if there are symptoms of shock, signs of embolism, or congestive failure. Good nursing and mild sedatives are more important than circulatory stimulants: mild purgatives and enemas are usually required if morphine is continued for any length of time. Digitalis is indicated when there are signs of congestive failure and the auricles are fibrillating or in a flutter; epinephrine should be reserved for patients with signs of heart block, and quinidine restricted to rare cases of paroxysmal tachycardia of unusual length. A convalescence of two months is always necessary *before allowing the patient gradually* to resume a part time or full time active life. Angina pectoris, on the other hand, is a chronic malady, and the treatment is ambulatory in most cases. When the attacks recur at frequent intervals or reach a stage of status anginosus, and the pain is not easily controlled by nitrites, a long rest in bed is indicated. Such patients are sometimes helped by chloral hydrate, or morphine given in sufficient doses to raise their pain threshold and keep them free from pain for a week or two. The therapeutic measures on which one must rely are based on restricting their activities, both physical and mental, and regulating their lives so that the extracardiac contributory factors aggravating the anginal syndrome may be eliminated or controlled; a suitable diet, a change of environment, and the treatment of focal sepsis form part of this regimen. It is doubtful whether drugs which are supposed to have a dilating action on the coronary vessels materially alter the course of the disease. For patients with cardio-aortic syphilis, iodides and mercury should always be prescribed; intravenous injections of arsenic are indicated in the early stages of the disease and can be given under conditions of rest in moderately large doses.

**Use of Vitamin B in Cases of Edema.**—Carmalt-Jones states that in 1918 Wenckebach described "the beriberi heart." In beriberi, right heart failure often occurs, in which there is grave edema, resisting cardiac drugs but disappearing at once on the administration of vitamin B. Profound edema is always of serious significance in heart failure with congestion in cases of rheumatic origin. Every hospital physician is familiar with rheumatic heart cases which are constantly in and out of the hospital, the intervals between the attacks progressively diminishing until the patients are admitted with extensive edema; this admission is generally the last. There are occasional exceptions, but extensive edema is often of the gravest prognosis in congestive heart failure. In the light of Wenckebach's paper, the author thought it would be wise to try the effect of vitamin B in such cases, to see if by this means any principle, the absence of which was causing the fatal result, could be supplied. He used it first in two or three moribund cases, in which its effect, if any, was quite insufficient to postpone death. A few less grave cardiac cases showed some improvement and afforded encouragement to proceed, but death was not prevented. In the edema of pernicious anemia, however, two striking results were obtained, and in some edemas of other origin the results were satisfactory.

### Indian Medical Gazette, Calcutta

**67**: 61-120 (Feb.) 1932

Result of Forecast of Cholera, Smallpox and Plague in India in 1931 and Forecast for 1932. L. Rogers.—p. 61.
*Mutation of Cholera Vibrios: Characters of Population of Freshly Isolated Cholera Colony, with Note on Some Colony Variants of Cholera and Cholera-Like Vibrios. C. L. Pasricha, A. J. de Monte and S. K. Gupta.—p. 64.
*Percain in Spinal Anesthesia. B. B. Dikshit and D. H. Rao—p. 69.
Epidemic of Jaundice in Alipuram Jail, Bellary (South India). C. G. Pandit and R. S. Rao.—p. 77.

**Mutation of Cholera Vibrios.**—Pasricha and his associates report that by subjecting to repeated cultivation on ordinary bile salt medium a freshly isolated cholera strain which is resistant to one or more types of choleraphage, and by selection of those colonies which behave differently from the parent colony, one can obtain colonies which differ in their morphologic, cultural and serologic characters. In an experiment which they performed, inagglutinable colonies and partially agglutinable colonies were derived from a good agglutinating colony. Some of the dissociated colonies lost not only the property of agglutinability with cholera serum but also the agglutinogenic power of the cholera vibrio. The serum prepared with the original strain possessed no appreciable amount of agglutinins for the serologic variants derived from the original strain. There is no definite order or stability of the serologic variants obtained. The evidence in the literature for the transformation of an agglutinating vibrio to a nonagglutinating vibrio is so slender and contradictory that no definite conclusions can be arrived at, and one cannot as yet establish a definite relationship between the vibrio of the disease and the vibrio found in nature.

**Nupercaine in Spinal Anesthesia.**—According to Dikshit and Rao, nupercaine is a drug of fairly high toxicity and its toxicity is increased in toxemic conditions. It has a powerful action on the cardiovascular system and produces a slowing and irregularity of the heart in small doses. Blood pressure is lowered and the splanchnic vessels are dilated. It markedly depresses the respiratory center and this action is manifested when the drug is injected intravenously or applied locally by injecting it into the cisterna magna. On the central nervous system it acts as a convulsant. Its action on the sensory nerves is marked, analgesia being produced in low concentrations. Clinically it has been found to be a drug of high potency and toxicity, and great care is necessary in its administration. Proper technic makes for success. Blood pressure is better controlled by giving ephedrine ten minutes after the spinal injection. Respiratory embarrassment is more to be dreaded than circulatory disturbances but is much less in frequency. Headache is the only important undesirable sequela and is amenable to treatment. The duration of analgesia and the degree of muscular relaxation are the distinctive features of the drug when given by the spinal method.

## Lancet, London

1: 435-494 (Feb. 27) 1932

- *Some Factors in Causation of Hydronephrosis. *J. P. Hosford.*—p. 435.
- *Treatment of Rheumatoid Arthritis with Gold Salts Injections. *J. Forestier.*—p. 441.
- *Detection of Presymptomatic Tuberculosis in Children. *E. Fletcher.*—p. 444.
- Changes in Liver of Mice Following Ingestion of Hydrocarbon Oils. *J. M. Twort and C. C. Twort.*—p. 448.

**Factors in Causation of Hydronephrosis.** — Hosford divides the causes of hydronephrosis into congenital and acquired. The term congenital hydronephrosis at once raises a difficulty in nomenclature, because there is a type commonly called congenital in which the dilatation affects mainly the pelvis of the kidney. In that the dilatation is probably not present at birth it is not really congenital, although the factors which cause it may be congenital. It is best to confine the term congenital to those types of hydronephrosis which are present in the new-born or are discovered after birth. It is found that they fall into two main groups: (1) those in which there is some discoverable mechanical cause obstructing either the ureter or urethra, and (2) cases of megalo-ureter combined with hydronephrosis in which there is no discoverable obstruction. In the first group the ureter may show a definite stricture, narrowing or fold, or it may present as an impervious cord. In quite a number of those cases showing distention of the bladder, as well as distention of the ureters and kidneys, some congenital mechanical obstruction can be found in the posterior urethra. The commonest is a valve, so arranged that it obstructs the downward passage of urine but does not prevent the upward passage of a bougie. In the second group, in which no obstruction can be found, the ureteral orifices and bladder sometimes share in the dilatation, though in others the kidney and ureter of one side are alone affected. The cause of the dilatation is unknown, but it has been suggested by some authorities that the explanation may be an embryologic one. It has been shown that the ureters in fetal life up to the third or fourth month are of large caliber, as compared with the size of the kidney and the rest of the body. Deficient development of the musculature of the ureter may be the cause. This musculature does not begin to develop until the third month—it begins at the lower end of the ureter and gradually spreads up to the renal pelvis. An imperfect development, a true hypoplasia of the muscle fibers, must be seriously considered as a possible cause. This possibility, in addition to the persistence of the wide caliber of the ureters as seen in early fetal life, may explain the condition of congenital megalo-ureters and dilatation of the renal pelvis. The author divides the causes of acquired hydronephrosis into two groups also: (1) cases in which there is a demonstrable macroscopic obstruction, and (2) cases in which there is no such obstruction. In the first group the obstruction may be due to a variety of lesions, among which may be mentioned calculus, neoplasms or tuberculous inflammation obstructing the ureter, ureteral strictures, and ureteral kinks. In connection with the last of these the author refers to aberrant vessels and abnormal mobility of the kidney. He does not deal with the question of urethral or bladder obstructions in the cause of hydronephrosis. The group of cases in which there is no demonstrable macroscopic obstruction is of much greater interest, and he refers to it at some length.

**Gold Salts in Rheumatoid Arthritis.**—According to Forestier, the action of the gold salt treatment in rheumatoid arthritis does not appear very quickly to clinical examination; at least two or three months elapse before definite changes in the condition of the patient are observed. The effect on the general condition is generally remarkable; a high percentage of rheumatic patients are pale, with a shallow café au lait color. After three months' treatment their color becomes normal and they look much stronger and less depressed. The action on the joints is different in cases of short and long standing; in the first, when there was only a synovial swelling, this disappeared progressively in two or three months in favorable cases and the joints became completely normal again. In the older cases, in which subluxations and stiffness accompanied chronic inflammation of the joints, the latter changes disappeared but the former were only slightly modified. The main cause of invalidism among rheumatic patients is the pain on active and passive movements; in the author's experience this diminished progressively after one month or more, and from that time the movements of the different joints were greatly improved. Three patients who had been bedridden for from four to six years were able to stand up and walk a few steps after the first series of treatments. The body weight showed in some cases an increase of a few pounds, but other patients lost a little weight when they were able to take a larger amount of physical exertion. Like the treatment with mercury, bismuth and arsenic, the gold salts also may cause reactions against which one should be on guard. Sometimes an increase of temperature and temporary rashes may occur; these appear in certain sensitive patients for no reason and could be considered as anaphylactic phenomena; they did not prevent the author from continuing the treatment. Sometimes, after from six to eight injections, toxic changes occurred. They consisted of two kinds: those on the mouth and those on the skin. In 20 per cent of the cases there was observed a mild form of stomatitis with erosion of the lips and tongue, which was severe in only four cases. The skin reactions were mostly morbilliform rashes, and in five instances erythrodermia with subsequent desquamation. One should always ask the patient when an injection is to be made whether the preceding one has caused any irritation in the mouth or on the skin; if there is the least doubt about it, the next injection should not be given, and a sufficient length of time should elapse before the treatment is resumed. To prevent any disorder of the mouth, the patients should clean their teeth with a tooth paste containing arsenic.

**Presymptomatic Tuberculosis in Children.**—Fletcher made a survey of fifty children, mostly of school age, who, at the time they were sent for, were considered healthy by their parents. Among the fifty were found four cases of "latent tuberculosis" (tuberculosis of childhood), four of enlarged lymph nodes of the tracheobronchial group, and five of nontuberculous fibrosis, making a total of thirteen cases in all. The tuberculin test gave the following results: Of four cases of tuberculosis of childhood one was plus plus, two were plus, and one was negative; of four cases of enlarged lymph nodes, two were plus, one was negative, and one was not done. It is concluded, so far as it can be from such a small number, that the tuberculin test is not a guide in a sufficiently important group of cases. As no case of tuberculosis of childhood developed, so far as is known, from contact with an open case of tuberculosis, it seems that there is still a large amount of accidental tuberculosis abroad—what the French call "tuberculose de la rue." In an American series, 91 per cent of children with roentgen lesions had no history of exposure. The probable period of development and resolution in favorable cases of "latent" tuberculosis in children is about three months. The shape and extent of the lesion by roentgenography is apparently not a guide to its severity or an indication of its prognosis. Clinical examination and the tuberculin test are not altogether reliable guides to the presence of "latent" tuberculosis.

## Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

**48:** 157-204 (Feb. 15) 1932

Blood Phosphorus in Pathology. M. Labbé and M. Fabrykant.—p. 157.
Fatal Icterigenic Spirochetosis in Patient with Latent Cancer of Stomach. M. Bariéty and M. Albeaux-Fernet.—p. 166.
Azotemic Syndrome: Sodium Chloride Therapy. C. Laubry and P.-L. Thiroloix.—p. 173.
*Treatment of Tabetic Gastric Disturbances by Intravenous Injections of Atropine Sulphate. T. Alajouanine and A. Horowitz.—p. 178.
Alimentary Hypoglycemia. M. Labbé, R. Boulin and M. Petresco.—p. 181.
*Tuberculosis with Multiple Synovial and Serous Manifestations. F. Bezançon, L. de Gennes, É. Bernard and Oumansky.—p. 186.
Leukemia Subsequent to Benzine Intoxication. P. Emile-Weil.—p. 193.
Primary Pelvic Pneumococcus Peritonitis in Adult. Ledoux, Humbert and Gomet.—p. 198.

**Treatment of Tabetic Gastric Disturbances by Intravenous Injections of Atropine Sulphate.**—Alajouanine and Horowitz call attention to the almost constant favorable results they obtained in thirty cases of tabetic gastric disturbances treated by intravenous injection of atropine sulphate. The treatment consists of the injection intravenously of from 1 to 3 mg. of atropine sulphate, once or twice daily, for several days. The group studied included patients with sensory and sensory-motor gastric disturbances, sometimes with the sympathetic system, sometimes with the vagus nerve predominating; the attacks were brief, from three to four days, or prolonged from two to three weeks. In some patients, the fulgurating pains that accompanied the gastric disturbances also disappeared or were calmed after treatment. The authors did not find any contraindications to the treatment. In most patients the improved condition lasted from one to three years. Recurrences were again treated.

**Tuberculosis with Multiple Synovial and Serous Manifestations.**—Bezançon and his co-workers report a case which was diagnosed as bilateral tuberculous hydrarthrosis of the knees. They state that tuberculous hydrarthrosis of the joints is not as exceptional as a simultaneous infection of all the chief arthrosynovia. The serous manifestations were characterized by a double pleurisy complicated by pericarditis without the sign of any pulmonary lesion. The process next appeared in the synovial membranes of the knees, elbows, wrists and ankles, passing through a state of hydrarthrosis but leaving the subjacent bone, the articular surfaces and the ligaments clinically and roentgenologically intact. On the other hand, all the serous tissue, juxta-articular bursae and muscular synovial membranes of the tendons in and about the joints were infected, whether suppuration was present or not. As a whole, the lesions were cold and exudative from the beginning, but there were no active inflammatory reactions and the lesions were different from those described in the course of tuberculous rheumatism. Twice a focal inflammatory reaction appeared at the level of the hydrarthrosis of the knees after subcutaneous or intradermal injection of a small quantity of tuberculin. The authors state that it is exceptional to find multiple tuberculous localizations in an adult (40 years old) with predilection for the serous tissue, invading successively the pleura, the pericardium and all the main articular or juxta-articular synovial membranes and leaving intact the parenchyma and the subjacent bone.

## Journal de Médecine de Lyon

*13: 99-136 (Feb. 20) 1932*

*Treatment of Pneumococcus Peritonitis Nové-Josserand.—p. 99.
Deficient Diets and Inapparent Dystrophies in Child. G. Mouriquand.—p. 103.
Pulmonary "Scissuritis" in Children. M. Péhu and J. Boucomont.—p. 111.
*Spontaneous Nontuberculous Pneumothorax in Nurslings. C. Gardère and J. Savoye.—p. 117.
*Typhobacillosis of Landouzy and Its Pathogenesis. A. Dufourt and P. Etienne-Martin.—p. 123.

**Treatment of Pneumococcus Peritonitis.**—Nové-Josserand states that, generally speaking, pneumococcus peritonitis is a pneumococcemia and a diffuse infection that can be localized in the lungs, heart, kidneys and other organs without showing these lesions clinically in the first period of the disease. No symptom is pathognomonic. The diagnosis should be established after a consideration of the symptoms peculiar to pneumococcus peritonitis and their evolution. The early age, female sex, absence of a prodrome, preexistence of a pleuropulmonary infection or, better, an angina, a rhinopharyngitis, an otitis or a vulvovaginitis, with progression to influenza, can lead to a presumptive diagnosis of pneumococcus peritonitis. Other symptoms are a sudden, violent onset with rapid elevation of temperature to 40 C. (104 F.) or higher, followed at the end of several hours by an almost complete lull in the pains and vomiting and a fall of the temperature to 38 or 38.5 C. (100.4 or 101.3 F.). Such sedations in appendicitis are not as marked. Examination of the abdomen reveals a slight distention without contraction of the wall and without distinct pain on pressure. The patient seems to suffer more from colic than from a peritoneal reaction. The right iliac fossa is supple and only slightly painful; one can palpate it deeply without feeling resistance. There are some forms that deviate from this semeiology and then early diagnosis is impossible. In regard to whether a surgical intervention is as urgent in pneumococcus peritonitis as in other forms of acute peritonitis, the author states that the intervention during the first hours is not without danger and is useless, since the diffuse and slight extravasation cannot be cleared up and the source of the infection cannot be removed because it is diffuse and often septicemic. But, in practice, the difficulty in differential diagnosis from appendicitis does not contraindicate a surgical intervention. Diagnosis is often possible, and when it is sufficiently certain, a delay, while the patient is being observed closely, is necessary, since, in diffuse forms, operative indications can be noted after the second day. If the diagnosis remains doubtful, it is best to intervene, but one should proceed in such a manner as to render as little harm as possible.

**Spontaneous Nontuberculous Pneumothorax in Nurslings.**—Gardère and Savoye state that spontaneous nontuberculous pneumothorax is not very rare in early infancy and it is more frequent than tuberculous pneumothorax. It appears especially in the course of pneumonia, bronchopneumonia or pulmonary abscess, often secondary to one or another of the infections. The symptomatology varies with the intensity of the functional signs, the causal disease and the evolution. It may take the form in which the distinct clinical characters may be recognized at the bedside, or the pneumothorax may be more or less latent and can be recognized only in the roentgenograms. The transformation into pneumothorax in the course of bronchopneumonia with pulmonary abscess is frequent and often fatal. The prognosis depends on the causal infection. In the course of a pulmonary infection with medium intensity and favorable prognosis, the pneumothorax itself cannot be considered a serious aggravation and, in spite of early age, is well tolerated and improves rapidly. The presence of an extravasation, in the case of hydropneumothorax, is not an aggravating circumstance unless the liquid becomes purulent. Treatment consists of inhaling large doses of oxygen, and tonicardiac and sedative medicaments to attenuate the intensity of the dyspnea. In suffocating forms, which usually awaken latent lesions of the opposite lung, pleural puncture is indicated in order to diminish the tension of the gaseous extravasation. After the patient's condition has improved, it is sufficient to treat the causal disease. A pneumothorax in the pure state will undergo spontaneous resorption.

**Typhobacillosis of Landouzy and Its Pathogenesis.**—Dufourt and Etienne-Martin state that the clinical syndrome of typhobacillosis, as described by Landouzy, consists of a pretuberculous bacillary fever in which the temperature curve resembles that of typhoid. They describe thirteen personal observations of typhobacillosis in children. These cases prove that the disease appears suddenly in children in whom the temperature formerly was normal. Sometimes, other signs than a febricula may exist. The temperature may suddenly rise to 39 C. (102.2 F.) or above. Even though roentgen examination shows lesions in two thirds of the patients, the relationship between them and the fever is not explained, since analogous lesions are found in children that are in the period of primary tuberculous infection. The authors state that the tuberculosis is an early secondary complication of typhobacillosis and their coexistence should not preclude identity. This contemporaneous but not necessary manifestation of the primary infection proves the presence of a general infection. The fever is an autonomic entity and is not necessarily accompanied by anatomic lesions; it may depend on a blood infection brought about by a tuberculosis virus.

## Revue Sud-Am. de Méd. et de Chir., Paris

**3:** 1-96 (Jan.) 1932

Progressive and Total Suppression of Pancreas Does Not Produce Diabetes in the Dog. P. Escudero.—p. 1.
*Roentgenographic Image in Auricular Fibrillation. P. Cossio.—p. 19.
Clinical Aspect of Meteorology. A. Dias.—p. 29.
*Hemiplegia in Cerebral Hydatid Cyst in Child. L. Morquio.—p. 39.

**Roentgenographic Image in Auricular Fibrillation.**—Cossio states that since auricular fibrillation involves arrhythmia it ought to be recognized by electrocardiography and phlebography, which offer the means of analyzing, outside of the cadence of the activity of the heart, the succession of the phenomena that are produced during a revolution of the central organ of circulation. He had had occasion to study fifteen observations (one with an examination at necropsy) in which invariably a peculiar roentgen image coexisted with the auricular fibrillation. This image was characterized by the presence of a mitral configuration in its left contour and a double arc in its right contour. The author concludes that when one is in the presence of a cardiac image in which the left contour presents the characteristic of a mitral configuration and the right contour presents a double arc, the former due to the left auricle, one should consider a mitral disturbance in its final stages; namely, auricular fibrillation. However, even though the auricular fibrillation may be the consequence of a mitral disturbance, it does not always present a projection of the left auricle in the right contour.

**Hemiplegia in Cerebral Hydatid Cyst in Infant.**—Morquio states that his observations in five cases of cerebral hydatid cysts showed that the predominating phenomenon is a hemiplegic syndrome. It was the hemiplegia which guided his diagnosis. He finds that when the patient appears for the examination, the hemiplegia is generally complete, including the arm and the leg, in several instances also the lower part of the face. Dextrohemiplegia may consist of aphasia or temporary alteration in speech. The hemiplegia is spastic; there is a hypertonicity, exaggeration of the reflexes, clonus of the feet, epileptoid trepidation, and Babinski sign—all characters of secondary degeneration of the pyramidal tract. The opposite side is apparently free; sometimes, it is entirely normal, while at other times there is an exaggeration of the reflexes. The author did not consider complicated cases in which the stiffness affected the two sides equally. In several instances the leg, in other instances the arm, predominated. There was no disturbance in sensation. The hemiplegia is insidious, in one or two stages. Pure hemiplegia does not always exist. In hemiplegia of a cerebral hydatid cyst, one can find at the onset or after a while that the paralysis is more extensive than the hemiplegia; the patients have difficulty and almost absolute impossibility in standing and walking, so that functionally it is a complicated hemiplegia. The complication consists in more than just a paralytic accentuation, frequently, in a loss of equilibrium or motor coordination; but the ordinary movements can be made when lying down, indicating that the forces are conserved. The author believes that a diagnosis of cerebral hydatid cyst is possible in most cases. This diagnosis, in the majority of cases, can facilitate a surgical intervention at an opportune time. Four of his patients were operated on; two of these died and two were cured. An early diagnosis and an improved surgical technic will make possible more favorable results. For the formulation of a diagnosis of cerebral hydatid cyst, one should take into consideration the clinical characteristics, the previous signs and especially the origin of the symptoms.

## Chirurgia degli Organi di Movimento, Bologna

**16:** 499-612 (Dec.) 1931

Os Trigonum and Fractures of Posterior Process of Astragalus. G. Ghigi and A. Morelli.—p. 499.
Gibbus Resulting from Tetanus. S. Ciaccia.—p. 531.
Treatment of Central Luxation of Femur. R. Babini.—p. 546.
*Subcalcaneal Exostoses. G. Mazzacuva.—p. 557.
Treatment of Hallux Valgus. T. Biancheri.—p. 583.
Bone Cyst Treated with Osteoperiosteal Transplant (Delagenière Operation): Case. G. Moreira.—p. 591.
Tuberculosis Involving Shaft of Bone. F. Rebaudi.—p. 599.

**Subcalcaneal Exostoses.**—Mazzacuva found the proportion of acquired subcalcaneal exostoses much less than is commonly reported in the literature. It ranges, according to his experience, between 3 and 4 per cent. Of the many theories advanced for the etiopathogenic interpretation of calcaneal exostoses, the author thinks that none exactly fit all cases. Exostosis is a manifestation that has no etiopathogenic specificity, for which reason it is necessary to seek in each patient the local and general causes that may have brought about its appearance and growth. In none of the author's cases was he able to find a frank roentgen, clinical or anatomopathologic difference between the spurs that gave evidence of an associated infection and those presented by subjects without any previous infection that was demonstrable objectively or by the case history. The presence of mucous bursae in the tissues adjacent to the spur is an exceedingly infrequent observation and is interpreted as a protective reaction of the tissues secondary to the chronic traumatic stimulus caused by the exostoses. Bloodless treatment may produce excellent results, especially in cases of infective origin or in exostoses that, while of different origin, are single, of small volume, and when the financial circumstances of the patient are such as to allow him comparative rest for the limb for a period of several months. The treatment consists primarily in the adoption of specific therapy and, secondarily, in the application of an ordinary plantar orthopedic apparatus if the patient has flat feet. The immediate and remote results of open surgical treatment (which is always carried out in case of multiple exostoses that have shown no benefit from conservative treatment) are, in the author's experience, always excellent and such as allow the patient to resume completely and permanently his former occupation.

## Gazzetta Internazionale di Med. e Chir., Naples

**40:** 1-36 (Jan. 15) 1932

Dermatosis Due to Occupational Arsenic Poisoning. F. Leoncini.—p. 1.
Experimental Research on Chronic Carbon Disulphide Poisoning. A. Antonini and G. Tamburi.—p. 2.
Effects of Ergotamine Tartrate on Carbohydrate Exchange. F. Amelio.—p. 6.
*Anisotonic Solutions in Treatment of Disequilibrium of Endocranial Pressure. G. Pozzi.—p. 13.

**Anisotonic Solutions in Treatment of Disequilibrium of Endocranial Pressure.**—Pozzi calls attention to the possibilities of anisotonic treatment in disorders of endocranial pressure, a form of treatment widely used in foreign countries but little known as yet, or at least little used, in Italy. The author discusses first the biologic principles on which this treatment is probably based and then reviews the various morbid conditions in which it is indicated. Then he considers the value of the treatment in acute disorders of endocranial pressure following craniocerebral traumatism (diffused cerebral compression and posttraumatic cerebral hypotension) and in disorders of neoplastic origin, in which it appears to be of advantage as a means of adapting patients to an operative intervention; as a mode of treatment of phenomena of acute hypotension that may be observed in the course of the intervention itself, and, finally, as a mode of treatment for postoperative cerebral hypotension due to protracted loss of cerebrospinal fluid from the wound. In view of its harmlessness, he considers this method of treatment deserving of confidence and of wide use in current practice.

## Semana Médica, Buenos Aires

**39:** 337-420 (Feb. 4) 1932. Partial Index

Phrenicectomy in Pulmonary Tuberculosis. F. Etcheverry Boneo.—p. 337.
*Gastrotonometry in Treatment of Gastric Leiasthenia. T. Martini and R. E. Curutchet.—p. 353.
*Colon Bacillus in Lithiasis of Gallbladder: Etiopathogenesis. H. J. D'Amato and A. Toroz.—p. 358.
Rupture of Echinococcal Cysts of Liver into Pleural Cavity. P. Jáuregui and V. Subiza.—p. 363.
Treatment of Chronic Third Grade Puerperal Inversion of Uterus by Taxis. J. Leon and D. D. Caravias.—p. 368.
Treatment of Hyperchloremia by Intravenous Injections of Hypertonic Solutions of Sodium Chloride. A. Pierini.—p. 378.
Semeiology of Azotemia. R. A. Izzo.—p. 387.

**Gastrotonometry in Treatment of Gastric Leiasthenia.**—Martini and Curutchet's work is a continuation of previously reported work on gastrotonometry (intragastric pneumatic massage following intragastric insufflations of air) in the treatment of leiasthenia (asthenia of the muscles of the stomach with disturbances of the gastric motility, developing into dyspepsia). The technic and immediate clinical and roentgen results of the treatment were described in illustrations in *La Semana Médica* (**37**:1954 [Dec. 25] 1930). The treatment consists of one or two series each of ten intragastric insufflations of air. The insufflations are given at intervals of from three days to one week. The amount of air insufflated varies, according to the capacity of the patient's stomach, from 900 to 1,275 cc. The limit of distensibility of the stomach is determined by the appearance of a slightly painful tenderness in the patient's stomach during the insufflation. Rarely a second series of insufflations is necessary and, when it is, the insufflations should be given after a period of rest, which varies from one to two months, during which time the patient should be out of the hospital. Therapeutic intragastric insufflation has a mechanical action on the gastric muscles, by the successive distention and retraction of the organ, thus producing the effect of an intragastric pneumatic massage on the walls of the stomach. It has also a chemical action on the organ, by means of the insufflated gases. By this combined mechanical and chemical action, the stomach regains its muscular energy, contractility and tonus, and hence its functional normality. The authors obtained good results from the treatment in about 100 patients with functional motor gastric disturbances and dyspepsia of the second or third grade. They now report late clinical and roentgen results of the treatment in a patient belonging to this group, who had anorexia and progressive dyspepsia for seven years. When the patient began to receive the treatment, her condition was poor: she had lost about 20 Kg. (44 pounds). The treatment gave satisfactory results, which still persist three years after the treatment was given. From their experience, the authors conclude that therapeutic gastrotonometry is a harmless method of a simple technic and of great value in the diagnosis and therapy of disturbances of the stomach, especially those originating in faulty motor functions. The only contraindication to the application of the method is the presence of ulcers or neoplasms of the stomach. Therapeutic gastrotonometry is the most rational treatment of gastric atony, either simple or complicated by dolichogastry. The treatment may produce satisfactory results in cases in which other treatments, previously given, have failed. Patients are not subjected to the use of uncomfortable abdominal supports. As they recover they regain their normal weight without surpassing it. The increase of the gastric tonus under the influence of the treatment causes the disappearance of anorexia in 70 per cent of the cases. The method permits one to make gastrotonometric measurements of the gastric tension, the figures of which are so exact that even latent dolichogastry may be detected when the roentgen examination does not show as yet the presence of a diminished tonus of the gastric muscles. Therapeutic gastrotonometry is also of value in patients with splanchnoptosis and anorexia in whom fat therapy is indicated.

**Rôle of Colon Bacillus in Biliary Lithogenesis.**—D'Amato and Toroz made observations in forty-two patients with biliary calculi and in eighty-nine patients with other diseases than biliary calculi (either with or without lesions of the gallbladder). They conclude that the colon bacillus is a frequent cause of infection and the most frequent cause of biliary lithogenesis. The clinical picture of biliary lithiasis when caused by the colon bacillus is characterized by a prolonged and attenuated evolution of the disease. The patients have a subfebrile temperature with changes of an intermittent type and long remissions in the appearance of the symptoms. They give a history of intestinal disturbances with either constipation or diarrhea. As a rule, the bowels move every three or four days. The colon bacillus appears and disappears intermittently in and from the urine (and sometimes simultaneously in the blood and in the bile). Hence the advisability of a repeated bacteriologic examination of the urine (the most common route of elimination of the bacillus) if there are any symptoms of infection or intestinal disturbances. If one fails to identify the colon bacillus by the repeated bacteriologic examination of the urine in patients with biliary calculi, the etiology of the disease should be considered as of a noninfectious nature. Sixty per cent of the cases of biliary calculi are of infectious origin (40 per cent of which are caused by the colon bacillus). The colon bacillus may be identified simultaneously in the urine and in the bile or alone in the urine, but never alone in the bile. Colibacillemia may exist in patients with other diseases than biliary calculi. In some of these cases, catarrhal lesions in the gallbladder (the so-called lithogenic catarrh), which precede the formation of biliary calculi, are observed, while in other cases the liver and gallbladder remain normal. Renal calculi are a frequent complication in patients with biliary calculi and colibacillemia and a rare occurrence in patients with biliary calculi without colibacillemia. The identification of the colon bacillus from the urine in patients with renal lithiasis should make one suspect the presence of biliary calculi, which are discovered in all cases properly investigated.

## Klinische Wochenschrift, Berlin

**11:** 313-352 (Feb. 20) 1932

Protein Digestion During Nursling Age. E. Freudenberg.—p. 313.
Value of Antigen and Curative Result of Chemotherapy. H. Kroó.—p. 316.
Attempts to Cultivate Virus of Lymphogranuloma Inguinale. K. Meyer.—p. 318.
Hormonal-Nervous Regulation of Function of Anterior Lobe of Hypophysis.—p. 321.
*Early Reaction of Leukemic Spleen Following Roentgen Irradiation. F. Windholz.—p. 323.
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Functional Test of Circulation by Determination of Amplitude Frequency Product. G. Schoenewald.—p. 334.
Identity of Icterus Gravis Familiaris Neonatorum with Congenital Erythroblastosis with Dropsy. A. Plaut.—p. 334.
Ammonia Formation During Various Contractions of Skeletal Muscles. J. K. Parnas.—p. 335.
Genetic Origin of Iso-Agglutinins on Basis of Blood Group Studies on Hogs. S. Schermer and A. Kaempffer.—p. 335.
"Acute Hemolytic Anemia" Lederer. F. P. Weber and O. B. Bode.—p. 336.

**Early Reaction of Leukemic Spleen Following Roentgen Irradiation.**—In summing up the results of his studies, Windholz finds that if during chronic myeloid leukemia the spleen is irradiated on three successive days with a total of 12 Holzknecht units, changes are noticeable fourteen hours after the last irradiation. The changes are characterized by a disintegration of the cells of the myeloid proliferations and by signs of degenerative changes on the connective tissue framework. The protoplasm of the myeloid cells shows an increase in oxyphilia before changes develop in the nuclei of the cells. The cells of the leukemic proliferations show more pronounced regressive changes than the cells of the connective tissue framework. The proteolytic reaction of the irradiated portion of the spleen shows (on Löffler-serum plates) a more rapid increase than do the nonirradiated portions. However, this difference in the reaction is equalized in twenty-eight hours. It is assumed that the difference in the proteolytic reaction is not due to the fact that the rays produce larger amounts of ferments but rather to their increased rapidity of diffusion as a result of impairment of the cell membranes by the irradiation. It seems possible that a portion of the histologically visible changes, especially those on the lattice fiber system, can be traced to the influence of the ferments that become liberated during cell disintegration. Thus the visible initial reaction of the spleen following roentgen irradiation has two components: a degenerative change in the cells as the result of direct ray influence, and apparently secondary changes (of the connective tissue framework); namely, demonstrably increased fermentative action in the irradiated tissue.

**Significance of Small Salivary Glands for Lupus Vulgaris of Oral Mucous Membrane.**—Memmesheimer emphasizes that, in oral lupus vulgaris as well as in other forms of tuberculosis of the oral mucous membrane, an involvement of the small salivary glands should be watched for. In characteristic older cases of the disease the involvement becomes manifest in a certain hardness of the disease focus and of the nodules. If involvement of the small salivary glands is suspected, a deep exploratory excision and histologic examination is necessary. As treatment the author recommends extirpation or deep destruction by means of a cold caustic.

## Zeitschrift für Krebsforschung, Berlin

35: 415-542 (Feb. 20) 1932

Reduction of Vitality Produced by Photodynamic Action on Sensitized Tissues: Experiments with Tissue Cultures. A. H. Roffo.—p. 415.
Occurrence of Estrual Substance in Blood and Tissues Under Pathologic Conditions. F. Silberstein, O. O. Fellner and P. Engel.—p. 420.
*Influence of Bacterial Filtrates and of Toxins on Tumor Cells. S. Segre.—p. 428.
Surface Cells of Serous Membranes and Their Primary Malignant Tumors. Regina Grossek.—p. 435.
Involvement of Trachea in Generalized Lymphosarcomatosis. M. Plonskier.—p. 467.
Statistics and Genesis of Pulmonary Cancer. S. Derischanoff.—p. 481.
Biochemistry of Rous Sarcoma of Chickens. V. Morávek.—p. 492.
Idem. V. Morávek.—p. 509.
*Influence of Endocrine Glands on Development and Behavior of Experimental Cancers. W. Karnicki.—p. 523.

**Influence of Bacterial Filtrates and of Toxins on Tumor Cells.**—Segre first studied the influence exerted by filtrates of bouillon cultures of various bacteria on suspensions of different carcinoma cells. He observed that some filtrates are capable of attacking the cells of certain suspensions. The activity of the various filtrates against the different cell suspensions varies, and the susceptibility of a carcinoma cell suspension toward the various culture filtrates differs likewise. If carcinoma cell suspensions are exposed to the influence of true bacterial toxins, it can be noted that the influence is much less pronounced than if they are exposed to twenty-four hour culture filtrates of nontoxic bacteria. It was also noted that there is no relationship between virulence, pathogenicity and toxicity of a type of bacteria, and the capacity of its culture filtrates to attack tumor cells.

**Influence of Endocrine Glands on Development of Experimental Cancers.**—Karnicki studied the influence exerted by the organs of internal secretion on the neoplasms produced by application of tar on the ears of rabbits. He observed that the removal of the thymus influences the development of the neoplasms so that the growth is four times more rapid than usual. Extirpation of the thyroid and of the accessory thyroid likewise effects accelerated development of the neoplasms, but in a somewhat lesser degree than in extirpation of the thymus. The tumors show a great tendency to horny, conical formations. Since the thyroid plays an important part in the calcium phosphorus equalization and also has a great influence on the sympathetic nervous system, it is easily understandable that its removal produces favorable conditions for the development of neoplasms. After removal of the testes there is a less pronounced acceleration in the development and in the growth of the neoplasms than after extirpation of the thymus or the thyroid, but it is nevertheless considerable. Extirpation of a suprarenal inhibits the development and growth of the neoplasms, and a pronounced cachexia develops and progresses rapidly. If testes and thymus are removed simultaneously in the same animal, a considerable stimulation of the growth of the nodules is noticeable. In the later phases there is again a decrease, and the growth is less than in animals in which only the thymus or only the testes have been removed. Transplantation of thymus and of testes has an inhibitory effect on the development of neoplasms. The character of the precancerous formations in these cases resembles those that are observed in the suprarenalectomized animals. The neoplasm remains small, and cachexia is absent. Intravenous injection of preparations from thymus and testes effects a drying up of the nodules and destruction of the small growths. The larger nodules decrease in size and become soft after a certain number of injections. In the conclusion the author points out that his results not only prove his own theories but are identical with the results of a considerable number of investigators.

## Zentralblatt für Chirurgie, Leipzig

59: 513-576 (Feb. 27) 1932

After-Treatment of Stump Following Amputation. Verth.—p. 515.
*Fracture of First Rib Caused by Muscular Traction. A. Adler.—p. 518.
*Fat Embolisms. E. Makai.—p. 521.
Remarks on Schmieden's Operation for Inguinal Hernia. A. Carraro.—p. 524.
Reply to Preceding Article. V. Schmieden and H. Niessen.—p. 528.
Sterile Plaster Bandage. Vömel.—p. 528.
Pyloric Stenosis Caused by Developmental Anomaly of Liver. H. Baumecker.—p. 529.

**Fracture of First Rib Caused by Muscular Traction.**—Adler points out that fractures of ribs caused by muscular traction are comparatively rare but, if they occur, it is usually the lower ribs that are involved. Fracture of the upper ribs, especially of the first one, by muscular traction is considered by some as impossible, yet several such cases have been reported in recent years. The author reports the case of a man, aged 54, who, while lifting a basket weighing about 20 Kg. (44 pounds) suddenly felt a cracking sound and then a severe pain in the region of the right scapula. A piercing pain persisted in the region of the shoulder and of the axilla, the neck became stiff, and the arm hung lifeless, only the fingers being movable. At first the diagnosis was not entirely clear, but fixation of the extremity brought relief. A few days later the patient stated that, although there was less pain, the slightest movement of the right shoulder joint and deep inspiration caused a cracking noise. Renewed examination of the patient corroborated this and roentgenoscopy revealed a transverse fracture of the first rib at the junction of the bone and cartilage. In discussing the causes of this fracture the author expresses the opinion that inadequate innervation of the muscles is one of the causal factors. That a greater brittleness of the bones, which may also be a causal factor, was not the cause in this case was proved by roentgenograms of several of the patient's bones, which were entirely normal. In the conclusion the author states that he shares Porzelt's theory of pathogenesis. Porzelt, who observed a case similar to that described by the author, maintains that the rib is extended not only by the lung, inflated by maximal inspiration, but also by forced tension or upward traction of the scaleni and the subclavius muscles; on the other hand, the arm lifting the load and the traction of the muscles of the chest press the clavicles on the extended first rib, and thus these two opposing forces cause a fracture.

**Fat Embolisms.**—Makai reports the clinical history of a man, aged 56, who sustained a complicated fracture of the leg. The fracture was reduced and then fixed with a plaster-of-paris splint. At first the patient was completely conscious, so that he was able to give orders and to read, but on the following day he became unconscious and restless. This condition persisted for several days, and when on the sixth day he came under the author's observation, a cerebral embolism was assumed and the injured extremity was immediately amputated. The improvement in the patient's condition was so evident after the amputation that a causal relationship can hardly be doubted. This case corroborates Kirschner's theory, who maintains that fat embolism not only develops immediately following a fracture but may develop later as result of incomplete fixation. If more and more fat enters the circulation, the sequelae, especially the cerebral symptoms, increase in severity, but if the source of the fat embolism is excluded the patient may recover. The author thinks that fat embolism may perhaps be more frequently the cause of temporary disturbances after injuries than is commonly believed. He suggests that the bronchopneumonia which so frequently develops in older persons after a fracture may be due to pulmonary fat embolisms. In regard to the treatment, he states that, in severe fractures with cerebral symptoms and shock, care should be taken to prevent repeated fat embolisms. Since in complicated fractures absolute immobilization may be difficult, amputation should not be shirked, for it may save the patient's life. Otherwise it can be attempted to counteract the threatening symptoms by resorting to venesection with subsequent infusion of sodium chloride or of sugar solutions, and by administration of epinephrine and solution of pituitary.

## Zentrablatt für Gynäkologie, Leipzig

56: 513-576 (Feb. 27) 1932

Plastic Surgery of Uterus According to Strassmann, with Subsequent Confinement. W. Hannes.—p. 514.
Rupture of Gravid Double Uterus. W. Rosenstein.—p. 517.
*Therapy of Puerperal Pyemia by Ligation of Veins. W. Schellenberg.—p. 519.
Further Modification of Cesarean Section According to Portes. B. Aschner.—p. 523.
Chemical Contraceptives. M. Rodecurt.—p. 526.
Technic of Vaginal Surgery. M. Samuel.—p. 531.
*New Pregnancy Test on Male Mice by Means of Hormone Concentration. J. Czyżak.—p. 533.

**Therapy of Puerperal Pyemia by Ligation of Veins.**—In order to gain insight into the mortality of puerperal pyemia when conservative treatment is employed and thus to be able to estimate the urgency of a more radical treatment, Schellenberg studied the histories of patients with puerperal pyemia who received treatment in the women's clinic in Zurich in the years from 1911 to 1930. On the basis of these studies he concludes that early operation in puerperal pyemia can be dispensed with, since within a short time a definite diagnosis can hardly be reached, and thus many patients would be subjected to ligation in whom pyemia either does not exist or is so mild that spontaneous cure sets in. If ligation of veins had been resorted to after the third attack of chills, in more than 56 per cent of the cases studied by the author the patients would have been unnecessarily exposed to the dangers of a surgical intervention, and if it had been done after the second attack over 67 per cent would have been operated on without need. A late operation after a fourth attack of chills is advisable only in exceptional cases, since the mortality rate is about equal whether conservative treatment is done or operation is resorted to. The small difference in the percentages does not justify the exposure of the patient to the possibility of the failure of the operation.

**New Pregnancy Test on Male Mice by Means of Hormone Concentration.**—Instead of using female mice as in the Aschheim-Zondek pregnancy test, Czyżak made the test on male animals. He found that only a urine with concentrated hormonal content produced visible changes and he therefore injected the test animals with a concentrated urine. He describes the technic of the concentration and of the injection and states that after 100 hours the test animals showed a considerable increase in the size of all the accessory sex glands, especially the seminal vesicles. The test was made in 100 cases; namely, in 66 cases of early pregnancy, 18 cases of adnexitis, 10 cases of ruptured tubal pregnancy and 6 cases of ovarian cysts. In evaluating his test he takes the Aschheim-Zondek test as the standard of comparison. He admits that the use of female mice has two advantages over his use of male animals: 1. The reaction on female animals permits a differentiation of the presence of prolan A and prolan B. 2. The reaction is more exact, for while in male animals the size of the sex organs has to be compared, in female animals the presence or absence of hemorrhagic spots or of yellow bodies serves as an indicator. However, in spite of its deficiencies the author considers his test a valuable supplement to the Aschheim-Zondek reaction. An advantage is that in using males there is always a sufficiency of animals and the test requires only three animals instead of at least five, as for the Aschheim-Zondek reaction.

## Vestnik Rentgenologii i Radiologii, Leningrad

**9:** 359-473, 1931

Mitogenetic Irradiation in Experimental (Tar) Cancer. S. Ya. Zalkind and L. M. Shabad.—p. 359.

Mitogenetic Irradiation of the Larvae of Saccocirrus. S. Ya. Zalkind.—p. 370.

*Clinical Aspect of Radiotherapy in Cancer of Larynx. K. N. Chochia.—p 372.

*Radiotherapy in Malignant Tumors of Urinary Bladder and Prostate. F. C. Grosman.—p. 380.

*Roentgen Therapy for Climacteric Phenomena. S. E. Shekhter and E. D. Duboviy.—p. 391.

Roentgen Diagnosis of Chronic Disturbances of Temporal Bone. G. B. Formin and S. I. Vulfson.—p. 395.

*Cancerous Metastasis of Bone Simulating Primary Sarcoma. V. Korkhov and M. M. Mintz.—p. 404.

Roentgen Diagnosis and Clinical Aspect of Congenital Radio-Ulnar Synostosis. A. B. Rabinerzon.—p. 413.

Roentgen Diagnosis of Gastroduodenal Ulcer. I. I. Zorokhovich.—p. 419.

Protection of Roentgenology Personnel. S. B. Zakov.—p. 421.

Diaphragm Compression Tube. Ya. G. Dillon.—p. 429.

Compressor for Roentgenography of Small Child. Ya. G. Dillon.—p. 434.

*Rare Localization in Osteochondropathy: Case. L. R. Dubrovskaya.—p. 436.

Solitary Cyst of Bone: Case. A. G. Maslov.—p. 439.

**Radiology in Treatment of Cancer of Larynx.**—According to Chochia, the predominant types of cancer of the larynx are basal cell, prickle cell and occasionally adenocarcinomas. Surgical treatment consists in radical excision of the cancer and the metastases in the lymph nodes. When the tumor has spread to the vocal cords, the ventricles and the cartilages, total extirpation of the larynx is indicated. This results in death in 50 per cent of the cases and with but few exceptions recurrence in the rest. The latter intervention and the results are so serious that few patients consent to the operation. Aside from surgery, radiotherapy (roentgen rays and radium implantation) was used. During the period 1919-1930, 112 patients (110 men and 2 women) were treated: 63 with roentgen rays, 33 with radium implants, and the rest with both roentgen rays and radium. The author concludes that radiotherapy, as well as surgical intervention, does not give striking results, although improvement is possible in a small percentage of the patients.

**Radiotherapy in Malignant Tumors of Urinary Bladder.**—Grosman treated thirty-nine patients with malignant tumors of the urinary bladder and nine patients with malignant tumors of the prostate. A review of the literature and the results of his own studies did not aid him to resolve on a conclusive treatment. Surgical measures were not sufficient and were indicated only in the early stages. Radiotherapy, and especially radium implantation, was an improvement, since it could be used not only in operative but also in neighboring and sometimes inoperable areas.

**Roentgen Therapy in Climacteric Deficiency Phenomenon.**—The climacteric deficiencies manifested in the study of Shekhter and Duboviy were mostly of a vasomotor character: flow of blood to the head, changes in cardiac rhythm, dizziness, palpitation of the heart, ringing in the ears. In many patients, arthritic symptoms and psychic disturbances were also present. Small doses of roentgen rays were given to thirty patients; in nineteen instances the hypophysis was irradiated, in seven instances the thyroid, and in four the hypophysis and the thyroid. In eighteen, or 60 per cent, of the patients the active hyperemia completely disappeared, and the palpitation of the heart and attacks of dizziness decreased; the ringing in the ears disappeared and sleep was improved. In nine, or 30 per cent, of the patients the active hyperemia became less intense. No change was noted in three, or 10 per cent, of the patients. Recurrences limited to active hyperemia occurred in a few instances from six to eight months after treatment; but these did not return after a second series of treatments. In the four instances, in which irradiation of one gland was unsuccessful and the other gland was subsequently irradiated, improvement was noted in one case only. The authors believe their favorable results substantiate the observations of Bokar, who believes that roentgen rays help to remove a hyperfunction in either the hypophysis or the thyroid.

**Cancerous Metastasis of Bone Simulating Primary Sarcoma.**—Korkhov and Mintz state that neoplastic metastasis in the bones may often mask the primary manifestations. He describes two personal observations. In one case, an osteoclastoma of the left scapula was found on roentgen examination to be secondary to a cancer of the left bronchus. In the second instance, roentgenograms proved the primary manifestation to be an ulcus carcinomatosum of the stomach with metastases in the pelvis, rib, pleura and lungs. The diagnosis before roentgenography in the second instance was sarcoma of the pelvis.

**Rare Localization in Osteochondropathy.**—Dubrovskaya describes an observation in which the diagnosis, after roentgenography of the 12 year old patient, was neoplasm of the proximal end of the fifth metatarsal bone of the left foot. The right foot showed similar but less intense changes. The author states that the change in the left foot was the result of a pathologic fracture of the necrotic bone with subsequent spreading of the necrosis. In the right foot the spread of the necrosis took place without a previous fracture.

## Hospitalstidende, Copenhagen

**75:** 213-240 (Jan. 21) 1932

*Roentgen Picture of Normal and Pathologic Sella Turcica. H. Scheuermann.—p. 213.

**Roentgen Picture of Normal and Pathologic Sella Turcica.**—Scheuermann examined roentgenograms of the cranium of 391 patients with a normal sella turcica and of 55 with brain conditions showing pathologic changes, and made comparative examinations of specimens of normal sella turcicas from 100 patients and of sella turcicas from forty-one with intracranial disorders. The technic in roentgen examination of the cranium, normal anatomy and roentgen pictures of sella turcica, position of the head in certain tumors of the brain, and primary and secondary enlargement of the sella turcica are discussed. There has been close agreement between the results of roentgen examination and of necropsy. The roentgenologist, he says, is to express himself concerning the pathologic changes revealed but to speak with reservation concerning the possible primary or secondary nature of the changes.

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# SUBDURAL HEMATOMA IN INFANTS

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In the past three years there have been admitted to the University Hospital nine infants with subdural hematoma. Since these cases are usually diagnosed as idiopathic hydrocephalus, we are reporting this series to stress the ease of differential diagnosis. The importance of making this distinction lies in the fact that idiopathic hydrocephalus is hopeless, while subdural hematoma is amenable to surgical treatment. There is no doubt that we, as well as others, must have frequently overlooked the condition.

## SYMPTOMATOLOGY

The symptom first noted is a gradual enlargement of the head, usually associated with convulsions. This is seldom observed before the age of 4 months. Though the shape of the head resembles that of hydrocephalus, the expression of the face is different. This, we feel, is a most important point. Instead of a dull, apathetic face, one sees a bright, alert expression, even though the eyeballs are displaced downward. In the far advanced cases this may not be true.

On percussion over the parietal region a dull note is obtained, while in hydrocephalus the note is tympanitic (McEwen's sign). A high-pitched note over a subdural hematoma in adults has been described by Rand.[1] The note in infants is, however, entirely different. On examination of the fundus, retinal hemorrhages and various degrees of optic atrophy may be seen and, occasionally, choked disk.

The diagnosis is established on puncture of the fontanel. If true hydrocephalus exists, the ventricle is usually entered at a depth of from 1 to 2 cm., colorless ventricular fluid being readily obtained. In subdural hematoma the fluid appears just after the click of piercing the membranous fontanel. It varies from slightly straw-colored to almost pure blood and gushes from the needle with each cry. One should not be confused here by subarachnoid fluid which might be increased by cortical atrophy and slightly colored by the trauma of the puncture. Immediate centrifugation will show in the latter condition a clear colorless supernatant fluid.

After reporting our cases, we will discuss the etiology, pathologic physiology and treatment.

## REPORT OF CASES

Case 1.—B. C., an illegitimate boy, was born at the Maternity Clinic of the University Hospital, Dec. 12, 1927. The delivery was normal and at term. He was placed on a formula ten days later. He was referred, April 17, 1928, because of a gradual enlargement of the head. There were no other symptoms except occasional vomiting.

Examination revealed a large, typically hydrocephalic head with a bulging fontanel. The eyes were displaced downward. The fundi showed both disks to be edematous. There were two large hemorrhages in the right fundus near the disk.

A ventricular puncture was attempted on the left without success. When the needle was removed, blood-tinged xanthochromatic fluid trickled from the puncture wound. A similar result ensued when the right side was tapped, except that the fluid was bloodier. Fluid was then aspirated from both sides and air injected. Roentgen examination revealed this to be extra-arachnoid. When both fluids were centrifugated, that on one side was seen to be deep yellow while the other was smoky reddish.

One of us (M. M. P.) made a right sided subtemporal decompression of about 30 mm. The dura was under marked tension and abnormally red. It was incised, and immediately xanthochromatic fluid spurted upward to a height of about 6 inches. When the pressure of the fluid had been exhausted the dura was widely opened. The brain, covered with arachnoid, immediately herniated slightly into the dural opening. There was considerable fluid beneath the arachnoid. This was aspirated with a fine needle and found to be perfectly clear. The brain was then depressed and a large amount of xanthochromatic fluid escaped from the anterior region. Herniation of the brain immediately ceased; in fact, it was sunken about 1 cm. below the temporal opening. No clots were seen, although the lateral aspect of the cerebral hemisphere was carefully explored throughout. The dura appeared pinkish. A piece was removed for pathologic examination. The wound was closed in layers.

Dr. Warthin's diagnosis was chronic pachymeningitis hemorrhagica.

A similar operation was performed on the other side a few days later with an entirely similar result.

The general condition was good postoperatively, but both wounds soon bulged with fluid subcutaneously. This was necessarily aspirated almost daily and was always xanthochromatic. Soon the downward gaze of the eyes disappeared. Six weeks later the shape of the head appeared almost normal. The accumulation of fluid, however, continued for about six weeks more. The patient was discharged apparently normal in appearance and mentality, July 11, 1929.

In considering this case in the light of our present knowledge, we realize that this was a mild degree of the condition we are discussing. There was undoubtedly an inner membrane lying over the arachnoid but it was so thin and transparent that it was not recognized. This inner membrane is ordinarily very firm and opaque, being usually strong enough to prevent the brain from expanding.

This case is undoubtedly the type that might regress spontaneously or after repeated punctures of the fon-

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From the Department of Surgery, University of Michigan Medical School.

[1] Rand, C. W.: Chronic Subdural Hematoma, Arch. Surg. 14: 1136 (June) 1927.

tanels. A report in October, 1931, showed that the head was apparently normal in size and that there was no bulging of the decompressions. The intelligence quotient was 68 by the Binet test.

Case 2.—D. H., an illegitimate boy, born at the Maternity Clinic, July 2, 1927, and placed on a formula almost immediately, was discharged to a nursing home as normal.

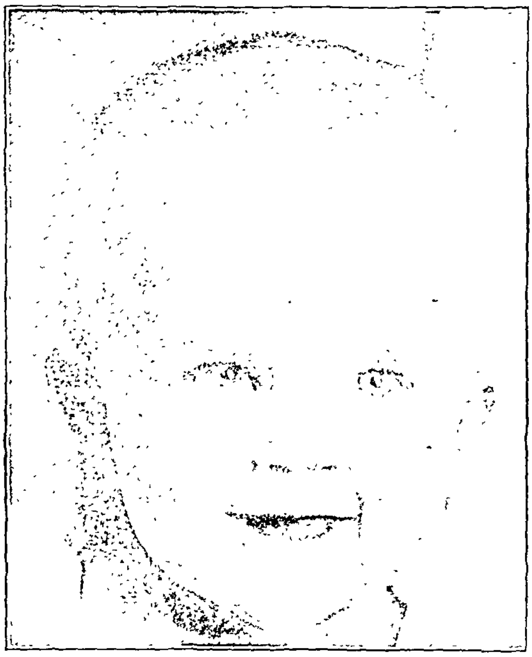

Fig. 1 (case 4).—Large head and normal facial expression. The fontanel is sunken from previous subdural puncture.

He was returned to the hospital three months later because he was not moving the left arm as formerly and was very apathetic. Examination by the department of pediatrics was negative: the anterior fontanel did not bulge and the head was apparently normal. The spinal fluid was negative.

He was admitted one month later because of a single convulsion and continued listlessness. He was a well nourished infant at this time. The head was enlarged and the anterior fontanel was bulging. There was a staring expression to the eyes. The Kahn test of the blood was negative. The fundi showed neuroretinitis with edema of the nerve heads.

Puncture of the fontanels revealed subdural bloody fluid on both sides, that on the right being darker. Air was injected on the right after the removal of about 40 cc. of fluid. Roentgenograms revealed the air-containing space to be limited posteriorly by the tentorium cerebelli, medially by the falx cerebri. It extended laterally over the parietal lobe. The normal convolutions of the brain which are ordinarily delineated when air is in the subarachnoid space were not seen.

A right sided osteoplastic flap was turned (E. A. K.), exposing the dura, which was under marked tension. The dark blue coloration indicated hemorrhage beneath. The dura was opened, exposing a gelatinous appearing cyst wall covering the entire brain. The cyst was opened, considerable hemorrhagic fluid escaping. The tough false membrane over the arachnoid was removed as far as possible, as well as the gelatinous lamination adherent to the dura. The condition became poor and the child died during the closure.

Case 3.—R. H., a boy, aged 6 months, admitted to the hospital, Oct. 10, 1928, had a normal labor. Cyanosis or convulsions were not present. The child had always been on a formula.

He was apparently well until about two weeks previous to admission when vomiting of a projectile type began. Convulsions had occurred twice in which the hands shook and the eyes rolled. The child was comatose for some time following each attack. The enlargement of the head was first noted at the onset of the vomiting and had progressed rapidly up to the time of entrance.

On examination the child appeared acutely ill. There was great enlargement of the frontal bossae. The anterior and posterior fontanels were widely open and there was considerable separation of the sutures. The veins of the scalp were dilated. The eyes were turned downward and in. The fundi showed bilateral choked disks. The blood Wassermann was ++++.

On puncture of the fontanels about 300 cc. of slightly bloody, orange-colored fluid was obtained from the two sides.

Antisyphilitic treatment was commenced. The subdural spaces were frequently tapped but there was no improvement after three months.

Jan. 16, 1929, under nitrous oxide anesthesia, a large, right sided osteoplastic flap was turned downward (M. M. P.). When the dura was opened there was an escape of a large amount of xanthochromatic fluid. Covering the inner surface of the dura was a definite membrane, which was quite adherent but could be peeled from the dura. The inner surface of this membrane was pinkish and shiny. The brain was displaced downward 3 or 4 cm. in the frontal region and less toward the parietal, so that the posterior parietal membrane, brain and dura were adherent. The displaced brain was covered with a semiopaque, pearly glistening membrane, which readily peeled from the arachnoid. A large portion of the dural membrane was removed, as was that over the displaced brain. The dura was partially closed and the osteoplastic flap returned to position. The incision was closed in layers.

About one hour later the patient suddenly became cyanosed, and respirations ceased shortly.

At autopsy, besides the subdural hematoma on the left side, there was well marked dilatation of all ventricles.

Case 4.—R. M., a boy, aged 10 months (fig. 1), a second baby, by a normal delivery, was placed on a formula at 2 weeks. Enlargement of the head was first noted at 4 months. It had gradually increased 1 inch. Convulsions of both a clonic and a tonic nature had occurred two or three times a month since the enlargement was first noted. Projectile vomiting was associated with these attacks.

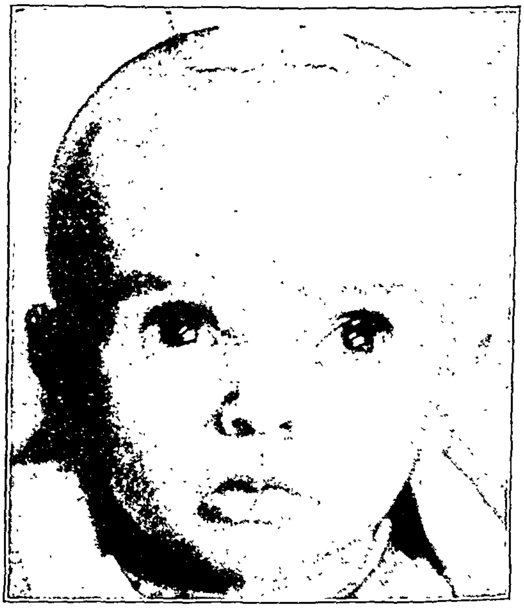

Fig. 2 (case 5).—Hydrocephalic type of head with a circumference greater than the chest. Bilateral fontanel punctures into subdural hematomas are sealed with collodium-cotton dressing.

The child had an abnormally large head and was unable to hold it up for any appreciable length of time. The expression of the face was that of a bright active child, and he smiled and laughed frequently. The anterior fontanel was large and bulging. The fundi showed no evidence of an increase in intracranial pressure.

On puncture of the fontanel the ventricles were not encountered. On the left, a large amount of bloody fluid was obtained from the subdural space. The fluid on puncture of the right fontanel was straw colored.

A right sided osteoplastic flap was turned (E. A. K.). The middle meningeal vessels were seen to be three times their normal size. When the dura was opened, it was easily separated from a cystic purplish gelatinous mass. Over 50 cc. of bloody fluid escaped when the mass was incised. A thin, tough, milky membrane covered the arachnoid and was stripped from it as far as possible.

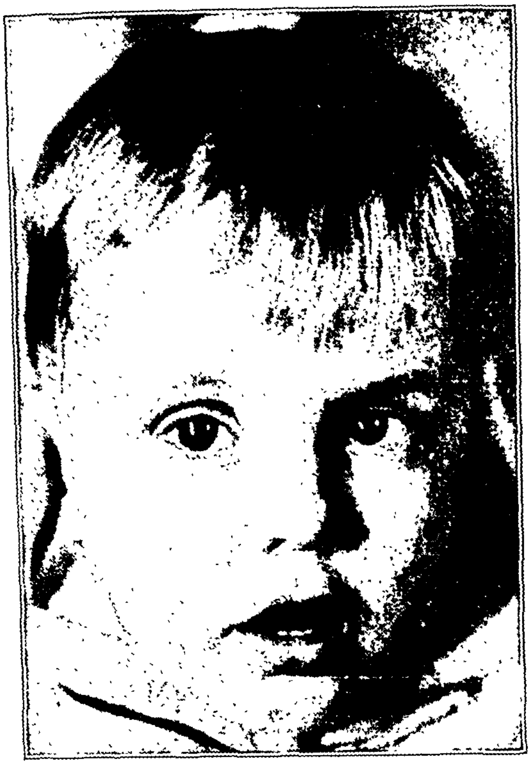

Fig. 3 (case 5).—Appearance of patient two years after operation.

Postoperatively the child seemed to be in excellent condition. Several hours later respirations suddenly became very shallow and the child soon died. A cause for the sudden death was not found at autopsy.

CASE 5 (fig. 2).—F. K., an illegitimate boy of a normal delivery, was born, Sept. 10, 1928, at the Maternity Clinic. The Kahn test was negative. The child was soon placed on a formula. He gained weight rapidly and was taken to a boarding home in November. At that time the head seemed larger than normal. About Christmas time a generalized convulsion occurred, and there was one following this.

The baby was returned for examination because of a continuous enlargement of the head, which presented a typically hydrocephalic appearance. There was some bulging of the anterior fontanel, and on percussion over the parietal bone a flat note was obtained. The appearance of the face showed no evidence of mental dulness. There was a peculiar bluish discoloration about the eyes. There was questionable early optic atrophy, with one hemorrhage in the left fundus. A diagnosis of pachymeningitis hemorrhagica was made.

Puncture of the fontanel on the left side revealed considerable clear yellow fluid. The fluid was very bloody on the right.

A few days later a bronchitis developed. Following this, a definite left sided bronchopneumonia was revealed by roentgen examination.

April 17, 1929, a small right sided osteoplastic flap was turned (E. A. K.). The dura was seen to be blackened and under considerable tension. A needle was inserted beneath the dura, and considerable bloody fluid was obtained, relaxing the dura. The middle meningeal vessels were ligated. The dura was opened with the base below. It stripped readily from a glistening, black, gelatinous membrane. This was opened, giving entrance into a cavity containing bloody fluid. The patient went into shock at this point, but on lowering of the head the condition improved.

The undersurface of the cavity was lined with a milky white membrane which covered a normal arachnoid. All the membrane was removed except for some far anteriorly. It did not extend posteriorly beyond the midparietal region.

The dura was closed with interrupted silk sutures and the wound was hastily brought together in two layers. The baby at this stage was in profound shock but rallied after a hurried whole blood transfusion.

The third day after operation, 100 cc. of bloody fluid was aspirated subcutaneously. Several more aspirations were necessary in the next ten days, following which there was no further accumulation.

June 9, a left sided osteoplastic flap was turned and a similar pathologic condition was found except that the fluid was somewhat less bloody. An attempt was not made to remove as much of the membrane as previously. Transfusion was performed at operation.

Postoperatively it was necessary to aspirate twice in about five days, but following this there was no further accumulation of fluid.

The patient was returned (fig. 3) for examination, November 1. He was walking and the nurse stated that he was "brighter than normal." He was again seen in June, 1931, at which time he was perfectly normal to all appearances.

CASE 6 (fig. 4).—R. C., a Negro boy, aged 13 months, who was delivered with instruments was in good health and was breast fed for ten months. His mother was a primipara with a history of a positive Wassermann reaction. He sat erect at 9 months. The past two months it was noted that the child was very irritable, that his appetite was poor and that he vomited frequently. The mother stated that the head had always been large.

Examination revealed a large globular head. The anterior fontanel was bulging. The facial expression was that of a normally bright child. The fundi showed early consecutive optic atrophy and no hemorrhages. There was dulness on percussion over both parietal regions. The Kahn test of the blood was negative and there were no signs of hereditary syphilis.

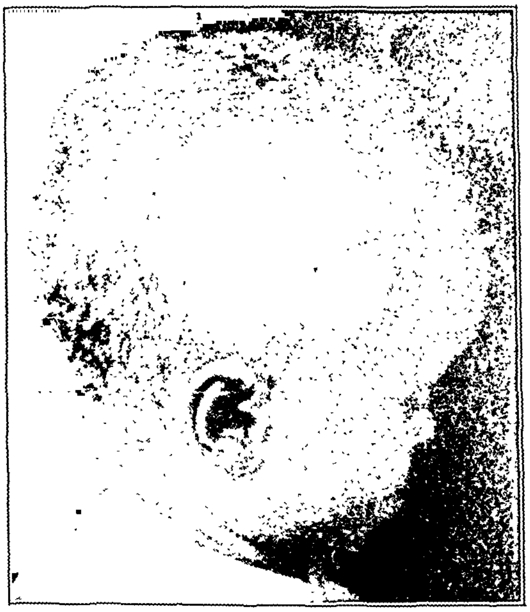

Fig. 4 (case 6).—Appearance two weeks after operation.

Subdural puncture of the right fontanel revealed about 40 cc. of very bloody fluid. On the left only a small amount of clear subarachnoid fluid was obtained. A diagnosis of right sided pachymeningitis hemorrhagica was made.

March 18, 1930, puncture of the left fontanel gave only a small amount of clear subarachnoid fluid. On right sided puncture about 30 cc. of very bloody fluid was obtained. A small right sided osteoplastic flap was then turned (E. A. K.). The dura was lax and when it was opened about 40 cc. of fluid escaped. The middle meningeal vessels were only slightly larger than normal and were secured with clips. The membrane on the dura was only about 2 mm. thick. It was stripped from the dural flap. No attempt was made to strip more of it from the surrounding dura. Though the arachnoid appeared normal, a thin greenish yellow membrane entirely covered it. This membrane was very delicate and was easily removed. The wound was closed in layers. The child was never in a serious condition during or after operation.

March 26, the bone flap was elevated by underlying fluid. About 80 cc. of bloody fluid was aspirated; March 30, 90 cc. was aspirated. It was necessary to aspirate the fluid every few days for a month. The fluid was then allowed to accumulate, raising the flap slightly. This disappeared spontaneously in about two weeks.

July 7, there seemed to be some fluid beneath the flap. On aspiration, 40 cc. of clear colorless cerebrospinal fluid was obtained. This was repeated a few days later. There was no further elevation of the flap and the child was discharged in good condition. The child was seen again in January, 1931. He was apparently perfectly normal. The mother had not noticed any increasing enlargement of the head. In October, 1931, the child was bright and symptom-free. Measurement showed no increase in the size of the head from the previous January (fig. 5).

We feel that, following operation and aspiration, the internal pachymeningitis had completely resolved or had organized in such a way that transudation no longer occurred. This meant the formation in so large a head of considerable dead space, which naturally became filled with cerebrospinal fluid. This accounts for the aspiration of clear fluid so long after operation.

Fig. 5 (case 6).—Appearance a year and a half after operation.

Case 7.—D. D., aged 10 months, a seven-months premature infant, had had a normal birth. It was the mother's seventh pregnancy. At the age of 4 months it was noted that the child was losing weight. There was a loss of appetite and diarrhea. At the time of entrance, the child had never sat alone. There was no history of convulsions.

The appearance was that of a greatly emaciated infant with a head suggesting hydrocephalus. The fundi showed slight secondary optic atrophy. The Kahn test of the blood was negative. On puncture of the fontanels the ventricles were not encountered, but from both subdural spaces straw-colored fluid was obtained.

Two months following admission, a right sided osteoplastic flap was turned (E. A. K.). A comparatively thin membrane was found beneath the dura. This was partly excised and the membrane covering the arachnoid was almost completely excised. There was an accumulation of about 60 cc. between the two membranes. About two hours after the operation, respirations suddenly ceased, the pulse continuing, however, for several minutes.

Case 8.—B. B., a boy, aged 6 months, was admitted because of increasing enlargement of the head, noted the past two months. There was no history of convulsions. He had been discharged from our maternity home at the age of 6 weeks in good condition. The mother was a primipara; the child, illegitimate.

The infant was well nourished. The head was typically hydrocephalic, the fontanel was large but not bulging. The coronal suture was open. There was dulness on percussion over both parietal regions. The fundi showed only slight pallor. On puncture of the fontanels, xanthochromatic fluid was found in both subdural spaces.

A right sided osteoplastic flap was turned (M. M. P.). Immediately beneath and adherent to the dura was found a dense false membrane, beneath which was a large organized clot. A firm membrane covered the arachnoid. Between this and the clot was from 200 to 300 cc. of yellowish, slightly bloody fluid. When the clot was removed, the brain did not expand. It did so only after the removal of the membrane covering the arachnoid. Beneath the arachnoid, clear fluid could be seen. The child left the operating room in fair condition. He continued to improve, when respirations suddenly ceased. The pulse could be felt for several minutes afterward.

Case 9.—B. L., an illegitimate child, had had a breech presentation. The Wassermann reaction of the cord blood was negative. He was immediately placed on a formula.

He was brought to the University Hospital because of a progressive enlargement of the head. The head presented the typical appearance of hydrocephalus with bulging fontanel, separated sutures and prominent scalp veins. There was dulness on percussion over both parietal regions. The fundi showed diffuse choroiditis and secondary optic atrophy.

Puncture of the fontanels revealed amber colored fluid on both sides. A diagnosis of bilateral subdural hematoma was made.

Under local anesthesia a large left sided osteoplastic flap was turned (M. M. P.). The dura was incised, making a flap with the base posterior. A thin subdural membrane covered the entire dura and was stripped off well to the frontal and occipital regions and from nearly the midline above downward into the floor of the middle fossa. There was a large amount of bloody fluid covering the cerebral cortex. When this was evacuated it was seen that the combined pressure on the brain coupled with the distention of the skull had pushed the dura so far away from the brain that there was a space of at least 1 inch between the inferior longitudinal sinus and the surface of the cortex. The cortical veins passing to the superior longitudinal sinus had been stretched until they were from 1 inch to 1½ inches long. A thin yellowish membrane, rather opaque and very tough, enclosed the cerebral cortex. This was stripped away, allowing the brain to expand. All the blood on the right side was thoroughly irrigated away, the dura closed and the osteoplastic flap returned to position. The scalp incision was closed in layers.

The postoperative condition was fair. Transfusion of 100 cc. of whole blood was done. Ten days later a right sided osteoplastic flap was turned under local anesthesia (M. M. P.). A similar condition was encountered. The two hematomas communicated beneath the falx. This was the only case in which this was found. Postoperative aspiration was performed six days later and was repeated every few days for one month, when the fluid had practically disappeared and no further aspiration was necessary.

## ETIOLOGY

Trauma is undoubtedly the most important factor, as stressed by Trotter.[2] Malnutrition, however, may predispose to this condition. None of our patients were breast-fed for any length of time except patient 5. Five of our patients were illegitimate, having been cared for in institutions. Sherwood[3] has noted the etiology of this malnutritional factor. Five of his nine patients had been cared for by foster mothers or by charitable institutions. O. Rosenberg,[4] who has had a most extensive experience with this condition, stated that he had never seen it develop in a healthy, normally developed, breast-fed child.

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[2] Trotter, W.: Brit. J. Surg. **2**: 271, 1914.

[3] Sherwood, David: Chronic Subdural Hematoma in Infants, Am. J. Dis. Child. **39**: 981 (May) 1930.

[4] Rosenberg, O.: Ergebn. d. inn. Med. v. Kinderh. **20**: 579, 1921.

### PATHOLOGIC PHYSIOLOGY

It would seem that there is a definite sequence of events. There first occurs a hemorrhage into the subdural space. This is undoubtedly from the superior cerebral veins which run from the cortex to the dura or longitudinal sinus. They have a comparatively short, vertical course in the subdural space, as shown by Trotter.[2] In one adult, we found the vein which apparently had caused the original hemorrhage.

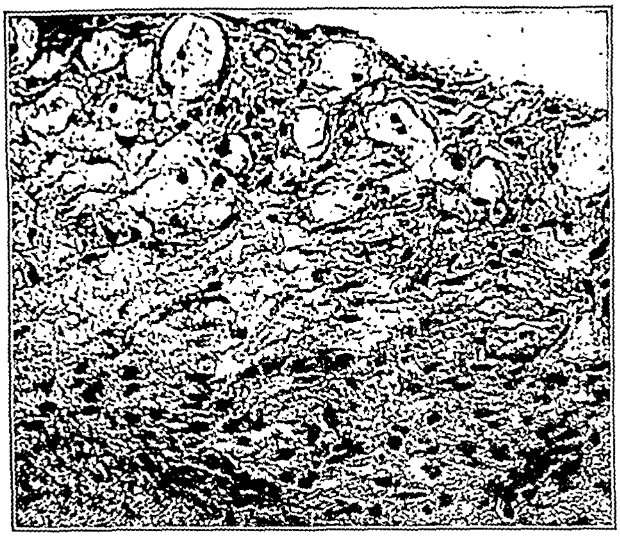

Fig. 6.—Inner surface of organized membrane attached to dura with the thin walled vessels through which transudate passes into cyst.

The line of force of the blow is probably in an anterior-posterior or posterior-anterior direction since the broad falx protects this region from lateral trauma.

Following the original hemorrhage there is organization along the inner dural surface with the formation of very thin walled vessels (fig. 6). From these thin walled vessels there is a continuous transudation producing the xanthochromatic fluid. Perhaps the increased intracranial pressure compresses the meningeal veins augmenting the transudation through passive congestion. From time to time a thin walled vessel may rupture. This accounts for the lamination of the membrane. The color of the fluid, which often varies on different punctures on the same side, is also determined in this way.

The membrane on the dura is chiefly supplied by the middle meningeal vessels. These increase greatly in size and are usually seen at operation to have two or three times the normal diameter. The great vascularity of a normal dura is seen in figure 6.

### TREATMENT

The outer membrane may be so thin as to be scarcely visible on the inner surface of the dura even though a great amount of fluid is present (case 1). We feel that this is the only type of case that might recover spontaneously or after repeated punctures of the fontanels. Rosenberg[4] states that 50 per cent of these infants die in the hospital, usually, however, of intercurrent infection. He traced fifteen out of thirty who left the hospital. Four died; of the eleven remaining, there were two idiots, three imbeciles, one severe neuropath, one stutterer, two bed wetters, one of whom had optic atrophy, and two were normal. Bronson Crothers[5] feels very pessimistic about complete spontaneous cures. Though our operative mortality is strikingly high, we feel that the poor progress reported by the most experienced observers justifies our position.

That recovery could take place without surgical intervention in such a condition as that presented by patient 5 seems out of the question. The inner membrane, which may be almost as tough as the dura, constricts the brain so tightly that expansion is impossible. After the membrane has been removed, the brain is seen to expand, provided the patient is not in deep shock.

Whether a subdural hematoma could regress spontaneously might be determined by examination of the membranes through a trephine opening. If seen to be very thin, conservative treatment might be tried. The thickness of the membrane does not determine the amount of fluid present or its rapidity of formation.

Our operative procedure is now as follows: If the case is bilateral, the subdural space opposite the side to be operated on is first tapped. This is to avoid subsequent pushing over of the brain with pressure on the brain stem by the fluid on the unoperated side after operation, when the intracranial pressure commences to reach the normal. We feel that three of our patients died as a result of this mechanism, for respiration ceased suddenly while the pulse continued for a short period. One should not wait until the operation has been completed before tapping the unoperated side, since the pressure then may be so low that very little fluid would be obtained.

A moderate sized osteoplastic flap is then turned down over the frontoparietal region. The dura is opened, leaving the base toward the occipital region. The middle meningeal vessels are clipped. The blue black gelatinous membrane is removed without an attempt being made to go too far beneath the dural incision. Following this, the depressed brain covered by a tough transparent or milky white membrane is seen. This is removed from the arachnoid as widely as possible, there being but slight danger from hemorrhage in this procedure. The dura is then closed and the bone flap replaced without making a decompressive opening. The scalp is sutured in two layers with silk. Facilities for immediate transfusion should be available.

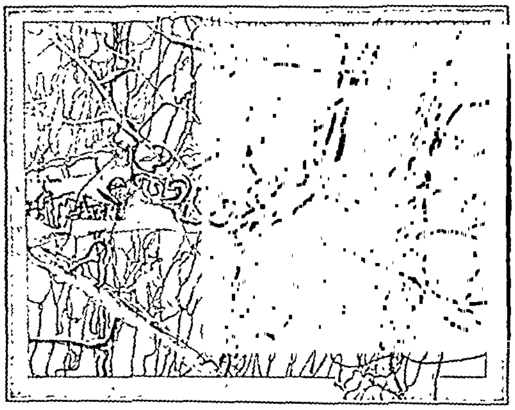

Fig. 7.—Normal dura, after R. A. Pfeifer.

### CONCLUSION

Subdural hematoma in infants is not a rare condition. In cases of apparent hydrocephalus, especially those presenting a normal facial expression and a dull percussion note over the parietal area, a subdural hematoma should be suspected and the fontanel punctured. Operation is justified in spite of the high mortality.

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[5] Crothers, Bronson: Personal communication to the authors.

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# SPONTANEOUS SUBARACHNOID HEMORRHAGE

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AND
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It is our belief that spontaneous subarachnoid hemorrhage occurs more frequently than is generally appreciated. This belief, together with the fact that the clinical picture is so striking and so easily recognized, prompts us to discuss briefly the subject, and to report concerning twenty-four cases entering the medical services of the Boston City Hospital in the eighteen months between July, 1929, and January, 1931.

## INCIDENCE

As an illustration of the frequency of subarachnoid hemorrhage, we have compared the incidence of this condition with that of cerebrovascular accidents of all types and subacute bacterial endocarditis during the same time period. The data are as follows: cerebrovascular accidents (all types), 353 cases; spontaneous subarachnoid hemorrhage, 24 cases; subacute bacterial endocarditis, 22 cases.

Thus, the incidence of subarachnoid hemorrhage is approximately one-fifteenth that of cerebrovascular accidents (including hemorrhages, thromboses) and about equal to that of subacute bacterial endocarditis, a much better known condition than subarachnoid hemorrhage.

## HISTORY

Subarachnoid hemorrhage was seldom recognized clinically before 1904. Most of the earlier cases were recognized only after a postmortem examination. Wilks [1] in 1859 described four cases of spontaneous subarachnoid hemorrhage, and Gintrac [2] in 1869 found only thirty-four cases recorded in the literature. It was after the introduction of lumbar puncture by Quincke [3] in 1891 that the clinical diagnosis of the condition could be made easily, especially from observations on the spinal fluid. Froin [4] in 1904 published a complete description of the fluid, its uniformly bloody character, the xanthochromia of the supernatant fluid, and the increase in depth of pigment on succeeding taps as the escaped blood became older.

Ehrenberg [5] in 1912 reported cases and described the condition in detail. Fearnsides [6] added forty-four cases and believed the hemorrhage due to aneurysms in younger people and to arterial degeneration in older people. The aneurysms in younger people he believed were the result of congenital defects of the media of the blood vessels; in fact, he emphasized the rarity of syphilis as a cause of intracranial aneurysm, since in the smaller arteries it causes an obliterative endarteritis rather than a weakening of the media.

McIver and Wilson [7] believed that acute infection produced meningeal hemorrhages by occlusion of many small vessels with infectious emboli and, in this way, weakening of the wall of the blood vessel. Mycotic aneurysms have also been described by Stengel and Wolferth.[8]

## ANATOMIC DESCRIPTION

The brain stem has three coverings or meninges. From without, inward, these are (1) the dura, (2) the arachnoid and (3) the pia, which is very vascular. Between the arachnoid and the pia is the cerebrospinal fluid. There are many trabeculae in this space.

Symonds [9] has pointed out that blood in the subarachnoid space may arise from one of the following four sources:

1. A subdural hemorrhage from lacerations of one of the large dural veins with rupture into the subarachnoid space.
2. A hemorrhage in a superficial part of the brain with rupture through the pia and into the subarachnoid space, cerebromeningeal hemorrhage.
3. A deep cortical hemorrhage with rupture into a ventricle and extension through the foramina of Luschka and Magendie into the subarachnoid space.
4. A rupture of one of the vessels lying in the subarachnoid space.

The first group is usually a result of traumatic laceration of the veins leading from the cerebral cortex to the great sinuses. Group 4 is the primary subarachnoid group. However, cases in groups 2 and 3 may present the typical picture of spontaneous subarachnoid hemorrhage with few or no signs of gross cerebral involvement. This is especially true of the patients entering in coma.

Symonds [9] emphasized the importance of the site of the hemorrhage in determining the rate of diffusion of the blood. If the hemorrhage occurs in the basal or pontile cistern, free diffusion is quickly accomplished. On the other hand, if it is in the ventricles, diffusion must occur through the narrow aqueduct of Sylvius, and there is a greater tendency toward localization. A superficial cerebral hemorrhage extending into the subarachnoid space is limited by the walls of the gyrus and the blood tends to gravitate to the base of the brain, and here also the rate of diffusion is slow.

## SYMPTOMS AND SIGNS

There is no condition in medicine that is more dramatic, more sudden, than subarachnoid hemorrhage. The patient is usually perfectly well until the sudden onset of headache. This strikes so suddenly and so intensely that some patients have described it as though "struck at the base of the skull" (Symonds). Vomiting, dizziness and coma may supervene in short order.

We have arranged the complete observations of our cases in table 1.

Some of the symptoms and signs are as follows:

*Onset.*—Of the twenty-four cases, histories were obtained in twenty. Of these, nineteen gave a story

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From the Thorndike Memorial Laboratory and the Second and Fourth Medical Services (Harvard), Boston City Hospital and the Department of Medicine, Harvard Medical School.

[1] Wilks: Guy's Hosp. Rep. **119**, 1859.

[2] Gintrac: Maladies de l'appareil nerveux, Paris **1**: 649, 1869-1871, quoted by Symonds (footnote 9).

[3] Quincke: *Die Lumbal Punktion des Hydrocephalus*, Berl. klin. Wchnschr. **28**: 929-965, 1891.

[4] Froin: Les hémorrhagies sous-arachnoïdiennes et de mécanisme de l'hématolyse en général, Thèse de Paris, 1904, quoted by Symonds (footnote 9).

[5] Ehrenberg, L.: Hygiea **74**: 849-885, 1912.

[6] Fearnsides, E. G.: Intracranial Aneurysms, Brain **39**: 224-296 (Oct.) 1916.

[7] McIver, Joseph; and Wilson, George: Spontaneous Subarachnoid Hemorrhage, J. A. M. A. **93**: 89-93 (July 13) 1929.

[8] Stengel, A. E., and Wolferth, C. C.: Mycotic Aneurysms of Intravascular Origin, Arch. Int. Med. **31**: 527-554 (April) 1923.

[9] Symonds, C. P.: Spontaneous Subarachnoid Hemorrhage, Quart. J. Med. **18**: 93 (Oct.) 1924.

of sudden onset. This is therefore a constant symptom. Onset usually occurs during exertion, as in playing games, tossing the baby in the air or straining at stool. The sudden onset helps to distinguish this condition from meningitis, in which the patient usually has a few hours of malaise, fever and slight headache.

*Headache.*—This symptom was present in sixteen of the twenty cases in which histories were obtained. The onset is usually sudden. The patients who go into coma usually remember later that a severe headache had preceded the loss of consciousness.

*Coma.*—Twenty-one of our twenty-four patients were brought into the hospital either in coma or in a stuporous state. Of the eleven stuporous patients, four died and seven recovered. Of the ten in deep coma, eight died and two recovered. It would seem, therefore, that the presence of coma adds to the gravity of the prognosis.

*Vomiting.*—This is a frequent symptom and was present in nine of our cases. It is probably due to the sudden increase of intracranial pressure. In six cases it was present at onset.

*Neurologic State.*—Of the twenty-four patients, seventeen could be roused. Six of these showed varying degrees of confusion. Histories were obtained for four of the six cases and indicated that the hemorrhage was of slightly longer standing than for the average case. Two of the six patients died. The other eleven patients were mentally clear. In meningitis, the patients in stupor or coma are more apt to be disoriented and irrational.

All but three of the twenty-two patients examined for the presence or absence of a stiff neck had this symptom. Stiff neck occurs early in the disease and is due to meningeal irritation. It is so constant that its presence in any patient should bring up the possibility of subarachnoid hemorrhage. The stiff neck may be mild at first and increase later. The Kernig sign is frequently present and is due to meningeal irritation.

None of the cases showed a large subretinal, usually single hemorrhage as described by Doubler and Marlow,[10] Hale-White [11] and Symonds. Two of our cases showed numerous fresh retinal hemorrhages. One of these patients had marked hypertension and a history of nephritis, and the hemorrhagic areas were flame-shaped. The other patient had hypertension (190 systolic) with no evidence of nephritis. Doubler and Marlow demonstrated that with subarachnoid hemorrhage the blood went down the optic sheaths and through the lamina cribrosa and ruptured through the retinal and hyaloid membrane. The patients with these large hemorrhages were associated in the cases described by the aforementioned writers with ruptured aneurysm of the internal carotid artery, usually near its termination.[12]

One patient had a paralysis of the left fourth nerve on entry. This nerve is fairly frequently involved. It occurred once in one of McIver and Wilson's cases [7] and in one of Richardson's cases.[13] Our patient showed no improvement in the paralysis while in the hospital, and complained of diplopia.

LABORATORY OBSERVATIONS

*Spinal Fluid.*—This is under increased pressure and is always bloody. It may vary in color from a pink to a dark red or a deep orange, depending on the degree and duration of the bleeding. One of Symonds' patients had a red blood cell count in the spinal fluid of over 3,000,000 per cubic millimeter. At first the white blood cells in the spinal fluid are proportional to the number of red blood cells. Then the number becomes slightly elevated, usually because of an increase in the polymorphonuclears; later, because of an increase in the lymphocytes. The supernatant fluid is faintly xanthochromic within from three to four hours after the onset and gradually becomes more xanthochromic. Usually the fluid is clear and colorless at the end of from ten days to two weeks. Care should be taken to distinguish bloody spinal fluid from a bloody tap (blood due to trauma of needle). The absence of clot, the uniformly bloody character of the fluid (when collected in the three tubes), and the xanthochromic supernatant fluid indicate a subarachnoid hemorrhage as against a bloody tap.

*Leukocytosis in the Blood.*—Of the twenty patients on whom white blood cell counts were done, eighteen had over 10,000 white blood cells per cubic millimeter. The average white count was 13,670 per cubic millimeter. One patient had over 20,000 white blood cells per cubic millimeter. The slight elevation in white blood cell count again confuses the condition with meningitis. There is no correlation between the white count and the outcome.

*Fever.*—The temperatures recorded in table 1 were the highest temperatures during the illness, excluding agonal rises. In the twenty-four cases, seventeen had temperatures of 99.5 F. or over. A temperature of 100 F. or over during the illness is the rule rather than the exception. Here again is a state of affairs which confuses the differentiation of meningitis from subarachnoid hemorrhage, although in subarachnoid hemorrhage the fever corresponds usually to the time of greatest hemolysis and absorption of pigments (first week).

*Albuminuria and Glycosuria.*—One case showed sugar and acetone in the urine with no previous history of diabetes and was at first thought to be a case of diabetic coma. However, the spinal fluid manifestations, the history of sudden onset, and the presence of severe headache established a diagnosis of subarachnoid hemorrhage. Most of our patients had albumin in the urine in slight amounts. Only two patients showed gross albuminuria and both of these had a few casts; one recovered and one died.

Claude Bernard, in his classic experiment, demonstrated that puncture of the fourth ventricle produces an increase in the volume of urine and often causes albuminuria as well as glycosuria.[14] Glycosuria and acidosis are known to occur as a result of hemorrhage in the region of the fourth ventricle. It is possible that such a mechanism is responsible for albuminuria in some of our cases.

Table 2 illustrates the similarities and differences of subarachnoid hemorrhage and meningitis.

The striking picture in subarachnoid hemorrhage is sudden onset, headache, stiff neck, bloody spinal fluid with no clots; in meningitis, gradual onset, stiff neck, cloudy spinal fluid with clots.

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[10] Doubler, F. H., and Marlow, S. B.: Hemorrhage into Optic Nerve, Arch. Ophth. **46**: 533 (Nov.) 1917.

[11] Hale-White: Tr. Clin. Soc. London **28**: 5, 1895.

[12] Goulden, C., and Riddoch, G.: Communication on the Relationship Between Subarachnoid and Intra-Ocular Hemorrhages, Brit. J. Ophth. **9**: 209 (May) 1925., Calhoun, F. P.: Ocular Symptoms of Subarachnoid Hemorrhage, J. A. M. A. **87**: 1104 (Oct. 2) 1926.

[13] Richardson, C. W.: Spontaneous Subarachnoid Hemorrhage; Report of Four Cases, Boston M. & S. J. **194**: 340 (Feb. 25) 1926.

[14] Schneider: Les albuminuries des hémorrhagies méning, Thèse de Paris, 1910, quoted by Symonds (footnote 9).

TABLE 1.—*Observations in the Authors' Series*

|  |  |  | Onset |  | Symptoms |  |  | Subarachnoid Hemorrhage |  |  |  |  |  | Laboratory |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  | Neurologic |  |  |  |  |  |  |  |  |  |  |  |  |
| No. of Case | Age | Sex* | How and When | Symptoms | Headache | Stupor Coma | Vomiting | Mental | Stiff Neck | Kernig's Sign | Eyegrounds | Miscellaneous | Associated Diseases | Albumin | Sugar | White Blood Cells | Blood Pressure | Highest Temperature | Outcome | Comment |
| 1 | 17 | ♀ | Sudden, 6 hrs. before | Headache | ++ | ++ | +++ | Clear | ++ | Not done | Early papilledema left eye | Tendon reflexes absent | None | 0 | 0 | 10,000 | 130/68 | 98.6 | Recovery | Fluid grossly bloody |
| 2 | 21 | ♀ | Sudden, same day | Headache; vomiting | ++ | +++ | +++ | Clear | +++ | Not done | Negative | None | None | 0 | 0 | 10,600 | 100/60 | 100 | Recovery | Admitted with headache; vomiting; 4 days later, fever, stiff neck, fluid grossly bloody |
| 3 | 27 | ♀ | Sudden, 4 days before | Mental confusion | ? | ++ | 0 | Confused; incontinent | ++ | ++ | Negative | None | Onset 17 days post partum | Not done | Not done | Not done | 140/90 | 104 | Died | Fluid grossly bloody |
| 4 | 31 | ♀ | Sudden, 8 hrs. before | Headache; vomiting | +++ | 0 | +++ | Normal | ++ | ++ | Negative | Weak right VII nerve | None | Slightest possible trace | Trace | 10,200 | 110/80 | 99-100 | Recovery | Fluid grossly bloody |
| 5 | 37 | ♂ | Sudden, 6 hrs. before | Collapse | ? | +++ | 0 | Not roused | 0 | 0 | Negative | None | Hypertension | Not done | Not done | Not done | 220/80 | 101 | Died, 1 hour | Fluid grossly bloody; moribund |
| 6 | 37 | ♀ | Sudden, 1 hour before | Dizziness; convulsions | ? | +++ | 0 | Coma; convulsions | Not done | 0 | Normal | Pupils unequal | Hypertension | Not done | Not done | 15,400 | 210/95 | 100 | Died, 1 hour | Tonic, clonic convulsions; fluid grossly bloody; intracranial pressure, 500 |
| 7 | 42 | ♂ | Sudden, 2 days before | Headache; unconscious | +++ | ++ | 0 | Drowsy; rational | ++ | 0 | Negative | None | None | 0 | 0 | 12,700 | 148/84 | 100-104 | Recovery | Fluid grossly bloody |
| 8 | 43 | ♀ | Sudden, 6 hrs. before | Headache; vomiting | ++ | ++ | ++ | Episodes; semicoma | 0 | 0 | 3 small hemorrhages | Left Oppenheim | None | 0 | 0 | 18,250 | 125/85 | 99.5 | Recovery | Spells of unconsciousness; 1 lumbar puncture, clear, colorless fluid, 26 r.b.c.; 2 lumbar puncture, bloody fluid; intracranial pressure 500+ |
| 9 | 44 | ♀ | Sudden, 2 days before | Headache; stiff neck | +++ | + | ++ | Clear | +++ | ++ | Many fresh flame-shaped hemorrhages | Paralysis VI nerve | Hypertension; chronic nephritis | 0 | 0 | 15,600 | 220/110 | 100 | Died, home after discharge | Grossly bloody fluid; probable cerebral hemorrhage at home |
| 10 | 50 | ♂ | ? | ? | ? | +++ | 0 | Coma | ++ | Not done | Negative | Bilateral Oppenheim | None | Slightest possible trace | 0 | Not done | Not done | 99.4 | Died, 12 hours | Fluid cloudy pink |
| 11 | 50 | ♀ | Sudden, 12 hrs. before | Headache; vomiting | ++ | 0 | +++ | Slightly irrational | ++ | ++ | Many fresh flame-shaped hemorrhages | None | Hypertension | 0 | 0 | 12,000 | 190/110 | 98.6 | Recovery | Fluid pinkish xanthochromic |
| 12 | 50 | ♂ | ? | ? | ? | +++ | 0 | Stuporous; irrational | +++ | ++ | Negative | None | Mild hypertension | Few hyaline casts, large trace | Trace | 11,200 | 190/100 | 100 | Recovery | Fluid pinkish xanthochromic |
| 13 | 50 | ♀ | Sudden, 1 day before | Headache; collapse | +++ | ++ | 0 | Clear if roused | +++ | ++ | Negative | None | Diabetes, acidosis | Trace | +++ | 3,400 | 150/100 | 100 | Died, 4 days | Sudden death after good progress |
| 14 | 51 | ♀ | Sudden, 1 week before | Headache; dizziness; vomiting | +++ | +++ | +++ | Not roused | ++ | ++ | Slight sclerosis | None | Hypertension; chronic nephritis with uremia | Many casts, very slight trace | 0 | 20,650 | 160/100 | 100 | Died, 8 hours | Nonprotein nitrogen, 138; markedly xanthochromic fluid |
| 15 | 55 | ♀ | Sudden, 4 hrs. before | Headache; collapse | +++ | ++ | 0 | Clear | +++ | ? | Negative | None | Slight hypertension | 0 | 0 | 14,500 | 190/110 | 102 | Recovery | Grossly bloody fluid; right hemiplegia developed 2 weeks after admission |
| 16 | 56 | ♀ | Sudden, 12 hrs. before | Headache; collapse | +++ | ++ | 0 | Clear if roused | +++ | ++ | Negative | Knee jerks unobtained | Hypertension | 0 | 0 | 10,050 | 180/90 | 102 | Recovery | Grossly bloody fluid |
| 17 | 60 | ♂ | Sudden, 6 weeks before | Headache; pains left side of body | + | 0 | 0 | Clear | ++ | Not done | Negative | None | Old tuberculosis | 0 | 0 | 11,000 | 130/58 | 99.0 | Recovery | Xanthochromic fluid |
| 18 | 60 | ♀ | Sudden, 1 day before | Headache; dizziness | +++ | ++ | 0 | Clear | ++ | 0 | Negative | None | Bronchopneumonia; septic parotitis | Occasional hg casts, large trace | 0 | 8,900 | 150/100 | 99 | Died | Grossly bloody fluid |
| 19 | 62 | ♀ | Sudden, 3 days before | Backache; collapse | ? | +++ | 0 | Not roused | Not done | 0 | Sclerosis | Bilateral Babinski flaccidity | Slight arteriosclerosis | Not done | Not done | 13,600 | 135/100 | 101.5 | Died, 3 days | Grossly bloody fluid obtained at postmortem |
| 20 | 62 | ♂ | Sudden, 1 day before | Convulsion; headache | +++ | ++ | ++ | Irrational | +++ | ++ | Negative | Negative | None | Very slight trace | 0 | 18,000 | 120/60 | 100-101 | Recovery | Grossly bloody fluid; pressure, 550 |
| 21 | 65 | ♀ | ? | ? | ? | +++ | 0 | Coma | +++ | ++ | Negative | None | Hypertension | Not done | Not done | Not done | 270/120 | 97.6 | Died, 1 hour | Grossly bloody fluid |
| 22 | 69 | ♂ | Gradual, 1 week before | Headache; slight aphasia; slight confus. | +++ | + | 0 | Slight mental confusion | 0 | 0 | Flame shaped hemorrhage | None | Hypertension; arteriosclerosis | Slight trace | 0 | 10,000 | 240/130 | 98.6 | Recovery | Bloody xanthochromic; improved after taps |
| 23 | 70 | ♀ | ? | ? | ? | +++ | 0 | Irrational when roused | ++ | Not done | Negative | None | Hypertension | Not done | Not done | 15,600 | 200/160 | 100 | Died, 4 days | Xanthochromic fluid 4 days after onset |
| 24 | 75 | ♀ | Sudden, 12 hrs. before | Headache; vomiting | +++ | +++ | ++ | Not roused | ++ | ++ | Slight arteriosclerosis | None | Hypertension; arteriosclerosis | Slightest possible trace | 0 | 17,600 | 200/110 | 100 | Died, 24 hours | Grossly bloody fluid; markedly xanthochromic fluid |

* In this column, ♂ indicates male; ♀, female.

Table 1.—*Observations in the Authors' Series—Continued*

| | | | Cerebromeningeal Hemorrhages | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Onset | | Symptoms | | | Neurologic | | | | | | Laboratory | | | | | | |
| No. of Case | Age | Sex | How and When | Symptoms | Headache | Stupor Coma | Vomiting | Mental | Stiff Neck | Kernig's Sign | Eyegrounds | Miscellaneous | Associated Diseases | Albumin | Sugar | White Blood Cells | Blood Pressure | Highest Temperature | Outcome | Comment |
| 1 | 34 | ♂ | Sudden, 3 days before | Headache | +++ | + | 0 | Clear | +++ | ++ | Congestion | Left hemiplegia; bilateral Babinski | Chronic alcoholism | 0 | 0 | 12,850 | 120/ 80 | 100 | Died, 2 days | Grossly bloody fluid |
| 2 | 49 | ♀ | Sudden, 5 days after | Headache | ++ | 0 | 0 | Normal | ++ | ++ | One fresh retinal hemorrhage | Previous left hemiplegia | Hypertensive heart | Very slight trace | 0 | 10,100 | 210/118 | 100-102 | Died, 1 month | Hemorrhage occurred 5 days after admission for cerebral hemorrhage |
| 3 | 55 | ♂ | Sudden, 12 hrs. before | Headache | +++ | ++ | 0 | Clear | +++ | ++ | Slight blurring of disk margin | Left hemiparesis | None | 0 | 0 | 9,700 | 130/ 80 | 98.6 | Recovery | Grossly bloody; similar onset 2 weeks before |
| 4 | 60 | ♂ | ? | ? | ? | ++ | 0 | Not roused | Not done | Not done | Negative | Left hemiplegia | Hypertension; arteriosclerosis | 0 | 0 | 21,500 | 200/110 | 100 | Died, 1 week | Grossly bloody fluid |
| 5 | 60 | ♀ | Sudden, 2 days before | Collapse; paralysis | ? | +++ | 0 | Not roused | Not done | 0 | Sclerosis; pulsation | Left hemiparesis | Syphilis; syphilitic heart; aortic regurgitation | Not done | Not done | Not done | 210/ 50 | 101 | Died, 3 days | Nonprotein nitrogen, 69; grossly bloody fluid |
| 6 | 65 | ♂ | Sudden, 12 hrs. before | Headache; increase; coma | ++ | +++ | 0 | Increased coma | +++ | 0 | Not made out | Twitching right arm | Cardiac decompensation; hypertension | 0 | 0 | 11,600 | 215/130 | 100 | Died, 6 days | Grossly bloody fluid |
| 7 | 70 | ♀ | Sudden, 9 days before | Headache; vomiting | ++ | 0 | +++ | Clear | + | 0 | Negative | Left hemiparesis | Hypertension | 0 | 0 | 15,000 | 160/104 | 98.6 | Recovery | Xanthochromic fluid |

ASSOCIATED DISEASES

The most frequently associated condition in our series was hypertension. Of the twenty-three patients whose blood pressure was taken, twelve had a systolic blood pressure of 160 or over. Of these, seven had a systolic pressure of over 190. This association appears to be too frequent to be accidental. Hypertension plays a more important etiologic rôle in subarachnoid hemorrhage than is generally believed. A subarachnoid hemorrhage may result from the bursting of a congenital aneurysm under the strain of hypertension, or vascular changes may take place in the subarachnoid vessels which may then give way under the stress of hypertension. We believe that hypertension has a definite etiologic rôle, especially in older patients. None of our patients had syphilis: all had negative Kahn and Wassermann tests of the blood serum and spinal fluid.

Table 2.—*Comparison of Meningitis and Subarachnoid Hemorrhage*

| | Meningitis | Subarachnoid Hemorrhage |
|---|---|---|
| | Similarities | |
| Headache | Present | Present |
| Stupor | Usual | Usual |
| Vomiting | Frequent | Frequent |
| Stiff neck | Present | Present |
| Kernig's sign | Usual | Usual |
| Leukocytosis | Present | Present (less marked) |
| | Differences | |
| Onset | Gradual (at least several hours of malaise, etc.) | Sudden |
| Mental picture | Frequently irrational | Usually clear; occasionally irrational |
| Fever | Present and high | Often present and slight |
| Blood pressure | Normal | Frequently elevated |
| Eyegrounds | Negative (slight choking) | Occasionally large subhyaloid hemorrhage |
| Spinal fluid | Cloudy and clots | Bloody or xanthochromic; no clots |

Miscellaneous diseases associated with subarachnoid hemorrhage were: hypertension, twelve (seven died, five recovered); pulmonary tuberculosis (fibroid), one (recovered); diabetes with acidosis, one (died); post partum with hemorrhage, one (died), and bronchopneumonia, septic parotitis (complication), one (died).

Table 3.—*Ages, Recoveries and Deaths in Groups With and Without Associated Conditions*

| | | Associated with Other Conditions | | |
|---|---|---|---|---|
| | | Hypertension | | |
| Age | No Associated Disease | 160-189 | 190 | Others |
| Under 40 years (3 recoveries) (3 deaths) | | | | |
| Recoveries | 3 | 0 | 0 | 0 |
| Deaths | 0 | 0 | 2 | 1 |
| 40 to 60 years (7 recoveries) (4 deaths) | | | | |
| Recoveries | 2 | 4 | 0 | 1 |
| Deaths | 1 | 1 | 1 | 2 |
| Over 60 years (2 recoveries) (4 deaths) | | | | |
| Recoveries | 1 | 0 | 1 | 0 |
| Deaths | 1 | 0 | 3 | 0 |
| Total | | | | |
| Recoveries | 6 | 4 | 1 | 1 |
| Deaths | 1 | 1 | 6 | 3 |

Table 3 lists the ages, recoveries and deaths in groups with and without associated conditions. One case was not classified because the blood pressure was not recorded.

From this table it may be seen that all three deaths in the youngest group occurred in patients with definite complications, while single deaths occurred in each of the other groups without obvious associated disease (although it is quite likely that some arteriosclerosis was present in the patient in the group over 60 years of age). It is interesting that hypertension is important not only etiologically but prognostically. Of the seven patients with marked hypertension (over 190), six died.

### AGE

The average age for these patients was 50 years; the youngest patient was 17 years old. However, it must be noted that subarachnoid hemorrhage is by no means confined to persons of middle age and in this respect differs from other cerebral hemorrhages. There were several patients in the twenties. The average age of Neal's[15] patients was 27 and of Symonds',[9] 30, while the average of her arteriosclerotic group was 57. In the younger patients, congenital defect in the wall of the blood vessel seems to be the most logical explanation. Small aneurysms are commonly found in the brains of young people, and a rupture of one of these might cause a subarachnoid hemorrhage.

### PROGNOSIS

The mortality rate of the entire group was 50 per cent. The mortality rate of Neal's cases was 40 per cent. Of the seven patients with subarachnoid hemorrhage and without associated diseases, only one died. Ten out of the sixteen patients with associated diseases died. Of the seven cases with marked hypertension (over 190 systolic), all but one died (table 2).

It would seem that the prognosis in uncomplicated subarachnoid hemorrhage is good. The presence of associated diseases, especially of marked hypertension, adds considerably to the gravity of the prognosis.

### AUTOPSY OBSERVATIONS

There were five autopsies. It is interesting that the five patients were all in deep coma on arrival at the hospital; there were only six in deep coma who could not be aroused in the entire group, and all of these died. The autopsy observations demonstrate the difficulty in differentiating spontaneous subarachnoid hemorrhage from cerebromeningeal hemorrhage in cases admitted in deep coma. Only one of these was a typical case of spontaneous subarachnoid hemorrhage at the postmortem (case 19).[16] In this case there was a hemorrhage going over the lateral surface of the right frontal lobe. The origin of the hemorrhage could not be determined. Another had a superficial hemorrhage into the septum pellucidum with rupture into the ventricle and extension through the pia arachnoid of the brain stem. The other three were cases of cerebral hemorrhages with extension into the subarachnoid space and therefore really belong in the cerebromeningeal group. Aneurysms were not found in any of the postmortem examinations. Unfortunately, no autopsies were obtained on patients who were not in coma on entry.

We may say from these results that accurate diagnosis in patients in deep coma is impossible.

### TREATMENT

Symonds recommends lumbar punctures in the early stage only for increased pressure; otherwise a reduction in spinal fluid pressure might increase the tendency to bleed. He advises daily lumbar punctures later to remove the bloody fluid, the source of irritation to the meninges. Our patients all had daily lumbar punctures during the early stage. If the pressure was elevated, the fluid was withdrawn slowly until the pressure was lowered to from 100 to 150 mm. of water. Stiff neck and headache are sometimes quite persistent, the latter occasionally lasting from ten days to two weeks. We believe that daily lumbar puncture, removal of some of the fluid with reduction of the pressure, offers a marked relief. None of our patients showed any evidence of renewed bleeding in spite of the numerous lumbar punctures. We believe that this danger is minimized if the pressure is lowered very slowly. The danger is probably real in the few hours after the hemorrhage takes place. In the early stage, ice caps and salicylates may be used for the headache. Opiates are contraindicated, as in all cases of increased intracranial pressure, because of the danger of respiratory failure.

Usually the spinal fluid pressure becomes normal after the third or fourth lumbar tap. Persistently elevated pressure should bring up the possibility of a cerebral neoplasm as the underlying cause. This occurred in one case outside, proved at autopsy, not included in this group.

### CEREBROMENINGEAL HEMORRHAGES

Besides the twenty-four cases of clinical subarachnoid hemorrhage, we found seven cases classified as subarachnoid hemorrhage but with neurologic manifestations to indicate a definite amount of cerebral damage (table 1). All but one of these patients had a left hemiparesis or left hemiplegia, and one had twitching of the right arm. The youngest in the group was a 34 year old chronic alcoholic addict, and the average age of the group was 56, distinctly higher than the other group. The onset was sudden in all cases, and stiff neck was found in all the five cases recorded. Five of the seven patients had hypertension. The prognosis was apparently worse in this group since only two recovered, a mortality rate of about 70 per cent. There was one postmortem (case 1), which showed a large hemorrhage into the external nucleus with rupture through the pia and over the insula.

Outside of the neurologic observations, these cases are entirely similar to those of subarachnoid hemorrhage. The treatment is identical to that of spontaneous subarachnoid hemorrhage.

### SUMMARY AND CONCLUSIONS

1. Subarachnoid hemorrhage occurs much more frequently than is generally believed. We have gathered twenty-four cases in eighteen months between July, 1929, and January, 1931. This number is about one fifteenth the number of cases of cerebrovascular accidents and about equal to the number of cases of subacute bacterial endocarditis, a much better known condition.

2. Subarachnoid hemorrhage is a striking syndrome with sudden onset, usually with headache, occasionally vomiting, dizziness, stupor or coma, and rarely convulsions. Stiff neck, Kernig's sign, fever and slight leukocytosis serve to confuse it with meningitis.

3. Hypertension is present frequently (twelve out of twenty-four cases). Systolic blood pressure over 190 was present in seven patients, of whom six died. We believe that hypertension and arteriosclerosis play an important rôle etiologically and prognostically.

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[15] Neal, Josephine B.: Spontaneous Meningeal Hemorrhage, J. A. M. A. 86: 6 (Jan. 2) 1926.

[16] The other four cases, although clinically cases of subarachnoid hemorrhage, therefore belong to the cerebromeningeal group.

4. The average age of our group was 50, the youngest being 17 and the oldest 75. This is higher than in Neal's and Symond's series.

5. Only one patient without an associated or a complicating disease died. Of the ten with an associated or a complicating disease, seven had hypertension (six over 190 systolic), one had diabetes with acidosis, one had bronchopneumonia and septic parotitis, and in one it occurred during the puerperium.

6. Five postmortems were done in the spontaneous subarachnoid group. These were all in patients brought into the hospital in deep coma. All but one showed cerebromeningeal hemorrhages. Of six patients entering in coma, all died. Coma adds to the gravity of the prognosis and obscures signs of gross cerebral damage.[17]

7. Seven cases of cerebromeningeal hemorrhage are briefly discussed. They may be differentiated clinically if they show evidence of brain injury (hemiplegia, Babinski reflex).

8. The treatment in these cases consisted of daily lumbar puncture until the spinal fluid pressure remained normal, and sedatives, ice caps, and the like for the headache.

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# EFFECT OF AIR FILTRATION IN HAY FEVER AND POLLEN ASTHMA

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This experiment was undertaken to determine the measure of relief that can be afforded the sufferer with uncomplicated hay fever by placing him in a room supplied with filtered air.

It seemed desirable also to learn whether comparative freedom from pollen irritation for a portion of the twenty-four hour period would establish reasonable personal efficiency for the remainder of that period. Pollen asthma was studied to determine the time element necessary to give relief. The efficiency of the commercial apparatus for pollen removal was studied.

## HISTORICAL

The earliest work on air filtration was that of Storm van Leeuwen,[1] who in 1924 described "miasm free" rooms used in the treatment of asthmatic patients. He developed a dust and miasm free chamber into which filtered air was pumped. Many of his asthmatic patients sleeping in such a room were partially relieved and could go about their work during the day with comfort, while others were entirely relieved of asthma by spending the night in the chamber. Since the earlier work, Storm van Leeuwen[2] has made a number of modifications to simplify his filtering apparatus.

In 1925, the Leopolds[3] at the University of Pennsylvania studied a group of cases under conditions in which not only the air was dust and pollen free but the temperature and humidity were controlled as well. Their work points to the possibility of controlling attacks in asthmatic patients sensitive to dust. The appliances used by both Storm van Leeuwen and the Leopolds were large and cumbersome, too costly to be easily adapted for use in a patient's home.

Later work with simplified mechanical construction was described by Cohen[4] in 1926. In his first filtering apparatus, the air taken through an opening in the window was delivered by a motor-driven fan through a filter of woven wool and cotton cloth, at the rate of from 140 to 180 cubic feet a minute. The room, which was closed but not hermetically sealed, was put under slightly positive pressure by the incoming current, so that the cracks about the doors and windows acted as outlets for the filtered air. Four ragweed sensitive cases are reported by Cohen in the preliminary study. A patient with very severe asthma required constant confinement in the room. Another patient with autumnal asthma was freed from acute symptoms after the first thirty-six hours of constant confinement. He then had to remain in the room most of the time for the next four days, after which he was able to remain outside for from eight to ten hours a day. A third patient, who had hay fever only, remained in the room eighteen hours a day for the first two days, after which he was able to be out from four to eight hours a day, depending on the pollen concentration outdoors. The fourth, also a nonasthmatic hay fever patient, was able to be outdoors eight hours a day.

Cohen[5] made a second study with an improved apparatus, which eliminated the spread of lint from the cotton and wool filter material. The machine used is reported as delivering 250 cubic feet of 99 per cent + pollen free air a minute. Such an apparatus was installed in each patient's bedroom just before the onset of the pollen season. The number of cases studied is not mentioned by the author. He reports that the number of hours necessary for the patient to be in pollen free air to obtain relief from symptoms varied with the pollen concentration outdoors. A shorter confinement period was required early and late in the season, while a much longer time was necessary at the height of the season. In midsummer, eight hours daily in the room was sufficient for mild cases, and from twelve to eighteen hours daily for severe cases. These observations were made on patients who began to use the filters before the development of hay fever symptoms. In asthma cases in which the patient came under observation after the symptoms had already developed, from two to seven days of confinement in filtered air was necessary for relief, after which the patients were able to be out for a part of the day with some comfort.

I. S. Kahn,[6] in discussing this report, mentions patients in Texas who require a much longer period of constant confinement to be cleared of asthma—twelve days for one, from one to two months for others, and as long as five months for one.

Peshkin and Beck,[7] in 1930, described a new and simplified portable filter which they state overcomes the objectional mechanical features of comparable air filters then in use. The essential difference is the filter screen, which is composed of several layers of a cellulose product held between a stiff open faced netting. The screen is corrugated and has a surface area of 8 square feet. The motor is equipped with three speeds, capable of producing 180, 250 and 400 cubic feet of air a minute. The apparatus is constructed so that filters can easily and quickly be replaced as often as required.

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[17] Accurate differential diagnosis in comatose patients between cerebromeningeal and subarachnoid hemorrhage was impossible in our series.

From the Departments of Medicine and Physiological Chemistry, University of Illinois College of Medicine.

[1] Storm van Leeuwen, W.: Proc. Roy. M. Soc. (Section on Therapeutics and Pharmacology), part 3, **17:** 19 (April) 1924.

[2] Storm van Leeuwen, W.: München. med. Wchnschr. **77:** 726-729 (April 25) 1930.

[3] Leopold, S. S., and Leopold, C. S.: Bronchial Asthma and Allied Allergic Disorders, J. A. M. A. **84:** 731 (March 7) 1925.

[4] Cohen, M. B.: M. J. & Rec. **123:** 322 (March 3) 1926.

[5] Cohen, M. B.: Clin. Med. & Surg. **34:** 276 (April) 1927; J. Lab. & Clin. Med. **13:** 59 (Oct.) 1927; 963 (July) 1928.

[6] Kahn, I. S., *in discussion on Cohen (footnote 5, third reference).*

[7] Peshkin, M. M., and Beck, Isabel: J. Lab. & Clin. Med. **15:** 643 (April) 1930.

### APPARATUS

The apparatus used in these experiments was an air filtration unit built by the American Air Filter Company. Two of these units were presented to the university for the conducting of these experiments. Each unit contained six filter forms with approximately 3 square feet of filter surface each. The edges of the filter forms rested on a felt covered frame on the top of the compartment in which was located the fan that propelled the air from outside the building into the room.

The filter material was of the cellulose type resembling ordinary filter paper but with a much larger porosity. The filters are sold on the market in varying thickness. Those used in our experiments were ten ply, and double sheets were used. Our experience with these filters in an apparatus used in connection with the drying of proteins led us to believe that the pollen granules could be filtered out of the air by their use. The pollen grains that made up the count in the experimental ward undoubtedly for the most part did not go through the filters but through small leaks in the machines. While such leaks are of no consequence in air filtration for the removal of dust in ventilating systems, they must be eliminated as far as possible in machines for the removal of pollen from the air. Even very low pollen counts have an undesirable effect on individuals who are highly sensitive to pollen. This fact must be fully appreciated by the manufacturers of commercial apparatus in order that the necessary efficiency may be attained.

The filter material was changed daily. The fan was shut down and the damper in the duct from the outside was closed. The forms were removed gently and placed on a sheet and taken to another room for the filter replacement. Our experience leads us to suggest that machines used for this purpose should be built so that there is no danger of pollen being carried into the machine beyond the filter sheets when the forms are being removed for the changing of the filters. In fact, a safer construction arrangement would be to have two sets of filters in series. If the first one is of such size that the velocity of the flow of air through it is very low, the efficiency can be still further increased. Our experimental eight bed ward had a cubical content of 7,500 cubic feet. The filter machines renewed this air approximately every six minutes.

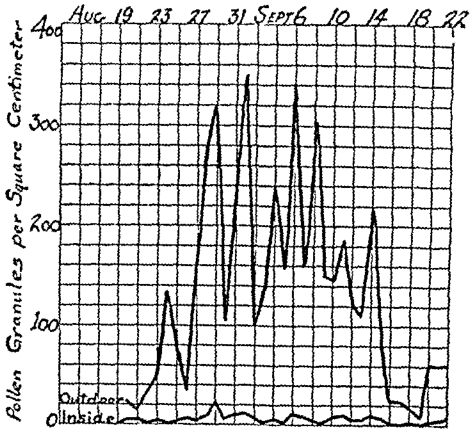

Fig. 1.—Pollen counts per square centimeter taken in filtered air room and outdoors.

### PROCEDURE

Pollen counts were made daily in the room, both directly in front of the outlet of each machine and at points distant from them. Counts were also made outdoors from a slide placed on a porch adjoining the room. The technic used in making pollen counts was that of Acquarone and Gay.[8] As pointed out by Duke,[9] the estimates of the pollen content of the outside air are not more than relatively accurate because of the many variable factors. In the room, however, most of these variable factors were not operative, the currents of air being about the same during the entire period of the experiment. The pollen counts in the room, however, are not an absolute index of the efficiency of the filtering apparatus. The counts varied little whether taken immediately in front of the machines, with the air currents sweeping directly over the slides, or when taken at a point away from direct currents.

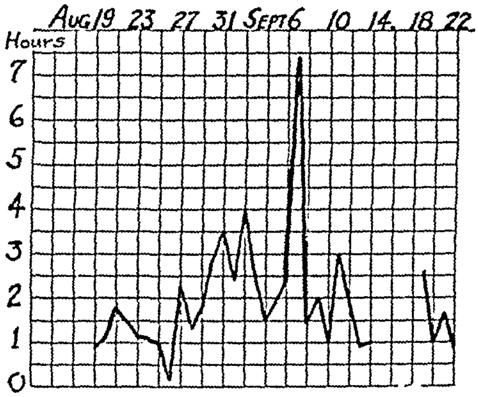

Fig. 2.—Average time required for maximum relief from hay fever symptoms on various days of the experiment.

The pollen counts in the room (chart 1) showed five or less pollen grains for each square centimeter on eighteen of the thirty-four days of the experimental period, ten or less on twenty-nine days, between ten and thirteen on five days, and a count of twenty-three on the day that a patient tampered with one of the machines. That night all the occupants in the room had moderate hay fever symptoms. While there was a slight rise of the pollen concentration in the room during the height of the pollen season, there was no tendency to follow closely the periodic rise and fall recorded outside the room. The absence of even approximate correspondence in the outdoor and indoor pollen curves renders it difficult to determine the precise filtration efficiency of the apparatus. Taken over the entire period, however, including the day it was tampered with, this was 95.4 per cent. During the major part of the experiment it was over 98 per cent. This approximates the 99 per cent plus filtering efficiency reported by Cohen with his apparatus.

The feeling of stuffiness complained of on most days was somewhat but not entirely relieved by increasing the air movements in the room. This was done by opening a transom leading to an adjoining hall and having an electric fan move the air in that direction. The discomfort was severe on the days when the temperature and humidity were higher than in either the adjoining ward or on the outside. The higher temperature in our filtered air ward may have been due to the fact that air was pumped into the room during the hottest periods of the day.

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[8] Acquarone, Paul; and Gay, L. N.: J. Allergy 2: 336 (July) 1931.
[9] Duke, W. W.: J. Allergy 2: 471 (Sept.) 1931.

One hundred and five patients were selected from a large group of applicants and admitted for study. Those who gave typical symptoms of autumnal hay fever either with or without asthma and with positive skin reactions to the ragweeds were chosen. They were divided into groups of eight, men alternating with women, each group for one week's observation. No case was therefore observed for more than seven days. The hay fever cases were usually kept under observation for only three or four days. They were admitted into the ward at 8 p. m. and permitted to leave at 10 a. m. Those with asthma were kept in the room during the entire period of observation except in special cases, when they were sent outdoors to observe the effect of exposure to pollen. All patients were interviewed morning and night, and full reports were made of the time required and degree of relief obtained, as well as the time of appearance and degree of symptoms experienced outside. This report, however, is based on sixty-six cases, the others being omitted either because the patient left after only one night of observation and the data obtained were insufficient, or because of intercurrent infections.

TABLE 1.—*Time Required for Maximum Relief in Patient Nights*

| Hours | ¼ | ½ | ¾ | 1 | 1½ | 2 | 2½ | 3 | 3½ | Over 3½ | No Relief | No Notation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Patient nights | 9 | 13 | 1 | 20 | 8 | 20 | 5 | 10 | 3 | 10 | 8 | 8 |

TABLE 2.—*Degree of Relief Obtained*

| Relief | Complete | Moderate | Slight | No Relief | No Notation |
|---|---|---|---|---|---|
| Patient nights | 49 | 51 | 2 | 8 | 5 |

TABLE 3.—*Symptoms of Hay Fever Present in the Morning*

| Symptoms | No Symptoms | Slight | Moderate | Marked | No Notation |
|---|---|---|---|---|---|
| Patient nights | 25 | 51 | 25 | 13 | 1 |

### OBSERVATIONS

The patients in this study can be classified into three groups: (1) uncomplicated hay fever cases, (2) combined hay fever and asthma cases, and (3) pollen asthma cases.

We observed thirty-five patients with uncomplicated hay fever of the autumnal type, spending 115 nights in the filtered air ward. The data compiled in the accompanying tables from the 115 nights gives the maximum relief obtained in time period and degree together with the degree of symptoms present in the morning, as well as the number of night attacks.

The average time required for maximum relief from hay fever symptoms on various days of the experiment is shown by chart 2.

Definite night attacks occurred in sixteen instances and consisted of hay fever symptoms only.

In 83.2 per cent of the uncomplicated hay fever cases studied without regard to the severity of the symptoms on entering the filtered air ward, relief of the symptoms was obtained either completely or moderately in three and one-half hours or less. In 7.5 per cent no relief was obtained, and in 13.9 per cent definite night attacks of hay fever occurred. In comparing the length of time necessary to obtain relief at different periods of the experiment, it was noted that in general the longest time required for relief occurred at the peaks of the pollen season. This bears out Cohen's[10] observations that the heavier the dose of pollen to which one is subjected, the longer time is required for relief of symptoms after entering the filtered air chamber. All the patients with uncomplicated hay fever reported that although symptoms as a rule appeared promptly on going outdoors, they believed that the degree of discomfort was less than they would have experienced had they not had from eight to ten hours of comparative relief during the preceding night. It was the opinion of most of the patients observed that their personal efficiency was definitely increased because of relief from pollen irritation during the night.

In our second group were ten patients showing combined symptoms of hay fever and asthma, either all the time or only part of the time. The average time for maximum relief from the hay fever symptoms was 1.2 hours, and the degree of relief was more complete than in the uncomplicated hay fever cases. The hay fever symptoms ceased as the asthma set in. Hay fever symptoms appeared very much sooner than did the asthma or asthmatic cough when the patient left the room. It was impossible to arrive at a definite average time for maximum relief of the asthma because most of the asthmatic attacks developed during the night, while the patients were in the room. Out of the thirty-two patient nights for these ten patients, only five night attacks of hay fever occurred, and these were of a mild nature, as compared to eleven night attacks of asthma, the majority severe enough to require epinephrine for relief. Several of these attacks were of a more severe nature than those which occurred during the day.

Twenty-one seasonal asthma cases sensitive to ragweed pollen were under observation, two from August 18 to August 22, the rest from September 2 to September 23. Two of the patients left after only one night of observation because of insufficient or no relief during this period. The others were observed for periods varying from two to seven days, the majority from four to seven days. All except two were kept in the room continuously except for the brief intervals necessary to attend to natural functions. The relief obtainable in these cases differed markedly from that observed in uncomplicated hay fever cases. All of them required epinephrine because of severe asthmatic attacks. Six of the twenty-one patients were observed for seven days. Of these, two required epinephrine for two days, two for three days, and two for the full seven days. The required dosage varied from 8 minims (0.5 cc.) several times a day and during the night in mild cases to 15 minims (1 cc.) every two to three hours in the severe cases. The dyspnea became less acute in all except two cases after the patients were in the ward twenty-four hours. These two required four days before feeling relieved from acute distress. Humidity seemed to be an important factor in all the asthma cases observed. The symptoms were much more severe during and following rainy days.

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[10] Cohen (footnote 5, third reference).

The objective manifestations of prolonged expiration and wheezing cleared completely only in two cases: one after five days in the ward, the other after three days in the ward. Neither of these patients had any asthma on reporting back twenty-four hours after their discharge. In the other nineteen cases there was still wheezing on leaving, four of these after seven days of observation in the filtered air.

Four of the patients who had been relieved completely of all subjective asthma and in whom there was only slight wheezing were permitted to go outdoors. All developed asthmatic attacks from one-half hour to one hour after leaving the room. These observations agree with those of Cohen,[10] who reported that relief for pollen asthma is not so readily obtained as for uncomplicated hay fever.

### SUMMARY AND COMMENT

Thirty-five patients with uncomplicated autumnal hay fever, protected from pollen during twelve to fourteen hours a day, were in most cases made comfortable in from half an hour to three hours after entering the room with filtered air. The degree of relief was moderate to marked in the majority of cases. A large proportion of patients had recurrences of symptoms of a mild nature while in the room either during the night or on awaking in the morning. All cases manifested symptoms promptly on exposure to unfiltered air. Ten patients with hay fever and asthma and twenty-one with pollen asthma were observed for periods up to seven days. Relief from hay fever symptoms was as prompt as in the first group. Relief from asthma was obtained only after constant confinement of from one to four days. Night attacks of asthma were more frequent in these groups, and of a severer nature than the night attacks of hay fever in the hay fever patients. In spite of constant confinement in filtered air, most pollen sensitive asthmatic patients require epinephrine for relief of acute attacks. It is our impression that in many patients hay fever asthma is not caused by the offending pollen alone. The individuals in this group were exposed to much more pollen during the first few weeks of the hay fever season than was present in the room, without any symptoms of asthma. The persistence of symptoms in spite of protection from pollen suggests either the prolonged action of pollen previously inhaled or the presence of some additional cause for their asthma. The bogginess of the nasal and bronchial mucosa after several weeks of irritation from pollen offers an excellent ground for bacterial growth. It is our belief that a low grade infection of the upper respiratory tract is as much responsible for the asthma in these cases as irritation from pollen.

Considerable discomfort from heat and humidity was experienced by those confined to the room. This may be lessened by increasing the air movement in the room or by shutting off the machine during the daytime for those patients able to be outdoors part of the time.

We expect to continue studies along these lines during the next ragweed pollen season, with additional types of air filters and with air cooling devices.

### CONCLUSIONS

1. Air filtration that removes most of the pollen will relieve symptoms of hay fever. It is particularly valuable in those cases not benefited by the usual methods of treatment.

2. Cases of pollen asthma respond slowly to filtered air treatment. In most cases only partial relief was obtained, even after seven days' occupation of the ward. All asthmatic patients studied were decidedly more comfortable in filtered air.

3. Recurrence of symptoms was prompt on exposure to pollen, but in uncomplicated hay fever cases the personal efficiency was increased because of relief from pollen irritation during the eight to ten hours in the filtered air ward.

4. From our results we conclude that it will be possible to increase the efficiency of the commercial air filter for the removal of pollen through some minor mechanical changes.

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# THE USE AND ABUSE OF DRUGS IN ASTHMA

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The emphasis that has been given to the study of asthmatic patients by immunologic methods has resulted in so many advances in our knowledge of handling these patients that careful study and cooperation by physician and patient leads to control of the seizures and prevention of their recurrence in the majority.

While there are no drugs that will cure the allergic state or even prevent an attack when the allergic body contacts with a large dose of the specific allergen, various remedies do assist in the control of individual attacks and should be used until the attacks are prevented by specific means. Some of these remedies, such as the iodides, the inhalation of smoke from nitro papers and stramonium leaves, the antispasmodics and opiates, have been in use for years. Hyde Salter[1] given an excellent account of their use in his classic work on asthma, and practically nothing can be added to his observations about most of them. Epinephrine, which has been in use for the past twenty years, and ephedrine, introduced recently, have been widely used, and there are many articles dealing with their pharmacology and clinical application.

Most of the patients whom we see have had various ones of these remedies used with good effect. In some, however, their use had been followed by unfavorable results and in a few by death. It has seemed to us, therefore, that it might be well to review briefly the actions of these drugs, their field of clinical usefulness and their dangers, and to point out some details of the methods of their administrations.

### EPINEPHRINE

Epinephrine is the active principle of the medulla of the suprarenal gland. Its action consists in a stimulation of the peripheral end organs of the sympathetic nervous system. It is poorly absorbed from mucous membrane surfaces and slowly absorbed after intramuscular or subcutaneous injection but has an immediate action following its intravenous administration. The action is of but short duration, since epinephrine leaves the blood stream rapidly and is soon oxidized. Its effect can be maintained by continuous intravenous administration of small amounts. Solutions are unstable unless a preservative is added. The effect of this drug

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From the Asthma and Hay Fever Clinic of the Asthma, Hay Fever and Allergy Foundation.

[1] Salter, H. H.: Asthma: Its Pathology and Treatment, first American from the last English edition, New York, William Wood & Co., 1882.

on a patient in an attack of asthma is startling when observed for the first time. Within from five to fifteen minutes after the subcutaneous injection of a suitable dose the paroxysm begins to subside, and usually within thirty minutes it has completely disappeared. The effect following subcutaneous administration lasts for from thirty minutes to two hours. This prolonged effect, several times as lasting as that following intravenous administration, can be explained by the fact of the slow and more or less continuous absorption from the peripheral area, giving the effect of the continuous intravenous administration of minute amounts. The therapeutically active amount for the relief of asthma, therefore, is extremely small. The therapeutic dose is much smaller than that usually recommended. Most textbooks give the dose as from 0.5 to 1.0 cc. (8 to 15 minims) of the 1:1,000 solution, and many physicians give the contents of one ampule (1 cc. of 1:1,000 solution) as a routine. Such doses are very dangerous; they cause attacks of palpitation, cardiac irregularity, intense throbbing headache, vomiting, intense excitability, tremor, blanching of the skin and extreme weakness. These epinephrine reactions are unnecessary, as the full therapeutic effect on asthma can be obtained by small doses. It is a safe rule to give from 0.2 to 0.4 cc. of the 1:1,000 solution (3 to 6 minims) subcutaneously. The attack will subside in most cases in a few minutes; if it does not, the dose should be repeated in twenty minutes.

Patients having severe attacks will have a recurrence of symptoms in a few hours. For these it is well to observe the frequency of recurrence and to administer a dose of epinephrine just before the next attack begins or on its inception. Often the administration of 0.3 cc. of the 1:1,000 solution every three or four hours, day and night, will prevent the symptoms completely, and less of the drug will be needed than if one waits for the attack to be full blown before giving it. For this reason all asthmatic patients should be taught to administer epinephrine to themselves. A glass syringe should be used, and it should be boiled and not sterilized by alcohol, since the small amount of alcohol in the syringe may destroy the drug. The solution used must be crystal clear and colorless. The slightest tinge of color indicates that some of the potency is lost, and when there is obvious pink color the solution is useless. This point is made because so much of the epinephrine solution on drug store shelves and in physicians' bags, especially the ampules, since these contain no preservative, is no longer potent. This explains why some physicians are disappointed with the drug therapeutically and also why doses of 1 cc. are so often given without dangerous reactions.

When given properly, epinephrine is the most valuable remedy that we possess for relief of the acute asthmatic paroxysm.

### EPHEDRINE

Ephedrine is the alkaloid of the plant ma huang, which has been used as medicine by the Chinese for centuries. Pharmacologically, its effects on the sympathetic nervous system are similar to those of epinephrine, but the effect is more lasting. It is readily absorbed from the gastro-intestinal tract and its full therapeutic effect can be obtained by oral administration. It has been used in the treatment of patients with asthma since its introduction in 1924 by Chen and Schmidt,[2] but a large experience with it has proved it of less value than was expected from its action in animals. Except in rare instances, a full therapeutic dose will not relieve a severe paroxysm of asthma. It is helpful in continuous doses in preventing mild seizures and does control the wheezing of the mild asthmatic state very well. It is best administered as the hydrochloride or sulphate in doses of from 25 to 65 mg. The effect lasts from four to six hours.

Ephedrine is poorly tolerated by most patients when given alone. It produces wakefulness, bad dreams during sleep, marked weakness, nausea, sweating and, in some patients, cardiac irregularity. The cerebral symptoms can be controlled by administering a small dose of some hypnotic with each dose of ephedrine. It is our custom to prescribe from 5 to 10 mg. of amytal with each 50 mg. of ephedrine hydrochloride. This dose can be given four times daily, evenly spaced between the hours of arising and retiring. Extra doses are useless if an attack supervenes. Epinephrine should be given for such an attack.

Ephedrine, like all alkaloids, is soluble in oils. A 1 per cent solution in oil is useful for nasal use in hay fever but has no place in the treatment of the asthmatic paroxysm.

### OPIUM

Some form of opium is recommended in asthma by almost all writers on medical subjects. Morphine is the drug advised by the majority. It is used to dull the excitement and fears of the patient so as to enable him to use his respiratory muscles to the best advantage and because it is supposed to produce bronchiolar relaxation in certain doses. However, when one reviews the pharmacologic action of the drug, one finds that its effects on the bronchiolar musculature are by no means constant and that narrowing of their lumen may follow its administration. Clinical experience with the drug in asthma shows it to be dangerous. For several years we have been asking various allergists their opinions as to the usefulness of opium in asthma, and we have been struck by the almost unanimous opinion that its use is unnecessary, frequently harmful and occasionally fatal. Hyde Salter[1] expressed his opinion as follows:

> To opium in asthma, I have myself a great objection. I do not mean to impugn the correctness of those who profess to have seen benefit derived from it; all I would say is, that I am not certain I have ever seen it do good, that I have often seen it do harm, and that I should have antecedently expected, from its known physiological action, that it would be prejudicial, and tend to increase the very condition for which it is given.

He then discusses the central effects of opium, considers them harmful and then says:

> But, beyond this, opium seems to have a specific tendency to excite involuntary muscular action and induce a temporary spasm. . . . But I would not let any theoretical objection run counter to clinical evidence; and if experience said "give opium," no theory should prevent my recommending it. My own experience, however, coincides with these objections; and *I am disposed to think that the frequency with which it is given in asthma depends upon an unthinking following of routine and a want of close and exact observation.*

Death in an acute attack of asthma is rare, but we have observed it on six occasions. In five cases, death followed within a few hours after the administration of morphine and in one case following the use of codeine. In none of these patients was there any clinical evidence of cardiac disease or other organic pathologic condition sufficient to cause death.

In all there was an increase in the asthmatic symptoms following the drug. The respiration became progressively more labored, and the patients died respiratory deaths quite comparable to those seen in strangulation. In two cases examined post mortem, the entire bronchial tree was filled with mucous exudate so tenacious that it was difficult to pull it away from the bronchial wall. These patients had been strangled by their own mucous secretion.

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[2] Chen, K. K., and Schmidt, C. F.: Ephedrine, Proc. Soc. Exper. Biol. & Med. **21**: 351, 1924.

There are several possible explanations for these bad effects; the first is that morphine depresses the respiratory center and makes the respiration more shallow; the second, that the abolition of the cough reflex makes it more difficult for the patient to expel the mucus plugs from the bronchial tree, and the third, that opiates are themselves hive producing. Morphine, codeine and other opium derivatives produce wheals when injected into the skin. All individuals are susceptible, but some get very marked reactions following their intradermal injection. Many patients have itching following the hypodermic injection of morphine. It is quite probable that in those asthmatic patients with an idiosyncrasy to opium there is produced by the morphine or codeine a hive reaction in the bronchial tree, which is added to the reaction already present because of the attack. These theories are being studied experimentally to determine whether they explain the phenomena observed. That opiates are contraindicated in asthmatic patients because of their bad effects cannot be doubted by any one with sufficient experience with these patients.

### BELLADONNA, STRAMONIUM, HYOSCYAMUS

The effects of belladonna, stramonium and hyoscyamus depend on their atropine content. Atropine paralyzes the innervation of the bronchial muscles and glands, causing bronchial dilatation and lessening of the mucous secretion. The best effects are obtained when the drug is inhaled. This can best be accomplished by inhaling the smoke produced by burning powder composed of powdered stramonium, 1 Gm., and potassium nitrate, 2 Gm., or the smoking of a stramonium cigaret. The smoke of 1 Gm. of stramonium leaves is said to contain from 0.3 to 0.5 mg. of atropine. Most of the asthma cigarets and powders on the market are similar to the formula given, although some contain tobacco, lobelia, anise or other volatile substances. The inhalation of these smokes is followed in a few minutes by cough and expectoration of the mucous plugs which were obstructing the bronchial tree. In some patients the relief is prompt and satisfactory; in others apparently similar clinically, no relief is obtained. Atropine is not nearly so useful when administered by other routes, since it is frequently necessary to give toxic amounts in order to relieve an asthmatic attack, and this can be done much better by epinephrine.

### IODIDES, TOBACCO, LOBELIA

Iodides, tobacco and lobelia assist in the relief of mild paroxysms of asthma by their thinning effect on the bronchial mucus. The iodides are excreted directly in the bronchial mucus; tobacco and lobelia produce thinning by their nauseating effect. Iodides are often of use between acute paroxysms, particularly in asthmatic patients with secondary bronchitis. Since the iodides are absorbed from the gastro-intestinal tract with amazing rapidity, their full effect is obtained by oral administration and there is no justification for their administration by the intravenous route.

### CALCIUM

Calcium has been used in asthma because of its alleged antiedemic action in diminishing cellular permeability. Recently it has been shown that this action cannot be demonstrated experimentally,[3] and studies by Ramirez,[4] by Criep and McElroy [5] and by Cohen and Rudolph [6] have shown that there is no clinical effect when calcium is administered to asthmatic patients. It should be excluded from the list of remedies for asthma since it will not benefit the patient in an acute attack and has no influence on the recurrence of attacks.

Many other drugs have been used from time to time with supposedly good results. Most of these good results will not stand critical analysis, and the time allotted for this presentation does not permit their discussion.

### SUMMARY

*Before the attacks of asthma are prevented by proper study and treatment, it is necessary to use drugs to ameliorate the symptoms.*

*Epinephrine in small doses is the remedy of choice. Ephedrine has a smaller but definite field of usefulness. Opium in all forms is contraindicated because of its dangers. Iodides, if used, should be given by mouth and not intravenously.*

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# LAXATIVE EFFECTS OF WHEAT BRAN AND "WASHED BRAN" IN HEALTHY MEN

## A COMPARATIVE STUDY

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The importance of ingestion of a reasonable amount of food "roughage" for the maintenance of satisfactory intestinal motility is widely appreciated. It is quite generally recognized that wheat bran contains a relatively large amount of indigestible material, notably cellulose. Knowledge of these facts has resulted in a considerable use by human beings of bran as a source of food roughage. Extreme views regarding such use have been expressed in the literature. Kellogg [1] is one of those who attribute numerous ills to constipation and therefore advocate the ingestion of large amounts of various sources of "indigestible residue," including bran, as a corrective and preventive measure. Alvarez [2] has challenged this view, and, as evidence for his position, has cited the results of a questionnaire circulated among physicians concerning the therapeutic use of bran. It may be questioned whether such a method of approach to the problem as Alvarez has employed is adequate or even suited. A more logical plan seems to be to test bran for laxative power on human beings subsisting on suitable, carefully controlled diets. The

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[3] Tainter, M. L., and Van Deventer, William: The Antiedemic Actions of Calcium in Experimental Irritative Edemas, J. A. M. A. **94:** 546 (Feb. 22) 1930.

[4] Ramirez, M. A.: The Value of Calcium in Asthma, Hay Fever and Urticaria, J. Allergy **1:** 283 (March) 1930.

[5] Criep, L. H., and McElroy, W. S.: Atopy: Blood Calcium and Gastric Analysis, Arch. Int. Med. **42:** 865 (Dec.) 1928.

[6] Cohen, M. B., and Rudolph J. A.: A Clinical Study of the Use of Calcium in Controlled Cases of Allergy, J. Allergy **1:** 34 (Nov.) 1930.

From the Laboratory of Physiological Chemistry, Yale University.

The expenses of this research were in part defrayed by a grant from the General Foods Corporation, New York.

Wheat bran, extracted twenty hours at room temperature with 0.2 per cent hydrochloric acid to remove phytin and other substances, is called washed bran in this paper.

[1] Kellogg, J. H.: The New Dietetics, Battle Creek, Mich., Modern Medicine Publishing Company, 1921.

[2] Alvarez, W. C.: Minnesota Med. **14:** 296 (April) 1931.

present paper is a report of such experiments conducted on healthy men.

Early recognition of the laxative value of bran in cattle, coupled with the knowledge that bran contains phytin, a phosphorus-yielding organic complex easily removed by washing with weak acid, led Jordan, Patten and Hart[3] to try the experiment of feeding to cattle a bran that had been treated with weak acid to remove the phytin; constipation definitely resulted and was relieved by the administration of the natural bran. The conclusion was drawn that the laxative power of bran is due predominantly to the phytin which it contains. Tests of salts of phytin performed on other species of animals[4] failed to confirm this. Williams[5] experimented on the dog and observed no difference between whole bran and the phytin-extracted product with respect to laxative power. It is possible that the observations of Jordan, Patten and Hart on cattle are in some way related to the fact that this species possesses that unique organ, the ruminant stomach. Then it should be borne in mind that treatment of bran with weak acid results in the extraction not only of phytin but also of inorganic phosphates and other substances, and that the absence of these other materials rather than of the phytin may have been responsible for the effects observed in the ruminant. The results suggest that, when an endeavor is made to evaluate bran as a laxative for man, it is pertinent to inquire whether the phytin which it contains contributes in any way to enhance the effect due to the indigestible cellulose also present. When this question is answered, it will be possible to say whether bran is to be regarded as having a somewhat unique value as a laxative or whether it is to be classified among foods simply on the basis of its content of indigestible residue. The experiments reported in this paper represent attempts to answer this question as it relates to the human species.

## CRITERIA OF LAXATIVE ACTION

In the study of laxation,[6] one is confronted at the outset by difficulty in the selection of suitable criteria of laxative action. Among the indexes that suggest themselves are: (1) subjective impressions of the persons concerning the complete and satisfactory character of elimination; (2) the amount of intestinal contents evacuated under the test conditions; (3) the water content of the stools, a large amount of water being indicative of only a brief stay of fecal material in the colon with consequent failure of absorption of water, and a low water content pointing to the opposite condition; (4) the time of passage of material through the alimentary tract; (5) the number of defecations in a unit of time, or laxation rate, and (6) the amount of indigestible substance, fiber, for example, present in the stool and the relation of this to the quantity ingested. In presenting the results of this investigation, each of these possible criteria will be considered and discussed.

The number of defecations in a unit of time—laxation rate—would seem to be the most logical objective indication of the extent to which laxation is taking place. The observations of Williams[5] on dogs indicate that this assumption is not without foundation. In the case of human beings, however, the mere record of the number of defecations may prove inadequate, because of the effect of habit or "conditioning" of the defecation reflex as the result of a highly organized social life.

Studies of the defecation reflex in animals indicate that it involves primarily a purely intrinsic nervous mechanism, which, however, may be influenced by nerve impulses from the brain. As an illustration of this, one may cite the case of Goltz's[7] dog in which the spinal cord had been severed in the lower thoracic region; this animal, nevertheless, performed the defecation act in normal fashion. In later experiments by Goltz, in which the entire spinal cord was removed except in the neck and upper thoracic region, the animal, after recovery from the operation, had a normal movement once or twice a day, indicating that the rectum and lower bowels acted by virtue of their own intrinsic mechanism. What are the stimuli capable of arousing the defecation reflex in such an animal? At the present time they are little understood. It is conceivable that one or more of the following factors may play a rôle: (1) the amount or bulk of the material present in the lower bowel ready for elimination; (2) the actual pressure or distention that this mass may exert on the colon or rectal wall; (3) the area of intestinal wall that it may stimulate by contact, and (4) chemical stimulation of the colonic wall by substances in the fecal mass. Just how these factors may be studied and measured is by no means clear. In the case of human beings, who have developed the habit of defecating at fairly definite times, the execution of the defecation reflex obviously does not depend solely on the influence of such factors.

## GENERAL PLAN OF EXPERIMENT

The plan adopted for this investigation consisted in having healthy men subsist first of all on a carefully selected basal ration, the laxative effect of which was known by having been recorded during a preliminary period of observation, and then on the same ration supplemented by a selected test amount of whole or washed bran. The comparison of these bran products was made on a fiber-equivalent basis.

In the preliminary studies a basal diet having what might be regarded as an average or normal fiber content was used; under such dietary conditions the laxative power of bran was not readily demonstrable. Another type of experimental ration was then devised and employed; namely, one the continued use of which was associated with a mild degree of constipation, as represented by defecation once a day. Finally, tests of the bran products were made by means of a diet that was markedly constipating in its effects. Three illustrative diets representative of these different experimental conditions and ingested by the same person are shown in table 1.

The foods were selected in such a way as to give a combination both qualitatively and quantitatively suitable for the respective persons. For example, orange juice was provided in order to insure an adequate supply of the heat-labile antiscorbutic vitamin.

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[3] Jordan, W. H.; Patten, E. B., and Hart, A. J.: Am. J. Physiol. **16**: 268, 1906.

[4] Mendel, L. B., and Underhill, F. P.: Am. J. Physiol. **17**: 75, 1906.

[5] Williams, G. A.: Am. J. Physiol. **83**: 1 (Dec.) 1927.

[6] In the writing of this paper the question arose as to the correct use of the word laxation. Investigation revealed that this word is not listed in the two standard medical dictionaries that were consulted; nor was it found in the Winston "Simplified Dictionary." In Webster's New International Dictionary (page 1223) laxation is defined as "the act of loosening, slacking or relaxing, or state of being loosened, slackened or relaxed." The definition given in the Funk and Wagnalls New Standard Dictionary of the English Language is essentially the same. It will be noticed in the definition cited that there is no specific reference to the alimentary tract. In this paper the writers have decided to use the word laxation to signify the act of loosening the bowels as well as the state or condition or degree of loosening characteristic of the bowels.

[7] Goltz, Friedrich: Arch. f. d. g. Physiol. **8**: 160, 1874. Goltz, Friedrich; and Ewald, J. R.: Ibid. **63**: 362, 1896.

When the experimental diet had been selected in each case, a capsule containing either charcoal or carmine was taken by the person in order to differentiate the stool formed from the residue of the meal ingested at the time the "marker" was taken. This technic for identifying the stools was used at the beginning of each experimental period. Each stool was weighed immediately on passage and then allowed to dry in a current of warm air. All the specimens evacuated during a given experimental period were then combined and the entire mass was weighed, ground to a degree of fineness suitable for analytic work, and then analyzed for residual moisture, fiber and mineral substances. In each period not only the number of laxations was recorded but also the time of passage and the subjective sensations of each individual with respect to difficulty of bowel movement, satisfactory evacuation, and the like.

Table 1.—*Representative Diets Used in These Investigations*

| Part 1<br>Preliminary Study<br>Two Movements per Day<br>"Condition Excellent" | | Part 2<br>Mild Constipation<br>One Movement per Day<br>"Unsatisfactory" | | Part 3<br>Marked Constipation<br>Less Than Once a Day<br>"Very Unsatisfactory" | |
|---|---|---|---|---|---|
| Dietary Ingredient | Amount Daily, Gm. | Dietary Ingredient | Amount Daily, Gm. | Dietary Ingredient | Amount Daily, Gm. |
| Almonds | 135 | Bacon | 130 | Bacon | 130 |
| Soda crackers | 75 | Hamburger steak | 150 | Hamburger steak | 150 |
| Apple butter | 70 | Soda crackers | 36 | Soda crackers | 36 |
| Cheese | 100 | Bread | 190 | Bread | 190 |
| Lettuce | 100 | Butter | 45 | Butter | 45 |
| | | Cheese | 60 | Cheese | 60 |
| Mayonnaise dressing | 15 | Jelly | 70 | Jelly | 90 |
| Banana | 600 | Banana | 350 | Banana | 200 |
| | | Potato | 220 | | |
| | | Ice cream | 100 | Ice cream | 100 |
| | | Catsup | 25 | Catsup | 25 |
| | | Cod liver oil | 4 | Cod liver oil | 4 |
| | Cc. | | Cc. | | Cc. |
| Milk | 500 | Milk | 500 | Milk | 500 |
| | | Tomato juice | 100 | | |
| | | Orange juice, strained | 70 | Orange juice, strained | 70 |
| Water | 1,500 | Water | 2,000 | Water | 2,000 |
| Cocoa* | 250 | Cocoa* | 250 | Cocoa* | 250 |
| Fiber content, 6.3 Gm. | | Fiber content, 5.25 Gm. | | Fiber content, 3.1 Gm. | |

* Cocoa, 6 Gm.; sugar, 10 Gm.; milk, 200 cc., and water, 50 cc.

In general, foods poor in fiber content were selected. Each food was analyzed for crude fiber,[8] mineral materials and moisture content, thus making it possible to estimate for each person the total intake, particularly of fiber and inorganic substances, for comparison with the amounts evacuated from the intestinal canal.

It is possible that the degree of hydration of the individual exerts some influence on laxation. Therefore, each person measured the volume of fluid taken daily during the preliminary period, when the exact details of the basal ration were being determined, and, on the basis of these observed quantities, selected that volume which should be taken daily, and thereafter drank that amount regularly. In this way each person conformed to his own desirable standard with respect to fluid intake.

## RESULTS

Part 1.—*Preliminary Experiments.*—Five healthy men served as subjects for the initial feeding trials. The experimental periods were four days long. Whole bran and two bran products were tested. During these preliminary periods, it will be recalled, the basal diet contained what was regarded as an average or normal content of fiber (table 1, part 1).

The following observations were made: On the basis of subjective impressions, four of the five persons on experiment noted no essential difference between the control and the experimental period. It was found that the laxation rates—number of defecations per day—were consistently high, the average for all periods being twice a day. When the data for the amount of material eliminated per day were studied, however, it was found that in thirteen out of fifteen instances the addition to the basal diet of bran or either of the test bran products resulted in an increased elimination of fecal material. In a few cases the increase was large.

These results raised several important questions: Was the failure to obtain a subjective impression of laxative effect related to the high laxation rate which prevailed when the individuals subsisted on the basal ration alone? Was it not likely that the person failed to notice the moderate increase in laxation, which occurred, as shown by the data for amount of material eliminated, because the rate was already high enough to give the feeling that laxation was satisfactory? This suggested that the different criteria of laxative action discussed in a preceding section may differ in their applicability to various conditions. There was also the possibility that the experimental periods in this preliminary study were too short; that four days is not enough to avoid a hang-over effect of a given period on the succeeding one.

Another point should be mentioned. Let it be assumed that the laxative action of the diet is due primarily, if not solely, to its content of indigestible material, of which fiber may be taken as the representative. Suppose that the amount of fiber already present in the diet and exerting a laxative action is great enough to bring about a high laxation rate. Under these conditions, then, it is quite possible that the quantity of additional fiber required in order to bring about a significant increase in the rate of laxation may be much greater relatively than that needed when the defecation rate is low enough to be interpreted subjectively as constipation. In other words, the basal diet used in these preliminary trials may have had too much fiber in it to allow satisfactory subjective demonstration of increased laxation due to ingestion of bran or other test material. This explanation of the preliminary observations is supported by the observations of Thorup and Carlson,[9] who investigated the influence of yeast on the alimentary rate. In their study the greatest changes in the intestinal rate resulting from ingestion of yeast occurred in those individuals who exhibited, as their "normal," rates below the average.

In the light of these considerations it was deemed advisable to repeat the study of the laxative action of bran by making observations on individuals subsisting on a basal diet definitely constipating in its effect and by extending the observations over much longer periods than were employed in the preliminary trials. Some difficulty arose in deciding not only as to the proper duration of the periods but also as to how severe the constipation induced by the experimental ration should be. It was decided to experiment with a basal diet which allowed a defecation rate of once a day and which was interpreted subjectively as "a rather unsatisfactory condition" or "mild constipation." It was believed that such a condition could be endured without injury by the persons acting as the subjects for the investigation for experimental periods of fourteen days' duration. The experiments carried out in accordance with this plan are described in part 2.

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[8] Official methods of the Association of Official Agricultural Chemists, 1925, were used.

[9] Thorup, D. W., and Carlson, A. J.: Am. J. Physiol. 84: 90 (Feb.) 1928.

Part 2.—*A Comparative Study of the Laxative Effects of Whole Bran and Washed Bran in Healthy Men Exhibiting a Mild Degree of Constipation.*—Experimental Details: Five healthy men served as the subjects for these experiments. The experimental periods were of fourteen days' duration in the case of four individuals and of ten days' for the fifth person.

An effort was made to select a basal diet distinctly lower in fiber content than that used in the preliminary studies. Because the total time of subsistence on the basal ration with and without supplement of test product was planned to range from at least four to eight weeks, each person experimented by ingesting varying amounts of the selected foods over periods of from ten days to two weeks in an endeavor to find a daily ration that he would be able to eat for a long period without subjective or other difficulty and which at the same time would meet the requirements of the research. When the experimental diet had been selected in each case, the "marker" of charcoal or carmine was taken to differentiate the stool formed from the residue of the meal ingested at that time, and the test period was formally begun.

The amount of fiber present in the new diet was less than that contained in the ration used in the preliminary study by about 1 Gm. The amount of water taken daily was carefully standardized in the manner previously described. In comparing washed bran with the natural product, fiber-equivalent quantities were used.

Subjective Impressions as a Criterion of Laxation: In every case the individuals reported that while on the basal diet only they felt that the bowels were unmistakably constipated although defecating once every day. The constipation was not of severe degree but was sufficient to be noticed. Frequently the evacuations were not satisfactory; there was the impression that emptying was incomplete. The urge to defecate, when it did occur, was not as pronounced as formerly. In contrast to this it was noticed that, when either the whole or the washed bran was taken, the urge to defecate was unmistakable at practically all times and could not be disregarded. Moreover, there was the feeling that the evacuation was fairly complete. The stools were more bulky. It was obvious that the ingestion of the whole bran or the washed product resulted in the production of a larger stool. So far as the subjective sensations were concerned, there seemed to be little or no difference in the physiologic effects of the two products tested.

Table 2.—*Number of Defecations in Fourteen-Day Periods When the Basal Diet is "Borderline" or Mildly Constipating in its Effects**

| Person | Periods<br>1<br>Basal Diet | <br>2<br>Basal Diet Plus Whole Bran | <br>3<br>Basal Diet | <br>4<br>Basal Diet Plus Washed Bran |
|---|---|---|---|---|
| W. E. A. | 14 | 15 | 15 | 17 |
| F. C. B. | 14 | 16 | 14 | 16 |
| M. L. P. | 14 | 15 | 12 | 15 |
| S. A. P. | 15 | 21 | 14 | 18 |
| A. B.† | 10 | 11 | 14 | 13 |

* From 1 to 1½ ounces of whole bran daily and the fiber equivalents of washed bran were the quantities used in test periods 2 and 4, respectively.

† Ten day periods.

Laxation Rate as a Criterion of Laxative Effects: Table 2 presents the data concerning the laxation rates that prevailed in the persons on these experiments. It will be observed that, after adding either 1 ounce of whole bran or its fiber equivalent of washed bran to the diet, only one person (S. A. P.) showed a pronounced increase in laxation rate over that of the basal periods. In this case the whole bran proved to be slightly superior to the washed product, if one chooses to regard the difference between eighteen and twenty-one defecations occurring in as long a period as fourteen days as a significant one. This is questionable. In the other cases there was only a slightly increased laxation rate in the test periods as compared with the controls. The subjective impressions of the persons, nevertheless, support the view that these test substances did exert laxative action.

Amount of Intestinal Contents Evacuated: The ingestion of either whole or washed bran resulted in daily evacuation of an increased amount of material. The data are presented in table 3. In view of the fact that S. A. P. showed an increased laxation rate when given bran (table 2), it became of interest to determine the average amount of material eliminated at each defecation. Data relative thereto have been incorporated in table 3.

In the case of S. A. P. (table 3) the amounts of material eliminated per day were approximately the same as those evacuated by the other persons. However, S. A. P., unlike the rest of the group, evidently could not retain such large amounts of fecal matter in the lower bowel without undue stimulation of the defecation reflex. The recent observations of Hines, Lueth and Ivy[10] on the contractions of the rectum and their relation to the defecation urge indicate that human beings show some variation with respect to their sensitivity to pressure within the rectum and the contractions of this organ. The increase in the defecation rate in the case of S. A. P., associated with average elimination of a relatively smaller stool, probably finds its explanation in such observations as those of Hines, Lueth and Ivy just cited.

In view of these positive observations with respect to the subjective criteria of laxative action and the increased amount of material eliminated, but negative result with respect to effect on laxation rate, further experiments with individuals exhibiting a constipation even more severe in degree were deemed advisable. After completing the experiments just reported,

Table 3.—*Amount of Intestinal Contents Evacuated per Day and per Defecation When the Basal Diet is "Borderline" or Mildly Constipating in Its Effects**

| Person | Average Weight of Intestinal Contents Eliminated per Day in Period†<br>1<br>Gm. | <br>2<br>Gm. | <br>3<br>Gm. | <br>4<br>Gm. | Average Weight of Intestinal Contents Eliminated at Each Defecation in Period†<br>1<br>Gm. | <br>2<br>Gm. | <br>3<br>Gm. | <br>4<br>Gm. |
|---|---|---|---|---|---|---|---|---|
| W. E. A. | 134 | 155 | 104 | 149 | 134 | 144 | 97 | 123 |
| F. C. B. | 100 | 205 | 129 | 220 | 100 | 169 | 129 | 193 |
| M. L. P. | 138 | 218 | 130 | 163 | 138 | 193 | 151 | 152 |
| S. A. P. | 101 | 200 | 97 | 154 | 94 | 127 | 91 | 119 |
| A. B. | 107 | 189 | 101 | 171 | 107 | 157 | 72 | 132 |

* The daily allowance of from 1 to 1½ ounces of whole or washed bran was distributed over two meals.

† Periods 1 and 3, basal diet only; period 2, basal diet plus whole bran; period 4, basal diet plus washed bran.

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[10] Hines, L. E.; Lueth, H. C., and Ivy, A. C.: Motility of the Rectum in Normal and in Constipated Subjects, Arch. Int. Med. **44:** 147 (July) 1929.

W. E. A. experimented further in an endeavor, first, to determine how best to alter the basal ration so as to produce a more constipated condition in himself and, secondly, to test the effect of ingestion of bran on the condition thus produced. The basal diet used previously (part 1) is shown in table 1. As a result of the elimination of potatoes from this ration and the reduction of the daily intake of bananas from 350 Gm. to 200 Gm., marked intestinal stasis developed. When this had prevailed for eight days, 30 Gm. of whole bran was eaten daily over a period of nine days. A definite increase in laxation rate resulted. It was not possible for W. E. A. to continue further on this experiment and determine the effect of washed bran. However, these observations emphasized the importance of repeating the experiments described under part 2 but using a basal diet more constipating in its effects. These additional studies are described in part 3.

Table 4.—*Weight of Intestinal Contents Eliminated When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Average per Day in Period* | | | | Average per Defecation in Period* | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 Gm. | 2 Gm. | 3 Gm. | 4 Gm. | 1 Gm. | 2 Gm. | 3 Gm. | 4 Gm. |
| W. E. A. | 82 | 168 | 84 | 182 | 114 | 147 | 98 | 159 |
| M. L. P. | 106 | 187 | 105 | 166 | 124 | 109 | 105 | 89 |
| R. L. R. | 107 | 252 | 87 | 235 | 107 | 110 | 101 | 117 |
| R. H. W. | 79 | 149 | 95 | 158 | 111 | 116 | 119 | 111 |
| Average | 94 | 189 | 93 | 185 | 114 | 121 | 107 | 119 |
| Average with "borderline" diet: part 2 experiments | 116 | 193 | 112 | 171 | 114 | 158 | 108 | 141 |

* Periods 1 and 3, basal diet only; period 2, basal diet plus whole bran; period 4, basal diet plus washed bran.

Part 3.—*A Comparative Study of the Laxative Effects of Whole Bran and Washed Bran in Healthy Men Exhibiting a Marked Degree of Constipation.*—Experimental Details: The observations here reported were made on four healthy men. The general plan of experimentation was the same as that followed in the experiments described in part 2. Two of the individuals (W. E. A. and M. L. P.) had served as subjects for the previous experiments. Subsistence on the new rations resulted in marked constipation in their cases. Of the two remaining persons, one showed pronounced intestinal stasis; the other (R. L. R.) defecated once a day but felt distinctly uncomfortable while exhibiting this laxation rate and considered himself a good subject for the experiment. It is an interesting fact that R. L. R.'s rate of once a day, like that of the persons on the experiments described in part 2, was also associated with a daily fiber intake of approximately 50 mg. per kilogram of body weight. This relationship and its significance is discussed in a later section of this paper.

Subjective Impressions as a Criterion of Laxation: The subjective impressions recorded during the periods of subsistence on the basal diet alone were unanimous in emphasizing the difficulty of bowel movement and, frequently, the feeling that evacuation was incomplete. In contrast to this are the records for the bran periods indicating that defecations now were easy to perform, satisfying in character, and accompanied by the impression that all dejecta had been eliminated. No difference could be noticed in the effect obtained with whole bran as contrasted with that for the washed product.

Amount of Intestinal Contents Evacuated: As was the case in the previous experiments described in parts 1 and 2, ingestion of either whole or washed bran resulted in daily evacuation of an increased amount of material. The data presented in table 4 show not only the average weight of dejecta eliminated by each individual per day but also the average amount evacuated at each defecation. Comparison of these averages with those obtained in the experiments with a "borderline" or "mildly constipating" diet (part 2) is not without interest. In order to facilitate such a comparison, these average data from table 3 are included in table 4.

The average amounts of dejecta per day yielded by the persons when on the more constipating basal diet of the present experiments (periods 1 and 3, table 4) are lower than those for the corresponding basal periods of the study described in part 2, in which a "mildly constipating" basal ration was used. We are inclined to believe that the differences, although not large, are significant; but we hesitate to stress this point. When the more constipating diet was used, the amounts eliminated per defecation regardless of diet and period showed a rather remarkable agreement suggesting that the urge to defecate is dependent to an appreciable extent on the presence in the lower bowel of what might perhaps be spoken of as a "threshold mass."

The data given in table 4 confirm the conclusion indicated by the other criteria of laxation discussed, that there is no difference in the laxative values of whole and of washed bran.

### Laxation Rate as a Criterion of Laxative Action

Table 5 presents the data concerning the number of times the individuals defecated in the various periods. As not all of the periods were of seven days' duration comparison is facilitated by calculation of the rates of laxation—the number of movements per day; these data are also incorporated in table 5.

The constipating effect of the basal ration used in this study is made manifest if one compares the rates of laxation prevailing in the basal periods 1 and 3 of table 5 with those for similar periods in table 2, in which the rates yielded by the basal diet were approximately once a day. Many of the rates shown in table 5 were less than one, indicating that the persons concerned frequently passed a day without having a bowel movement.

Table 5.—*The Number and Rate of Defecations Observed When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Number in Seven Day Periods* | | | | Rate per Day in Periods* | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| W. E. A. | 5 | 8 | 6 | 8 | 0.7 | 1.1 | 0.9 | 1.1 |
| M. L. P. | 6 | 12 | 10† | 13 | 0.9 | 1.7 | 1.0 | 2.0 |
| R. L. R. | 7 | 16 | 6 | 14 | 1.0 | 2.4 | 1.0 | 2.1 |
| R. H. W. | 5 | 9 | 8† | 10 | 0.7 | 1.3 | 0.8 | 1.6 |

* Periods 1 and 3, basal diet only; period 2, basal diet plus whole bran; period 4, basal diet plus washed bran.

† Ten day period instead of seven days because of hang-over effect of the previous period.

In contrast to the results obtained in the studies described in parts 1 and 2, the objective data presented in table 5 abundantly confirm the subjective impressions indicating that both whole bran and washed bran possess demonstrable laxative power when tested under these conditions. Comparison of periods 2 and 4—"whole bran" periods, respectively—with the basal periods 1 and 3 brings out this fact clearly and supports the conclusion that there is no appreciable difference in the laxative values of washed bran and the natural product. This is a confirmation of the conclusion reached by consideration of the subjective impressions recorded. Evidently, then, the use of a more constipating diet for this study has been justified. The entire investigation described thus far strongly suggests that the technic often employed by students of laxation, namely, mere administration of the test product to individuals subsisting on various uncontrolled diets, and recording of a positive or negative effect on laxation, is an inadequate means of approach to the problem. A substance evidently may exhibit considerable laxative power when tested on a definitely constipated individual but yield a negative response when administered to a person whose condition in this respect is "borderline" or "normal."

TABLE 6.—*Summary of Average Intervals Between Defecations Observed When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Period 1 Basal Diet Only, Hours | Period 2 Basal Diet Plus Whole Bran, Hours | Period 3 Basal Diet Only, Hours | Period 4 Basal Diet Plus Washed Bran, Hours |
|---|---|---|---|---|
| W. E. A. | 39 | 14 | 28 | 24 |
| M. L. P. | 29 | 14 | 25 | 12 |
| R. L. R. | 27 | 12 | 21 | 12 |
| R. H. W. | 36 | 20 | 30 | 17 |
| Average | 34 | 15 | 26 | 16 |

*Time of Passage of Material Through the Alimentary Tract as a Criterion of Laxation:* The duration of the interval between defecations will stand in inverse relation to the state of laxation occurring. The interval might be as short as that characteristic of a severe diarrhea; on the other hand it might be as long as twelve months, as in the famous case of constipation described by Geib and Jones.[11] In table 6 are presented the data concerning the duration of the interval between defecations obtained in the present experiments. They indicate, as do the subjective impressions and the objective data pertaining to rates of laxation and amount of material eliminated, that there is no difference in the laxative power of whole bran and washed bran, when these products are fed in fiber-equivalent amounts to constipated individuals.

It will be noticed in table 6 that the average interval in basal period 3 was shorter than that for period 1. The individuals on the experiment all gained the impression that in period 3 there was a hang-over effect from period 2.

*Water Content of the Stool as a Criterion of Laxation:* The reasons for believing that the water content of the stool may serve as an index of laxation have already been presented and need not be repeated here. In discussing the data obtained from this study bearing on this question it is pertinent to repeat that the influence of water intake on laxation was minimized as far as possible in the present study. Each person drank a constant, selected and suitable volume of water daily.

The percentage of water present in the stools of the persons in these experiments was on the whole quite constant. Data obtained from each series of feeding trials are presented in table 7. In studying these figures it should be borne in mind that they are the result of determinations for moisture content of the total combined stools for the period. When the data in table 7 were studied, and the tendency toward formation of a stool of constant water content was recognized, there was considered the possibility that the water content of the stool varies appreciably from day to day, and that data of the sort presented in table 7, being averages, really obscure such daily differences. This possibility received support from the observation that certain stools, selected as representative of a constipated condition because of difficulty in passing, seemed on gross inspection to be drier than other specimens and actually proved on analysis to have an appreciably lower content of moisture. It seemed worth while, therefore, to study the water content of a large number of individual freshly passed dejecta. An opportunity for doing this was presented when another series of feeding trials was carried out in which two bran products were tested for laxative potency on eight normal men who subsisted on basal diets that were markedly constipating in their effects, being essentially of the type used in the experiments of part 3. Each person submitted for moisture determination specimens which proved to be difficult to pass and which were interpreted as evidence of definite constipation. The results of these determinations are given in table 8.

It will be noticed in table 8 that there were several specimens in which the moisture content was quite definitely below the averages given in table 7. The grand average in table 8 is 66 per cent, as compared with 72 per cent in table 7. The specimens regarded as representative of marked constipation, therefore, were in fact slightly more dehydrated. The differences, however, are small and their significance questionable. The conclusion that seems to be justified by these observations is that the water content of the stools is of little value as a criterion of laxation.

TABLE 7.—*Water Content of the Stool as a Criterion of Laxation*

| Prevailing Condition of Laxation on Basal Diet | Person | Period* 1 Basal Only, per Cent | Period* 2 Per Cent | Period* 3 Basal Only, per Cent | Period* 4 Per Cent | Period* 5 Basal Only, per Cent | Period* 6 Per Cent | Average, per Cent |
|---|---|---|---|---|---|---|---|---|
| Preliminary study: "two movements per day" | C. E. T. | 74 | 76 | 65 | 79 | 72 | 75 | 74 |
| | C. H. W. | 72 | 78 | 74 | 74 | 70 | 60 | 71 |
| | F. B. W. | 63 | 65 | 66 | 61 | 62 | 77 | 66 |
| | F. C. B. | 71 | 69 | 71 | 70 | 69 | 74 | 71 |
| | W. E. A. | 69 | 72 | 68 | 71 | 62 | 63 | 68 |
| Average | | 70 | 72 | 69 | 71 | 67 | 70 | 70 |
| | | Period† 1 | Period† 2 | Period† 3 | Period† 4 | | | |
| "Borderline": mild constipation, "one movement per day" | W. E. A. | 76 | 74 | 72 | 72 | | | 74 |
| | F. C. B. | Lost | 80 | 81 | 82 | | | 81 |
| | M. L. P. | 78 | 80 | 79 | 78 | | | 79 |
| | S. A. P. | 77 | 80 | 77 | 81 | | | 78 |
| | A. B. | 76 | 79 | 74 | 74 | | | 76 |
| Average | | 77 | 79 | 76 | 77 | | | 78 |
| Marked constipation | W. E. A. | 63 | 73 | 66 | 75 | | | 73 |
| | M. L. P. | 84 | 76 | 79 | 77 | | | 79 |
| | R. L. R. | 84 | 79 | 77 | 79 | | | 80 |
| | R. H. W. | 44 | 66 | 78 | 72 | | | 65 |
| Average | | 70 | 74 | 76 | 76 | | | 74 |
| Grand average of basal periods, per cent | | | | | | | | 72 |
| Extreme values, per cent | | | | | | | | 44-84 |
| Grand average of all periods regardless of diet, per cent | | | | | | | | 73 |
| Extreme values, per cent | | | | | | | | 44-84 |

* For description of periods see table 2.
† For description of periods see table 4.

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[11] Geib, Daniel; and Jones, J. D.: Unprecedented Case of Constipation, J. A. M. A. 38: 1304 (May 17) 1902.

W. E. A. experimented further in an endeavor, first, to determine how best to alter the basal ration so as to produce a more constipated condition in himself and, secondly, to test the effect of ingestion of bran on the condition thus produced. The basal diet used previously (part 1) is shown in table 1. As a result of the elimination of potatoes from this ration and the reduction of the daily intake of bananas from 350 Gm. to 200 Gm., marked intestinal stasis developed. When this had prevailed for eight days, 30 Gm. of whole bran was eaten daily over a period of nine days. A definite increase in laxation rate resulted. It was not possible for W. E. A. to continue further on this experiment and determine the effect of washed bran. However, these observations emphasized the importance of repeating the experiments described under part 2 but using a basal diet more constipating in its effects. These additional studies are described in part 3.

Table 4.—*Weight of Intestinal Contents Eliminated When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Average per Day in Period* | | | | Average per Defecation in Period* | | | |
|---|---|---|---|---|---|---|---|---|
| | 1<br>Gm. | 2<br>Gm. | 3<br>Gm. | 4<br>Gm. | 1<br>Gm. | 2<br>Gm. | 3<br>Gm. | 4<br>Gm. |
| W. E. A. | 82 | 168 | 84 | 182 | 114 | 147 | 98 | 159 |
| M. L. P. | 106 | 187 | 105 | 166 | 124 | 109 | 105 | 89 |
| R. L. R. | 107 | 252 | 87 | 235 | 107 | 110 | 101 | 117 |
| R. H. W. | 79 | 149 | 95 | 158 | 111 | 116 | 119 | 111 |
| Average | 94 | 189 | 93 | 185 | 114 | 121 | 107 | 119 |
| Average with "borderline" diet: part 2 experiments | 116 | 193 | 112 | 171 | 114 | 158 | 108 | 144 |

* Periods 1 and 3, basal diet only; period 2, basal diet plus whole bran; period 4, basal diet plus washed bran.

Part 3.—*A Comparative Study of the Laxative Effects of Whole Bran and Washed Bran in Healthy Men Exhibiting a Marked Degree of Constipation.*—Experimental Details: The observations here reported were made on four healthy men. The general plan of experimentation was the same as that followed in the experiments described in part 2. Two of the individuals (W. E. A. and M. L. P.) had served as subjects for the previous experiments. Subsistence on the new rations resulted in marked constipation in their cases. Of the two remaining persons, one showed pronounced intestinal stasis; the other (R. L. R.) defecated once a day but felt distinctly uncomfortable while exhibiting this laxation rate and considered himself a good subject for the experiment. It is an interesting fact that R. L. R.'s rate of once a day, like that of the persons on the experiments described in part 2, was also associated with a daily fiber intake of approximately 50 mg. per kilogram of body weight. This relationship and its significance is discussed in a later section of this paper.

Subjective Impressions as a Criterion of Laxation: The subjective impressions recorded during the periods of subsistence on the basal diet alone were unanimous in emphasizing the difficulty of bowel movement and, frequently, the feeling that evacuation was incomplete. In contrast to this are the records for the bran periods indicating that defecations now were easy to perform, satisfying in character, and accompanied by the impression that all dejecta had been eliminated. No difference could be noticed in the effect obtained with whole bran as contrasted with that for the washed product.

Amount of Intestinal Contents Evacuated: As was the case in the previous experiments described in parts 1 and 2, ingestion of either whole or washed bran resulted in daily evacuation of an increased amount of material. The data presented in table 4 show not only the average weight of dejecta eliminated by each individual per day but also the average amount evacuated at each defecation. Comparison of these averages with those obtained in the experiments with a "borderline" or "mildly constipating" diet (part 2) is not without interest. In order to facilitate such a comparison, these average data from table 3 are included in table 4.

The average amounts of dejecta per day yielded by the persons when on the more constipating basal diet of the present experiments (periods 1 and 3, table 4) are lower than those for the corresponding basal periods of the study described in part 2, in which a "mildly constipating" basal ration was used. We are inclined to believe that the differences, although not large, are significant; but we hesitate to stress this point. When the more constipating diet was used, the amounts eliminated per defecation regardless of diet and period showed a rather remarkable agreement suggesting that the urge to defecate is dependent to an appreciable extent on the presence in the lower bowel of what might perhaps be spoken of as a "threshold mass."

The data given in table 4 confirm the conclusion indicated by the other criteria of laxation discussed, that there is no difference in the laxative values of whole and of washed bran.

Laxation Rate as a Criterion of Laxative Action: Table 5 presents the data concerning the number of times the individuals defecated in the various periods. As not all of the periods were of seven days' duration, comparison is facilitated by calculation of the rates of laxation—the number of movements per day; these data are also incorporated in table 5.

The constipating effect of the basal ration used in this study is made manifest if one compares the rates of laxation prevailing in the basal periods 1 and 3 of table 5 with those for similar periods in table 2, in which the rates yielded by the basal diet were approximately once a day. Many of the rates shown in table 5 were less than one, indicating that the persons concerned frequently passed a day without having a bowel movement.

Table 5.—*The Number and Rate of Defecations Observed When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Number in Seven Day Periods* | | | | Rate per Day in Periods* | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| W. E. A. | 5 | 8 | 6 | 8 | 0.7 | 1.1 | 0.9 | 1.1 |
| M. L. P. | 6 | 12 | 10† | 13 | 0.9 | 1.7 | 1.0 | 2.0 |
| R. L. R. | 7 | 16 | 6 | 14 | 1.0 | 2.4 | 1.0 | 2.1 |
| R. H. W. | 5 | 9 | 8† | 10 | 0.7 | 1.3 | 0.8 | 1.6 |

* Periods 1 and 3, basal diet only; period 2, basal diet plus whole bran; period 4, basal diet plus washed bran.

† Ten day period instead of seven days because of hang-over effect of the previous period.

In contrast to the results obtained in the studies described in parts 1 and 2, the objective data presented in table 5 abundantly confirm the subjective impressions indicating that both whole bran and washed bran possess demonstrable laxative power when tested under these conditions. Comparison of periods 2 and 4—"whole bran" periods, respectively—with the basal periods 1 and 3 brings out this fact clearly and supports the conclusion that there is no appreciable difference in the laxative values of washed bran and the natural product. This is a confirmation of the conclusion reached by consideration of the subjective impressions recorded. Evidently, then, the use of a more constipating diet for this study has been justified. The entire investigation described thus far strongly suggests that the technic often employed by students of laxation, namely, mere administration of the test product to individuals subsisting on various uncontrolled diets, and recording of a positive or negative effect on laxation, is an inadequate means of approach to the problem. A substance evidently may exhibit considerable laxative power when tested on a definitely constipated individual but yield a negative response when administered to a person whose condition in this respect is "borderline" or "normal."

TABLE 6.—*Summary of Average Intervals Between Defecations Observed When the Basal Diet was Markedly Constipating in Its Effects*

| Person | Period 1 Basal Diet Only, Hours | Period 2 Basal Diet Plus Whole Bran, Hours | Period 3 Basal Diet Only, Hours | Period 4 Basal Diet Plus Washed Bran, Hours |
|---|---|---|---|---|
| W. E. A. | 39 | 14 | 28 | 24 |
| M. L. P. | 29 | 14 | 25 | 12 |
| R. L. R. | 27 | 12 | 21 | 12 |
| R. H. W. | 36 | 20 | 30 | 17 |
| Average | 34 | 15 | 26 | 16 |

Time of Passage of Material Through the Alimentary Tract as a Criterion of Laxation: The duration of the interval between defecations will stand in inverse relation to the state of laxation occurring. The interval might be as short as that characteristic of a severe diarrhea; on the other hand it might be as long as twelve months, as in the famous case of constipation described by Geib and Jones.[11] In table 6 are presented the data concerning the duration of the interval between defecations obtained in the present experiments. They indicate, as do the subjective impressions and the objective data pertaining to rates of laxation and amount of material eliminated, that there is no difference in the laxative power of whole bran and washed bran, when these products are fed in fiber-equivalent amounts to constipated individuals.

It will be noticed in table 6 that the average interval in basal period 3 was shorter than that for period 1. The individuals on the experiment all gained the impression that in period 3 there was a hang-over effect from period 2.

Water Content of the Stool as a Criterion of Laxation: The reasons for believing that the water content of the stool may serve as an index of laxation have already been presented and need not be repeated here. In discussing the data obtained from this study bearing on this question it is pertinent to repeat that the influence of water intake on laxation was minimized as far as possible in the present study. Each person drank a constant, selected and suitable volume of water daily.

The percentage of water present in the stools of the persons in these experiments was on the whole quite constant. Data obtained from each series of feeding trials are presented in table 7. In studying these figures it should be borne in mind that they are the result of determinations for moisture content of the total combined stools for the period. When the data in table 7 were studied, and the tendency toward formation of a stool of constant water content was recognized, there was considered the possibility that the water content of the stool varies appreciably from day to day, and that data of the sort presented in table 7, being averages, really obscure such daily differences. This possibility received support from the observation that certain stools, selected as representative of a constipated condition because of difficulty in passing, seemed on gross inspection to be drier than other specimens and actually proved on analysis to have an appreciably lower content of moisture. It seemed worth while, therefore, to study the water content of a large number of individual freshly passed dejecta. An opportunity for doing this was presented when another series of feeding trials was carried out in which two bran products were tested for laxative potency on eight normal men who subsisted on basal diets that were markedly constipating in their effects, being essentially of the type used in the experiments of part 3. Each person submitted for moisture determination specimens which proved to be difficult to pass and which were interpreted as evidence of definite constipation. The results of these determinations are given in table 8.

It will be noticed in table 8 that there were several specimens in which the moisture content was quite definitely below the averages given in table 7. The grand average in table 8 is 66 per cent, as compared with 72 per cent in table 7. The specimens regarded as representative of marked constipation, therefore, were in fact slightly more dehydrated. The differences, however, are small and their significance questionable. The conclusion that seems to be justified by these observations is that the water content of the stools is of little value as a criterion of laxation.

TABLE 7.—*Water Content of the Stool as a Criterion of Laxation*

| Prevailing Condition of Laxation on Basal Diet | Person | Period* 1 Basal Only, per Cent | Period* 2 Per Cent | Period* 3 Basal Only, per Cent | Period* 4 Per Cent | Period* 5 Basal Only, per Cent | Period* 6 Per Cent | Average, per Cent |
|---|---|---|---|---|---|---|---|---|
| Preliminary study: "two movements per day" | C. E. T. | 74 | 76 | 65 | 79 | 72 | 75 | 74 |
| | C. H. W. | 72 | 78 | 74 | 74 | 70 | 60 | 71 |
| | F. B. W. | 63 | 65 | 66 | 61 | 62 | 77 | 66 |
| | F. C. B. | 71 | 69 | 71 | 70 | 69 | 74 | 71 |
| | W. E. A. | 69 | 72 | 68 | 71 | 62 | 63 | 63 |
| Average | | 70 | 72 | 69 | 71 | 67 | 70 | 70 |
| | | Period† 1 | Period† 2 | Period† 3 | Period† 4 | | | |
| "Borderline": mild constipation, "one movement per day" | W. E. A. | 76 | 74 | 72 | 72 | | | 74 |
| | F. C. B. | Lost | 80 | 81 | 82 | | | 81 |
| | M. L. P. | 78 | 80 | 79 | 78 | | | 79 |
| | S. A. P. | 77 | 80 | 77 | 81 | | | 78 |
| | A. B. | 76 | 79 | 74 | 74 | | | 76 |
| Average | | 77 | 79 | 76 | 77 | | | 78 |
| Marked constipation | W. E. A. | 68 | 73 | 66 | 75 | | | 73 |
| | M. L. P. | 84 | 76 | 79 | 77 | | | 79 |
| | R. L. R. | 84 | 79 | 77 | 79 | | | 80 |
| | R. H. W. | 44 | 66 | 78 | 72 | | | 65 |
| Average | | 70 | 74 | 76 | 76 | | | 74 |
| Grand average of basal periods, per cent | | | | | | | | 72 |
| Extreme values, per cent | | | | | | | | 44-84 |
| Grand average of all periods regardless of diet, per cent | | | | | | | | 73 |
| Extreme values, per cent | | | | | | | | 44-84 |

* For description of periods see table 2.
† For description of periods see table 4.

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[11] Geib, Daniel; and Jones, J. D.: Unprecedented Case of Constipation, J. A. M. A. 38:1304 (May 17) 1902.

significantly higher one, the change in laxation is evident almost immediately. The question of habit with respect to laxation must also be considered; it is difficult to evaluate this factor. In the present study there was one definite instance of the positive effect on laxation of the mental state of the person.

The observations made in the present study indicate that the rate of laxation, although not the most sensitive criterion of laxative effects, nevertheless is the most valuable. The following reasons are suggested: The capacity of the large intestine for holding fecal material is quite considerable. By reference to tables 3 and 4 it becomes evident that the average weight of each stool may be increased by approximately 25 per cent. If the increased fiber intake is small and only sufficient to bring about an increase in the weight of the stool of about this order of magnitude, evidently this extra amount of ingested fiber will not bring about any increase in the rate of laxation. If the additional amount of material to be eliminated is so great that it cannot be taken care of by this normal capacity for increase in weight of the stool, more stools must be formed and passed; this will reveal itself in an increase in laxation rate.

The observations made in these investigations suggest that the various criteria used in measuring laxative effects, when ranked according to their sensitivity in revealing improvement in laxative conditions, would be listed as follows: (1) subjective impressions; (2) appreciable increases in the amount of intestinal contents eliminated each day; (3) average time of passage of material through the alimentary tract, and (4) rate of laxation, or number of movements per day. Criteria 3 and 4 have about the same degree of sensitivity. With this list in mind it becomes evident that, whenever the new conditions are sufficiently effective to bring about a definite change in the rate of laxation or in the time of passage of material through the alimentary tract, the effect on laxation may be regarded as having been demonstrated in very objective fashion.

food residues play in promoting elimination, but this recognition seems to have been only with respect to the qualitative aspect. The present investigation contributes information on the quantitative side. Numerous data for fiber content of foods are at hand in reference books available to students of nutrition, but quantitative data on the physiologic side have not been available. Without in any way minimizing the importance of other factors influencing laxation, or the presence in numerous foods of other indigestible materials besides fiber—pentosans, for example—it seems reasonable to attempt some application of the observations of this research in human physiology.

Following out this idea, calculations have been made to determine the amounts of various representative foods that are required as sources of fiber to supplement a "very constipating" and a "borderline" diet for an average healthy man weighing 70 Kg. in order to reach the physiologic fiber minimum previously suggested. Conceivably, somewhat larger amounts may be required to attain a physiologic fiber optimum. The calculations are presented in table 12 and have been

Table 12.—*Sources of Fiber to Supplement a Very Constipating and a Borderline Diet* *

| | | For Use With | | | |
|---|---|---|---|---|---|
| | | Very Constipating Ration (As Used in Part 3, for Example) | | Borderline Ration (As Used in Part 2, for Example) | |
| Food | Fiber Content, per Cent | Gm. | Ounces | Gm. | Ounces |
| Bran, washed | 14.9 | 25.5 | 0.8 | 15.4 | 0.5 |
| Bran, whole | 10.4 | 36.5 | 1.2 | 22.1 | 0.75 |
| Grapes | 4.3 | 88 | 3.0 | 53 | 1.75 |
| Peaches | 3.6 | 106 (2)† | 3.5 | 64 | 2.1 |
| Pears | 2.7 | 141 (2) | 4.3 | 85 | 2.8 |
| Apples | 1.2 | 316 (4) | 10.5 | 191 | 6.3 |
| Banana | 1.0 | 380 (5) | 12.6 | 230 | 7.6 |
| Cabbage | 1.1 | 345 | 11.5 | 220 | 7.0 |
| Spinach | 0.9 | 421 | 14.0 | 255 | 8.1 |
| Lettuce | 0.7 | 543 | 18.1 | 328 | 11.0 |
| Peanuts | 2.5 | 156 | 5.0 | 96 | 3.2 |
| Almonds | 2.0 | 190 | 6.3 | 115 | 3.8 |
| Whole wheat bread | 1.2 | 316 | 10.5 | 191 | 6.3 |
| Graham bread | 1.1 | 345 | 11.5 | 220 | 7.0 |
| Rye bread | 0.5 | 760 | 25.3 | 460 | 15.3 |

* These calculations are based on the following data and assumptions: very constipating diet contains 2.5 Gm. of fiber per day; borderline diet has 4 Gm. of fiber per day. A man weighing 70 Kg. is to receive a daily total of 6.3 Gm., or 90 mg. of fiber per kilogram daily. The amounts in columns 3 and 5 yield 3.8 and 2.3 Gm. of fiber, respectively.

† Numbers in parentheses indicate approximate number of peaches, pears, and the like, yielding this amount. In the case of the banana and similar foods, the raw starch present probably exerts a definite influence on laxation; likewise, organic acids in the case of other fruits, berries and similar foods.

Fiber Content of the Diet in Relation to Laxation: The importance of giving attention to the amount of indigestible material present in the diet, when studying the problem of laxation, is well known. Fiber, or cellulose, is perhaps the most common of the indigestible substances present in the foods of man and therefore assumes considerable importance in a study such as is described in this paper. For this reason the comparison of whole bran with the washed product was made on a fiber-equivalent basis. As these test products were found to have the same laxative potency, it may be concluded that the laxative action of bran is due predominantly to the fiber present and not to phytin or other bran constituents that are readily extracted by treatment with weak acid. This confirms the work of Williams,[5] carried out on dogs, and of Falcon-Lesses,[12] performed on rats. Therefore the statement often made in the literature that the laxative action of bran is due chiefly to the phytin which it contains is erroneous.

Table 8.—*Water Content of Freshly Passed Stools Representative of Marked Constipation*

| Person | Individual Determinations, per Cent | Average For Person, per Cent |
|---|---|---|
| W. E. A. | 52, 48 | 50 |
| M. L. P. | 64 | 64 |
| P. A. B. | 89, 68 | 79 |
| T. L. B. | 63, 70, 71 | 68 |
| P. S. | 65, 66 | 66 |
| E. W. S. | 67, 70 | 69 |
| C. E. T. | 68, 69, 70 | 69 |
| F. B. W. | 53, 66 | 60 |
| Grand average | 66 per cent | |

Alimentary Disappearance of Fiber: In the investigation here reported, several interesting observations were made bearing on the rôle of fiber or indigestible material in laxation. In stating that the laxative value of an edible substance is due primarily to the fiber it contains, one must guard against creating the impression that the so-called fiber is totally indigestible and remains entirely intact in its passage through the alimentary tract of man. If the amounts of fiber ingested and subsequently excreted by way of the stools are known, it becomes possible to determine whether the fiber that is eaten has passed through the alimentary canal unchanged, and also to what extent any increase in bulk of the intestinal excreta is due to the additional fiber ingested. Earlier studies of this nature (reviewed by Schmidt and Strasburger [13]), have shown that there is a variable utilization of the cellulose contained in different vegetables. For example, in some experiments the fiber from cabbage almost completely disappeared in contrast to about 47 per cent of the fiber of lentils.[14] The data obtained in the present investigation and presented in table 9 likewise indicate that appreciable amounts of ingested fiber disappear in the course of alimentary passage through man.

Calculations were also made to determine the extent to which the fiber of the whole bran and the washed bran disappeared following ingestion. This was done by comparing the increments of food and fecal fiber in (*a*) the whole bran period 2 over basal period 1, (*b*) the whole bran period 2 over the basal period 3, and (*c*) the washed bran period 4 over the basal period 3. Such calculations can be only approximate. From the results of the calculations presented in table 10 it is evident that more of the fiber contained in both the whole and the washed bran passes through the alimentary tract unchanged than is the case with the fiber contained in the foods comprising the basal diet. This is a confirmation of work reported in the literature. Reference has already been made to the observations of Lohrisch, showing that a relatively large amount of the fiber of cabbage disappears during alimentary passage as compared with the fiber of lentils. Other work bearing more directly on the question of the utilization of bran is that of Rubner,[15] who made a study in men of the extent to which the cereal brans disappear when fed in the form of coarse black bread. Examination of his data [16] reveals that about 56 per cent of the bran disappeared. This figure is considerably greater than the averages presented in our table 10. Perhaps the difference is related to the fact that in Rubner's experiments almost 2 ounces of bran was ingested daily, whereas in the present study the daily intake was from 1 to 1½ ounces. Differences in the milling processes by which the brans were prepared also might account in part for these observed differences.

Modification of the Demonstrable Laxative Value of Bran by the Amount of Fiber Already Present in the Diet: The tests of whole and of washed bran on individuals exhibiting marked constipation resulted in the demonstration that these substances possess definite laxative power. In the earlier studies described, the amount of fiber already present in the basal diet, on which the bran product was superimposed, was great enough to bring about a laxation rate of at least once a day, and the addition to this of the amount contained in an ounce of bran was not sufficient to improve laxation except as measured by subjective sensations and the amount of material evacuated. The ratio of bran or other test-substance fiber to the total fiber in the diet seems to be of importance, therefore, if the laxative power of the test product is to be demonstrated beyond question. In table 11 are given, for purposes of comparison, the values of this ratio for the preliminary feeding trials, those with a "borderline" or "mildly constipating" diet (part 2), and those obtained when the individuals were markedly constipated (part 3). From table 11 it appears that, in order to demonstrate clearly in normal men the laxative power of bran (or other test source of fiber), the ratio of fiber in the test material to the total fiber in the diet must

Table 9.—*Amount of Ingested Fiber that Disappears on Passage Through the Alimentary Tract of Healthy Men*

| Person | Period<br>1<br>Basal Diet Only, per Cent | <br>2<br>Basal Diet Plus Whole Bran, per Cent | <br>3<br>Basal Diet Only, per Cent | <br>4<br>Basal D'et Plus Washed Bran, per Cent |
|---|---|---|---|---|
| W. E. A. | 69 | 57 | 65 | 46 |
| W. E. A.* | 60 | 44 | 58 | 52 |
| M. L. P. | 36 | 48 | 76 | 56 |
| M. L. P.* | 73 | 42 | 62 | 49 |
| S. A. P. | 73 | 56 | 73 | 56 |
| A. B. | 24 | 34 | 42 | 39 |
| R. L. R. | 80 | 30 | 83 | 53 |
| R. H. W. | 61 | 37 | 57 | 55 |
| Average | 60 | 44 | 65 | 51 |

* This person served as a subject in two series of experiments.

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12. Falcon-Lesses, Mark: J. Nutrition **2**: 295 (Jan.) 1930.
13. Schmidt, E. A., and Strasburger, Julius: Die Fäzes des Menschen, ed. 3, Berlin, August Hirschwald, 1910, pp. 211-216.
14. Lohrisch, H. R.: Ztschr. f. physiol. Chem. **47**: 237, 1906.
15. Rubner, Max: Ztschr. f. Biol. **19**: 67, 1883.
16. In table on page 67 of Rubner's paper.

approximate the value 0.6. It would be interesting to perform similar experiments with nonfiber sources of roughage in order to determine whether this finding applies to indigestible residues in general.

The Relation Between Ingested Fiber and the Rate of Laxation: The observations presented in table 11 suggested that a detailed examination of the data for ingested fiber in relation to the rate of laxation might yield significant and interesting results. Fifty-six instances were available for study in which the fiber intake per kilogram of body weight per day and the number of bowel movements per day were known. W. E. A. served as the subject in every series of feeding trials. Therefore, in his particular case it was possible to plot five separate points for laxation rates, ranging from 0.8 to 1.2 movements per day and corresponding fiber intakes from 38 to 112 mg. per kilogram per day. These data, when plotted on coordinate paper, suggested a logarithmic relationship between these two variables; another plot on arith-log paper gave the surprising relationship presented in the accompanying chart. Line *AB* represents the best straight line plot for all the data that run through the intersection of the axes; *CD* is the line running through all but one of the plotted points.

TABLE 10.—*Amount of the Ingested Fiber of Whole Bran and Washed Bran That Disappears on Passage Through the Alimentary Tract of Healthy Men*

| | Whole Bran: Periods Used in Calculations | | | Washed Bran: Periods Used in Calculations | | |
|---|---|---|---|---|---|---|
| Person | 2 and 1, per Cent | 2 and 3, per Cent | Average, per Cent | 4 and 3, per Cent | 4 and 1, per Cent | Average, per Cent |
| W. E. A. .......... | 42 | 47 | 45 | 22 | .. | 22 |
| W. E. A.*.......... | 32 | 34 | 33 | 53 | 45 | 49 |
| M. L. P. .......... | 61 | 22 | 41 | 40 | .. | 40 |
| M. L. P.*.......... | 20 | 27 | 24 | 41 | 33 | 37 |
| F. B. .............. | .. | 25 | 25 | 22 | .. | 22 |
| S. A. P. .......... | 35 | 36 | 36 | 37 | .. | 37 |
| R. L. R. .......... | —30† | —30† | —30† | 28 | 30 | 29 |
| R. H. W. .......... | 22 | 25 | 24 | 54 | 52 | 53 |
| Average‡......... | 35 | 31 | 33 | 37 | 40 | 36 |

* This person served as a subject in two series of experiments.

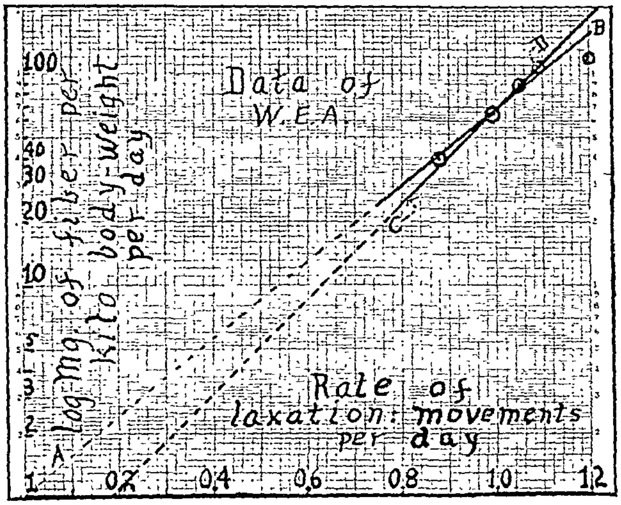
† The output was 30 per cent greater than the intake. This might be explained as a hang-over effect from the previous period.

‡ The values for R. L. R. designated by † were omitted when these averages were calculated.

TABLE 11.—*Relation of the Demonstrable Laxative Power of Bran to the Total Amount of Fiber in the Diet*

| Prevailing Condition of Laxation on the Basal Diet | Movements per Day When on the Basal Diet Average | Ratio of Test Substance Fiber to Total Fiber Ingested | Is a Laxative Potency Demonstrated? |
|---|---|---|---|
| Part 1: preliminary study; "two movements per day" | 2.05 | 0.34 | No |
| Part 2: mild constipation; "once a day" | 1.00 | 0.44 | Subjective criteria: yes; objective criteria: ? |
| Part 3: marked constipation; "less than once a day" | 0.88 | 0.59 | Yes |

As a conservative interpretation of the chart, it might be stated that the range of values for the logarithm of fiber intake is not great, running from 1.58 (log of 38) to 2.08 (log of 112), and that, therefore, the relationship may be of a first approximation order only, and not of very great significance. On the other hand, it is of interest to point out that a projection of line *CD* cuts the *x* axis at a value of about 0.2; in other words, if this relationship is significant within the range of values covered by plot *CD* and holds for extrapolated points representing lower values of the respective variables, and the fiber intake per day is reduced to zero, a laxation rate of 0.2 per day, or once in five days, is obtained. Approximately this value was actually obtained in a separate study on dogs. These animals were fed an artificial diet supplemented by measured amounts of various sources of indigestible material. Subsistence on the basal diet devoid of roughage resulted in defecation about once every four days. In view of this observation we are inclined to believe that the relationship presented in the chart is more significant than the conservative interpretation just given would indicate. As further evidence in support of this view we may cite the finding that the fifty-six cases secured in this study, in which values for the fiber intake per kilogram per day and laxation rate were obtained, conformed to this relationship. All cases in which the daily fiber intake was less than 50 mg. per kilogram exhibited laxation rates with values of less than once a day; intakes of fiber ranging from 50 to 63 mg. per kilogram were associated with defecations once a day, interpreted subjectively as "mild constipation"; when the intakes of fiber were 70 mg. and over, laxation was regarded as satisfactory by subjective criteria in every instance, some persons, however, requiring a daily fiber intake of from 90 to 100 mg. per kilogram in order to secure excellent laxation, as judged by all criteria, both subjective and objective in nature.



Data of W. E. A.

Several observations of importance in relation to the interpretation of laxation data should be mentioned. When an individual has been subsisting at a relatively high level of fiber intake and changes suddenly to a significantly lower level, there is a considerable hang-over effect. A period of four or more days is necessary before the effect of the low fiber diet on laxation can be clearly shown. This finding throws doubt on the validity of the conclusions drawn in studies of laxation in normal human beings, in which the experimental periods have been as short as four days. It is possible, therefore, for a person to exhibit different rates of laxation with the same fiber intake, depending on whether the observation of laxation rate in the low-fiber period is begun immediately or an intervening period of adjustment to the new level is allowed. When one goes from a low-fiber level to a significantly higher one, the change in laxation is evident almost immediately. The question of habit with respect to laxation must also be considered; it is difficult to evaluate this factor. In the present study there was one definite instance of the positive effect on laxation of the mental state of the person.

The observations made in the present study indicate that the rate of laxation, although not the most sensitive criterion of laxative effects, nevertheless is the most valuable. The following reasons are suggested: The capacity of the large intestine for holding fecal material is quite considerable. By reference to tables 3 and 4 it becomes evident that the average weight of each stool may be increased by approximately 25 per cent. If the increased fiber intake is small and only sufficient to bring about an increase in the weight of the stool of about this order of magnitude, evidently this extra amount of ingested fiber will not bring about any increase in the rate of laxation. If the additional amount of material to be eliminated is so great that it cannot be taken care of by this normal capacity for increase in weight of the stool, more stools must be formed and passed; this will reveal itself in an increase in laxation rate.

The observations made in these investigations suggest that the various criteria used in measuring laxative effects, when ranked according to their sensitivity in revealing improvement in laxative conditions, would be listed as follows: (1) subjective impressions; (2) appreciable increases in the amount of intestinal contents eliminated each day; (3) average time of passage of material through the alimentary tract, and (4) rate of laxation, or number of movements per day. Criteria 3 and 4 have about the same degree of sensitivity. With this list in mind it becomes evident that, whenever the new conditions are sufficiently effective to bring about a definite change in the rate of laxation or in the time of passage of material through the alimentary tract, the effect on laxation may be regarded as having been demonstrated in very objective fashion.

Is there a physiologic roughage minimum? The data obtained in this investigation suggest strongly that there is such a thing as a minimum amount of roughage compatible with satisfactory laxation in healthy men. As a result of a review of all the data for fiber intake in relation to laxation rate, the following statements appear justified: A laxation rate of once a day, which, however, is not often accompanied by subjective impressions of satisfactory laxation, is obtained in healthy men with a daily fiber intake of from 50 to 60 mg. per kilogram of body weight. With some individuals an increase of this intake to from 70 to 80 mg. resulted in a satisfactory laxative condition. Other persons, notably those showing a greater tendency to constipation, required from 90 to 100 mg. per kilogram daily in order to insure good laxation. So far as we are aware, no data of this sort have been published before. These observations certainly suggest the existence of what might be called a physiologic roughage minimum, which, for normal men, might be expressed in terms of a daily fiber intake of from 90 to 100 mg. per kilogram of body weight.

In advancing this suggestion we do not wish to be understood as ignoring the influence on laxation of such factors as habit, emotional states, the presence in certain foods of substances having a stimulating action on intestinal motility, and other factors at present only vaguely recognized. The literature on laxation is full of recognition of the important part the indigestible food residues play in promoting elimination, but this recognition seems to have been only with respect to the qualitative aspect. The present investigation contributes information on the quantitative side. Numerous data for fiber content of foods are at hand in reference books available to students of nutrition, but quantitative data on the physiologic side have not been available. Without in any way minimizing the importance of other factors influencing laxation, or the presence in numerous foods of other indigestible materials besides fiber—pentosans, for example—it seems reasonable to attempt some application of the observations of this research in human physiology.

Following out this idea, calculations have been made to determine the amounts of various representative foods that are required as sources of fiber to supplement a "very constipating" and a "borderline" diet for an average healthy man weighing 70 Kg. in order to reach the physiologic fiber minimum previously suggested. Conceivably, somewhat larger amounts may be required to attain a physiologic fiber optimum. The calculations are presented in table 12 and have been applied to representatives of different types of food. Such a calculation can be extended readily to include many other foods.

Table 12.—*Sources of Fiber to Supplement a Very Constipating and a Borderline Diet* *

| | | For Use With | | | |
|---|---|---|---|---|---|
| | | Very Constipating Ration (As Used in Part 3, for Example) | | Borderline Ration (As Used in Part 2, for Example) | |
| Food | Fiber Content, per Cent | Gm. | Ounces | Gm. | Ounces |
| Bran, washed | 14.9 | 25.5 | 0.8 | 15.4 | 0.5 |
| Bran, whole | 10.4 | 36.5 | 1.2 | 22.1 | 0.75 |
| Grapes | 4.3 | 88 | 3.0 | 53 | 1.75 |
| Peaches | 3.6 | 106 (2)† | 3.5 | 64 | 2.1 |
| Pears | 2.7 | 141 (2) | 4.3 | 85 | 2.8 |
| Apples | 1.2 | 316 (4) | 10.5 | 191 | 6.3 |
| Banana | 1.0 | 380 (5) | 12.6 | 230 | 7.6 |
| Cabbage | 1.1 | 345 | 11.5 | 220 | 7.0 |
| Spinach | 0.9 | 421 | 14.0 | 255 | 8.1 |
| Lettuce | 0.7 | 543 | 18.1 | 328 | 11.0 |
| Peanuts | 2.5 | 156 | 5.0 | 96 | 3.2 |
| Almonds | 2.0 | 190 | 6.3 | 115 | 3.8 |
| Whole wheat bread | 1.2 | 316 | 10.5 | 191 | 6.3 |
| Graham bread | 1.1 | 345 | 11.5 | 220 | 7.0 |
| Rye bread | 0.5 | 760 | 25.3 | 460 | 15.3 |

* These calculations are based on the following data and assumptions: very constipating diet contains 2.5 Gm. of fiber per day; borderline diet has 4 Gm. of fiber per day. A man weighing 70 Kg. is to receive a daily total of 6.3 Gm., or 90 mg. of fiber per kilogram daily. The amounts in columns 3 and 5 yield 3.8 and 2.3 Gm. of fiber, respectively.

† Numbers in parentheses indicate approximate number of peaches, pears, and the like, yielding this amount. In the case of the banana and similar foods, the raw starch present probably exerts a definite influence on laxation; likewise, organic acids in the case of other fruits, berries and similar foods.

Inspection of table 12 shows clearly that whole and washed bran, because of their relatively great fiber content, have high supplementing value in laxation. Of the fruits listed, grapes, peaches and pears prove to be of greatest value. The vegetables cabbage, spinach and lettuce are next. Peanuts and almonds, although richer in crude fiber than these vegetables, probably cannot contribute a very large amount of fiber to the diet because of their content of oil and consequently high caloric value. The common breads given in the table have about the same content of fiber as the apple, the banana and the leafy vegetables, and therefore should be of about equal value as sources of roughage; when these cereal products are eaten in only moderate quantities, they contribute only small amounts of fiber; when eaten in large amounts as staple foods, their yield of fiber would be comparable to that of the fruits and vegetables cited. This indicates that these breads can serve as valuable sources of food fiber. It is recognized that these estimations are only approximate, but it is believed that they can serve as aids in the wise selection of foods with the view to securing intake of the "physiologic fiber optimum."

### COMMENT

Reference has already been made to the widely discussed criticisms by Alvarez of the use of bran in the diet. The results of this research give indications of the potency of bran as a laxative in the case of healthy men. The evidence pointing to the existence of a physiologic roughage minimum—or shall we say optimum—is worthy of serious consideration and seems to afford a basis on which to rest an explanation of the controversy that has arisen concerning the value of bran as a laxative. It is quite likely that many cases of constipation are due simply to failure to ingest sufficient roughages, either through ignorance or through an unwarranted assumption that a high-roughage diet is being ingested; these individuals may really be subsisting on a diet the roughage content of which is below the physiologic minimum and therefore should obtain relief by raising the level of roughage intake to the optimum. The data secured in this research are believed to be of value in answering the question as to what level of roughage intake constitutes the physiologic optimum. Another group of cases exhibiting constipation and much more likely to come to the attention of the clinician is made up of individuals presenting other symptoms, such as pain, along with the constipation. Cases of spastic colitis and similar conditions, in which an irritable colon is an important feature of the syndrome, belong in this class. It is quite possible that the form of the roughage is of special importance for these persons; the colonic wall may be unduly sensitive to discrete particles in such cases. Finally there should be mentioned the cases of constipation observed in the clinic that are due to obstructive conditions, such as a misplaced uterus, or neoplasms, for example. It is obvious that raising the level of fiber intake to the physiologic minimum may be a totally inadequate therapeutic measure in such cases. With these considerations in mind, therefore, it should be clear that sweeping generalizations may be quite unwarranted.

### SUMMARY AND CONCLUSIONS

The laxative value of whole wheat bran was studied in three series of experiments on eleven healthy men subsisting on carefully controlled diets. This was compared with the value for laxation of a bran that had been treated with weak acid in order to remove the phytin. Measured by the several criteria used in this study, there was no difference in the laxative values of these two products. It was concluded that the laxative value of bran is due predominantly to the fiber present, regardless of phytin or other bran constituents that are readily extractable by treatment with weak acid. The statement often made in the literature that "the laxative value of bran is due largely to the phytin which it contains" is erroneous. In making bran products for human consumption the indications of this research are that the laxative value of such materials may be estimated fairly accurately from the fiber content.

The data obtained in this research support the view that in healthy men a definite relationship exists between the rate of laxation and the amount of fiber ingested daily per unit of body weight. This points to the existence of a physiologic roughage minimum, which, in terms of fiber, is obtained with an intake of from 90 to 100 mg. of fiber per kilogram of body weight daily. Such an intake of fiber by healthy men should contribute definitely toward securing satisfactory laxation. A somewhat greater fiber intake may be required to secure the physiologic fiber optimum. In an attempt to indicate practical applications of these observations, calculations of additional fiber in terms of common foods, required by a healthy man weighing 70 Kg. to supplement borderline and markedly constipating diets, have been made.

333 Cedar Street.

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# DIFFERENTIAL DIAGNOSIS BETWEEN TYPHUS AND SPOTTED FEVER

## REPORT OF A CASE AND THE ISOLATION OF A NEW MILD TYPE OF SPOTTED FEVER VIRUS

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The occasion for differential diagnosis between typhus fever and Rocky Mountain spotted fever has recently assumed importance. Although it is stated in current textbooks[1] that the likelihood of encountering both typhus and spotted fever in the same locality is extremely unlikely, newer studies have revealed that spotted fever is not localized in the Northwest but that a distinct variety is widespread east of the Appalachian Mountains.[2] Cases have also been reported in Texas.[3] Typhus fever, on the other hand, has been observed not only in the East and Southeast but also in California, in Minnesota[4] and as far north as Montreal.[5] The diagnosis of the latter two cases, however, was not proved. The Minnesota case was diagnosed on clinical grounds alone in 1915 before refinements for laboratory diagnosis had been developed. The case observed in Montreal was diagnosed from clinical and pathologic data, but no confirmatory immunity tests were made. It is important, therefore, considering the widespread distribution of both diseases, that the true nature of infection should be determined in every sporadic case of either disease.

Clinically, there are many points of resemblance between spotted fever and typhus fever, especially Old World typhus, as pointed out by Ricketts and Wilder.[6] Endemic typhus, formerly called Brill's disease, is a relatively mild infection. Differentiation may be made to some extent in regard to the season during which the disease occurs; epidemic (Old World) typhus is most prevalent in winter; endemic typhus in summer and fall; and spotted fever in spring and summer. The

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From the Department of Medicine, University Hospital, University of Minnesota Medical School.

[1] Wolbach, S. B., in Oxford Medicine, Oxford University Press **5**: 481, 1921.

[2] Rumreich, A. S.; Dyer, R. E., and Badger, L. F.: Pub. Health Rep. **46**: 463-470 (Feb. 27) 1931. Dyer, R. E.; Rumreich, A. S., and Badger, L. F.: The Typhus-Rocky Mountain Spotted Fever Group in the United States, J. A. M. A. **97**: 589 (Aug. 29) 1931.

[3] Kemp, H. A., and Grigsby, C. M.: Texas State J. Med. **27**: 395 (Sept.) 1931.

[4] Head, G. D.: A Case of Typhus Fever, J. A. M. A. **64**: 991 (March 20) 1915.

[5] Cushing, H. B., and Caldwell, R. J.: Canad. M. A. J. **25**: 649 (Dec.) 1931.

[6] Ricketts, H. T., and Wilder, R. M.: The Relation of Typhus Fever (Tabardillo) to Rocky Mountain Spotted Fever, Arch. Int. Med. **5**: 361 (April) 1910.

overlapping of incidence unfortunately is great enough to render differentiation on this basis uncertain. If a history of previous insect bite is available it is important to know that epidemic typhus is transmitted by lice, endemic typhus by rat-fleas, and spotted fever by ticks. The specific histologic changes in the blood vessels of the skin in typhus fever serve to distinguish it from other acute infectious diseases, but the lesions are similar to those found in spotted fever and are of no value in differentiation. The only certain method of differentiation requires immunologic procedures which are based on the observations of Ricketts and Wilder,[6] who showed that animals immune to typhus fever are not immune to spotted fever, and vice versa.

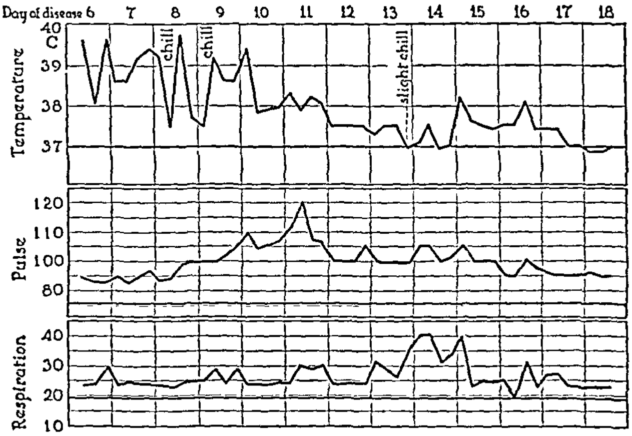

Fig. 1.—Temperature, pulse and respiration record of a patient with spotted fever. The relatively slow pulse appeared early in the course. The high respiratory rate accompanied bronchopneumonia.

An example of the methods employed in establishing an etiologic diagnosis is described in a case report by Otto.[7] A technician, accidentally infected in a laboratory, contracted a fatal illness thought at first to be typhus fever. The infecting virus obtained from the patient's blood was inoculated into guinea-pigs for propagation by passage from animal to animal. By subsequent immunity tests, the virus proved to be that of spotted fever.

The following case is presented because of twofold interest: (1) a presentation of the methods employed in establishing an etiologic diagnosis, and (2) the identification of a new mild type of spotted fever.

### REPORT OF CASE

A Jew, aged 67, was proprietor of a rooming house for transients in a densely populated portion of the city. There was nothing pertinent in his family history or past history; his health was usually good.

While at a nearby summer resort, he was bitten twice by wood ticks. About ten or twelve days later (May 18, 1931) he noted malaise. On the following day there was high fever, dizziness and photophobia. He drove his automobile home to the city and narrowly escaped several accidents en route. On the same day he was obliged to go to bed by the severity of his symptoms. He complained of partial deafness. The first chills occurred May 21. About this time (third day of illness) a rash was noted on his arms. He entered a hospital on the sixth day of his illness, under the care of Dr. T. T. Warham.

The patient appeared to be very ill; muttering stupor was present, but when aroused he cooperated satisfactorily. The lips and ears were cyanotic, the throat was reddened, and there were punctate injected areas over the uvula and soft palate. There was slight conjunctivitis. The pupils were equal and reacted normally. The lungs were clear. A systolic murmur was audible. The blood pressure was 120 systolic and 50 diastolic. The liver and spleen were not palpable nor were any abnormal lymph nodes evident. The reflexes were undisturbed. The eruption involved most of the body surface except the head and the neck and was particularly striking in the palms and soles. The rash was maculopapular, discrete and confluent, and of a dusky pink. The color faded partially on pressure. The laboratory tests showed 7,000 leukocytes, a trace of albumin and hyaline casts in the urine, and a negative Widal test. A blood culture taken at this time was sterile. Typhoid was considered as a possible diagnosis.

Two days later on the eighth day of the illness the rash became hemorrhagic and no longer faded on pressure. At this time one of us (H. L. U.) was called in consultation. Because of the developing rigidity of the patient's neck, meningitis was suspected, but the spinal fluid proved to be normal. Typhus fever was then considered. On the ninth day, a roentgen examination revealed a density in the left lung, but clinical evidence of pneumonia was delayed for three days. Bronchitis had been present for several days but the cough became much worse. The patient became delirious and appeared to be moribund. He was incontinent, restless, and at times excited. At this time one of us (H. A. R.), who had previous experience with Old World typhus, saw the patient and on clinical grounds alone agreed with the impression of typhus fever.

The Weil-Felix reaction at this time was positive in a low dilution, 1:80, and doubtfully positive at 1:160 (National Institute of Health). Oxalated blood was injected intraperitoneally into guinea-pigs on this, the twelfth day of illness. A leukocytosis of 12,000 accompanied the pneumonia.

After this time there was gradual improvement, and on the thirteenth day the temperature reached the normal level but rose again for several days before convalescence began, as shown in figure 1. The rash by this time had faded to a dirty brownish color. The patient left the hospital on the twenty-ninth day after the onset of illness and was still confused mentally. The titer of the Weil-Felix reaction on the twenty-fourth day was 1:1,280.

It is of interest to note that the cases of Otto[7] and Kemp,[3] the cases reported along the Atlantic seaboard,[2] and our own were first considered to be typhus fever but proved later by immunologic methods to be spotted fever. As a result of previous experience with typhus fever we were led to consider typhus fever first in our own case, although the infection took place early in May. The fact that the patient owned a rooming house and accommodated transients suggested the possibility of the importation of some typhus vector by a guest coming from an endemic center. It was not until later when the patient became rational and when Dr. Perkins of the Minnesota State Board of Health made an investigation that a history of tick bites was obtained. Tick bites are very common in Minnesota and have never been regarded seriously heretofore. Nevertheless, Rocky Mountain spotted fever was then considered. Certain clinical features, such as the presence of conjunctivitis, the deafness, the development of pneumonia, and the absence of splenic tumor, resembled the behavior of Old World typhus. The gradual onset and defervescence, the early appearance of the rash on the arms on the third day, and the disturbances

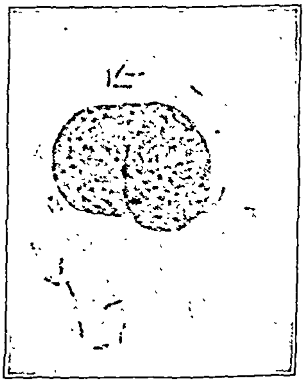

Fig. 2.—Rickettsia of Minnesota type of spotted fever located in a cell obtained from the scrotal exudate of a guinea-pig. Giemsa stain.

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7. Otto, R.: Centralbl. f. Bakt., Orig. **106**: 279, 1928.

of the central nervous system favored spotted fever as a diagnosis. The Weil-Felix reaction is of no value in differentiation, since it occurs in both diseases.

It is clear, then, that although certain clinical and epidemiologic differences exist between spotted fever and typhus fever, positive diagnosis can be made only by laboratory methods involving animal experimentation.

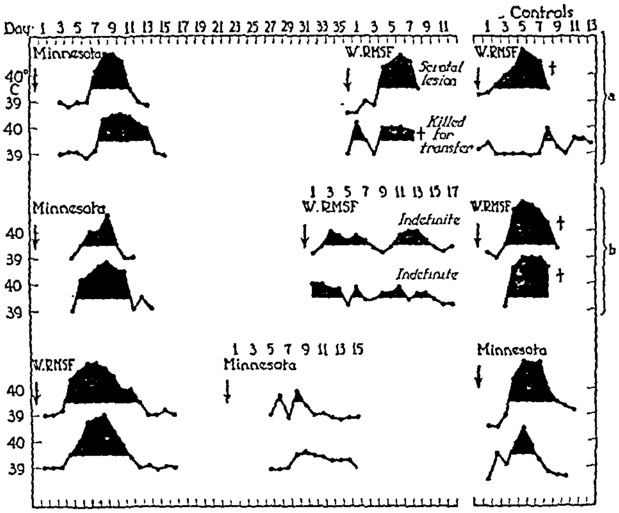

Fig. 3.—Cross-immunity tests with the Bitter Root (Western) strain of spotted fever: Daily temperature records of (a) guinea-pigs convalescent from Minnesota strain and not immune (!) to spotted fever (Dyer and Rumreich); (b) two animals convalescent from Minnesota strain which are immune to spotted fever (experiment by Parker); two animals convalescent from spotted fever which are immune to Minnesota strain. Control animals reacted positively for each group, except one animal in a. The arrows indicate the time of inoculation.

## BIOLOGIC DIFFERENTIATION

Two guinea-pigs were inoculated intraperitoneally with 2 cc. of oxalated blood obtained from the patient on the twelfth day of his illness. One guinea-pig failed to react, but the second developed fever seventeen days later, which lasted three days. Blood was obtained by heart puncture on the second day and inoculated into two fresh animals. Fever appeared on the sixth and eighth days, respectively. The strain, for convenience called "Minnesota" strain, was thus established in guinea-pigs. Transfers to fresh animals were then made by removing the brain aseptically on the second or third day of fever, emulsifying it in physiologic solution of sodium chloride and injecting it intraperitoneally into fresh animals. With small doses of from one-tenth to one-twentieth brain, fever often failed to develop. When one-fourth brain was injected the reaction was more constant. Of 68 animals thus inoculated, fever developed on the fifth day in 3, sixth day in 10, seventh day in 21, eighth day in 16, ninth day in 3, and from the tenth to the twelfth day in 5. Fever failed to appear in ten inoculated guinea-pigs. Fever lasted one day in 3, two days in 11, three days in 7, four days in 7, five days in 7, six days in 8, and seven days in 1. It was then found that the transfer of blood was more convenient and gave more constant results. Thereafter, more than 90 animals were inoculated with 3 cc. of blood obtained by heart puncture from lightly anesthetized guinea-pigs on the second and third days of fever. By this method, fever usually developed earlier, on the fifth or sixth day, and lasted on the average two or three days longer. Typical fever curves are illustrated in figures 3, 4 and 5. None of the inoculated animals died. Scrotal edema and redness, with adherence of the testes to the tunica sac, occurred in about 50 per cent of the males. Several animals were killed during the fever and examined. No gross pathologic changes were observed aside from an enlarged spleen, scrotal swelling and inflammation.

Histologically, the scrotal exudate contained polymorphonuclear leukocytes, macrophages and mesothelial cells. Certain mesothelial cells contained from 20 to 40 rickettsia per cell (fig. 2). The rickettsia were bacillary and often appeared to be diploform. They were somewhat larger and fewer to a cell than the rickettsia observed in the scrotal exudate in endemic typhus. Far fewer cells contained rickettsia of the Minnesota strain than in endemic typhus. Pinkerton,[8] using tissue culture methods, succeeded in maintaining viable rickettsia for several weeks in the frozen state.

In one animal there was a marked diffuse perivascular infiltration of lymphocytes around the arterioles of the vas deferens. The vessel walls were normal. There was mononuclear cell infiltration around certain arterioles of the tunica. Here and there was slight evidence of endothelial proliferation. The tunica was involved in a nonspecific inflammation and covered with exudate. No important changes were found in the brain.

A male rabbit inoculated with blood virus developed a low fever after five days, which lasted for three days. The scrotum was red and slightly swollen.

The characteristics exhibited by the Minnesota strain in guinea-pigs differ in several respects from the behavior of other varieties of rickettsial diseases. The Western Bitter Root type (fig. 3) and Eastern type spotted fever (fig. 4) have a shorter incubation period, cause a more violent fever reaction, and often cause death of the animals. The Bitter Root strain causes superficial necrosis of the scrotum, ears and snout. Scrotal involvement, on the other hand, rarely occurs with Eastern type spotted fever, and exudate covering the tunica and containing rickettsia has not been found.

There are greater similarities between the behavior of the Minnesota strain and typhus fever. Guinea-pigs rarely die from Old World typhus. Scrotal reaction occasionally occurs and rickettsia are found in the exudate.[9] Brain lesions, however, are frequent and characteristic in typhus fever but do not occur with the Minnesota strain.

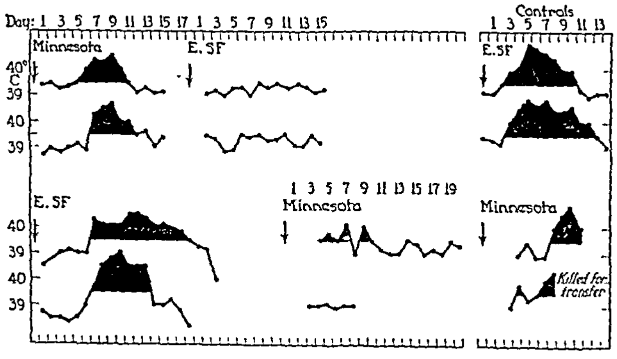

Fig. 4.—Immunity tests with Eastern spotted fever. Guinea-pigs immune to Minnesota strain do not react to Eastern spotted fever virus, and vice versa. All controls reacted positively.

In endemic typhus in guinea-pigs, the incubation period is longer, the fever curve is more irregular (fig. 5), the scrotal swelling is more constant, and the exudate is more copious and contains many more rickettsia[10] than in infections due to the Minnesota strain. It appears, therefore, that the Minnesota strain has certain features in common with both spotted fever and typhus and is either a variety of one or the other, or an intermediate type. The similarities and differences in the reactions of various rickettsial diseases in guinea-pigs are shown in the accompanying table.

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[8] Pinkerton, Henry: Personal communication to the authors.
[9] Pinkerton, Henry: J. Infect. Dis. 44: 337 (May) 1929.

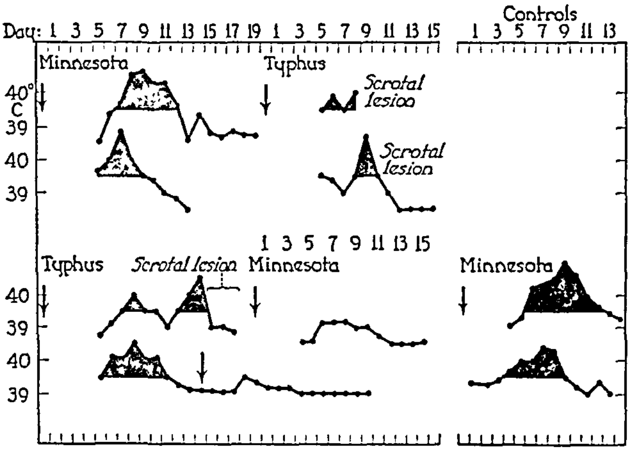

Fig. 5.—Immunity tests with endemic typhus virus. Two guinea-pigs convalescent from Minnesota strain are not immune to typhus virus; two animals immune to typhus are immune (!) to Minnesota strain. Controls are positive.

## IMMUNITY EXPERIMENTS

*Cross-Immunity Tests with the Bitter Root Strain of Spotted Fever.*—Six guinea-pigs immune to spotted fever as a result of convalescence from infection with the Bitter Root strain were sent to us through the courtesy of Dr. R. R. Parker from the U. S. Public Health Service Laboratory at Hamilton, Mont. These animals, together with five fresh guinea-pigs, were inoculated with the Minnesota strain. None of the guinea-pigs convalescent from spotted fever manifested signs of infection, while the fresh animals did. A few of the temperature charts are illustrated in figure 3.

*Comparative Observations in Varieties of Experimental Rickettsial Disease in Guinea-Pigs*

| | Incubation in Days | Duration in Days | Mortality per Cent | Scrotal Reaction in Males | Exudate on Spleen | Brain Lesions |
|---|---|---|---|---|---|---|
| Bitter Root spotted fever... | 2-5 | Usually fatal | 80+ | Superficial necrosis | ? | Frequent |
| Eastern spotted fever............ | 2-6 | 5-10 | 25 | Rare | ...... | Many small focal glioses |
| Old World typhus | 5-10 | 5-10 | 0 | Rare, few rickettsia when exudate occurs | Often | Constant numerous |
| Endemic typhus.. | 2-19 | 2-10 | 0 | Constant with copious exudate; many rickettsia | Occasionally | Frequent in females; in males only after subcutaneous inoculation |
| Minnesota strain. | 5-12 | 1-7 | 0 | 50% with exudate, few rickettsia | Rare | Rare |

Conversely, three animals immune to the Minnesota strain were sent to Dr. Parker for inoculation with Bitter Root spotted fever. Two showed a low-grade type of fever (indefinite reaction) while one remained unaffected.[8] Three control animals developed typical spotted fever, two of which are illustrated in figure 3 *b*.

Four animals immune to the Minnesota strain were also sent to Drs. Rumreich and Dyer, at the National Institute of Health in Washington, D. C., where similar tests were made. Curiously, when these animals were inoculated with the Western type of spotted fever, two of the Minnesota immunes developed fever (fig. 3 *a*) with scrotal lesions typical of Western spotted fever. The remaining two showed atypical low fever.[8]

*Immunity Tests with Eastern Spotted Fever.*—A strain of this type of virus was sent to us from the National Institute of Health for tests in our laboratory. Guinea-pigs immune to the Minnesota strain as a result of convalescence therefrom proved to be immune to the virus of Eastern spotted fever. Conversely, animals recovered from Eastern spotted fever were immune to the Minnesota strain. The results are shown in figure 4. Similar results were obtained by Dr. Pinkerton at Harvard University, to whom the Minnesota strain was sent.[8]

*Effect of Spotted Fever Vaccine.*—Several guinea-pigs received two intraperitoneal injections of spotted fever vaccine (supplied by the Montana laboratory) at five-day intervals. Three weeks after the first injection they were inoculated with the Minnesota strain, together with three controls. The vaccinated animals were protected from infection, while the controls developed typical fever, and two developed scrotal swelling.

*Immunity Tests with Endemic Typhus Virus.*—A strain of typhus virus (Wilmington) was supplied to us by Dr. Pinkerton and established in our laboratory. Immunity tests showed that guinea-pigs convalescent from infection with the Minnesota strain were not immune to typhus virus. Pinkerton obtained similar results. Surprisingly, five animals recovered from typhus fever in our hands proved to be immune to Minnesota virus, while four fresh ones developed typical reactions (fig. 5). Pinkerton's results differed in regard to the latter result. In his experiments, typhus failed to protect against the Minnesota strain; in fact, typhus immunes were used to propagate the Minnesota strain.[8]

## COMMENT

The clinical report of a case is presented which was at first believed to be typhus fever but proved to be spotted fever after immunity experiments had been made. Emphasis is laid on the necessity of biologic procedures in determining an etiologic diagnosis. Differentiation on the grounds of clinical, epidemiologic or pathologic data is uncertain.

Studies of the reaction of the virus after its establishment in guinea-pigs indicated a number of features which distinguish it from other strains of rickettsial disease thus far reported. The low virulence for guinea-pigs, the scrotal swelling, and the presence of rickettsia in the scrotal exudate resembles the reaction of typhus more than that of spotted fever. On the other hand, the results of the immunity tests point to a closer relationship with spotted fever. The conflicting results of several tests, namely, the failure in two instances of the Minnesota strain to confer immunity against Western spotted fever, as found by Dyer, and the apparent protection conferred by typhus fever against the Minnesota strain in our experience, are puzzling. These results suggested that the Minnesota strain might be of an intermediate variety.

We feel, however, that another explanation is likely. The Minnesota strain produces a comparatively mild disease in guinea-pigs and may thereby evoke weak immunity, too weak to protect regularly against a strain of such high virulence as the Bitter Root variety of spotted fever. On the other hand, endemic typhus may conceivably confer a certain grade of nonspecific immunity which, in our hands at least, was sufficient to protect guinea-pigs against the weakly virulent Minnesota strain. But from the results of other tests, namely, the reciprocal immunity conferred by the Minnesota strain and Eastern spotted fever, and by the protection conferred against infection with the Minnesota strain by spotted fever vaccine, it appeared that the Minnesota strain represents an exceptionally mild type of spotted fever.

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[10] Pinkerton, Henry: J. Exper. Med. 54: 181 (Aug. 1) 1931

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# TUBERCLE BACILLI IN THE STOMACH CONTENT OF CHILDREN WITH POSITIVE TUBERCULIN TEST

## PRELIMINARY REPORT

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LUCY MISHULOW, B.A.
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The demonstration of tubercle bacilli in the stomach content of children is important because:

1. It may help to make the diagnosis of tuberculosis in certain cases presenting negative physical and roentgen signs and showing a positive tuberculin test as the only indication of tuberculosis.
2. It may help in estimating the activity of the tuberculous process.
3. It makes it possible to separate the children who are passing tubercle bacilli, and therefore are dangerous to their surroundings, from those who are healed or well arrested and do not spread tubercle bacilli and therefore are harmless to their environment.

To wash out the stomach and search for tubercle bacilli in the sediment of the stomach content is a cumbersome method both for the patient and for the physician. Inoculation of guinea-pigs with the sediment of the stomach lavage is an essential part of the method but makes it expensive. Therefore, these procedures should be used only in those cases in which one cannot avoid them; i. e., in children under 4 or 5 years of age who cannot be taught to expectorate.

This study was made on forty children in the Sea View Hospital.

### TECHNIC

The stomach lavage was carried out in the morning on an empty stomach, from 200 to 300 cc. of physiologic solution of sodium chloride being used. Only one lavage was done in each case.

The specimens were centrifugated for one hour at high speed. The sediment was suspended in about 3 to 5 cc. of sterile water and treated with an equal amount of 3 per cent sodium hydroxide. This was incubated at 37 C. for thirty minutes and made neutral to phenolphthalein with 15 per cent hydrochloric acid.

In the early part of this investigation, cultures of some of the treated sediment were grown on Corper's and Löwenstein's mediums and the remainder was inoculated into guinea-pigs subcutaneously. But most of our specimens were contaminated with molds, and the cultures were so badly overgrown that we discontinued making cultures and inoculated the entire sediment into guinea-pigs. The contamination was probably due to the fact that at least twenty-four hours passed between the stomach lavage and the bacteriologic study, which, for technical reasons, could not be avoided.

Smears were made of the sediment of each specimen and examined for acid-fast bacilli, but all of them were negative.

If any of the guinea-pigs died and showed suspicious lesions but no acid-fast bacilli, the suspicious tissue was subinoculated into other guinea-pigs.

In all guinea-pigs in which the lesions were grossly tuberculous, a smear examination was made, and the result was recorded as positive only when acid-fast bacilli were found. Altogether, we used 173 guinea-pigs in this experiment. The number of animals used seems to have but little to do with the frequency of positive results. In the group that gave positive results, we used an average of two pigs per child. In the cases that gave negative results, we inoculated an average of four guinea-pigs per case.

In one case, tests on both guinea-pigs were negative, but there was one colony on Löwenstein's medium which proved to be fully virulent for guinea-pigs.

### SELECTION OF CASES

All cases had a positive tuberculin test. Most of them had a Pirquet test first, and if this happened to be negative a Mantoux test of 0.1, 0.2, 2, 5 or 10 mg. of old tuberculin was done.

All the patients were afebrile or nearly so, having a temperature of less than 100 F. by mouth or by rectum. The flat temperature curve was occasionally interrupted by a febrile acute nontuberculous condition lasting a few days.

All these children gained weight, the speed of gain being different in the individual cases. It was not difficult to select afebrile children and children who gained in our tuberculosis institution because by proper limitation of activity, i. e., more bed rest, we were able to make most of our patients gain and become afebrile. The children who were continuously losing weight and had fever in spite of forced rest and open air treatment in our institution were in most instances seriously ill, presented far advanced cases, had abundant positive sputum, positive throat swab or positive feces examination, and were not included in this study.

### AGE

The ages of the children under examination varied from 2 years to 10⅓ years. The average age of the seven children who gave positive stomach lavage was 4.4 years, whereas the average age of those who were negative was 5.9 years. This finding might be interpreted in two ways:

1. The younger the child, the more likely it is that he swallows his sputum instead of spitting it up.
2. The younger the child, the more likely it is that we are dealing with a fresh and active tuberculous process, the sign of which is the presence of bacilli in the expectoration or in the stomach content.

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From the Sea View Hospital and the City of New York Department of Health.

The bacteriologic work was done in the Bureau of Laboratories of the City of New York Department of Health, under the general supervision of Dr. William H. Park, by Miss Lucy Mishulow and Miss Dorothy Behner. The lavage itself was carried out by Dr. Radwin, one of the resident physicians of Sea View Hospital. We purposely did but one single stomach lavage on this group of forty children. We are convinced that, by repetition of the procedure, the frequency of positive results would increase. However, we were mainly interested in the results that one single lavage gave us.

### SPEED IN GAINING WEIGHT

Our entire group gained weight at an average of 0.6 pound (272 Gm.) a month. The average gain for the positive lavage group was 0.55 pounds (250 Gm.) and of the negative, 0.64 pound (290 Gm.) a month. But as the average gain in a group of children 4.4 years of age is supposed to be greater than in a group of children 5.9 years of age, it is obvious that the relative speed of gain of children who gave positive results was definitely smaller than the relative rate of gain in the group who gave negative stomach lavage. This somewhat slower average gain in weight in the positive stomach lavage group also speaks for our supposition that the presence of the bacilli in the stomach content points toward fresh or active tuberculosis. On the other hand, some authors, like Holt, think that 4 year old and 6 year old children gain with equal speed. If so, the slight difference between the two groups would be insignificant.

### EXAMINATION OF FECES FOR TUBERCLE BACILLI

One would think that tubercle bacilli in the stomach content passing through the intestine could easily be recovered from the feces. During the hospitalization of our forty children, twenty-five had from one to five examinations of the feces. One of the children who had positive stomach lavage and fourteen who had negative ones had no feces examination. All the stools of the others examined were negative for tubercle bacilli. The explanation of these negative observations was that probably the few bacilli passing the stomach were so diluted in a big mass of feces that it was hard to find them unless one used practically the total amount of feces for examination. In our hospital 50 Gm. of stool was used for the search for acid-fast bacilli.

The other fact that has to be considered in evaluating the discrepancy between the results of our stomach lavage and the feces examination is that the two examinations were not made at the same time; the feces examination was an admission routine, whereas stomach lavage was done as a special piece of work a few months later. On the other hand, if the two methods were equally sensitive, one would expect more positive observations on admission than later on, because these forty children were all improving during their hospital stay.

The feces and sputum examinations were made in the pathologic laboratory of Sea View Hospital under the supervision of Dr. Cornelius Mezei.

### EXAMINATION OF SPUTUM

The sputum of thirty-five children in this group of forty was examined with three positive results. These three positive ones were in the group that was negative with stomach lavage. But this is not necessarily a contradictory finding, because the sputum examinations and the lavage were not done at the same time. The positive sputum occurred one year and one and one-half years before and, in the third case, two months after the stomach lavage was done. Of the five children whose sputum was not examined, four were in the negative and one was in the positive gastric lavage group.

### COUGH

Cough is not as frequent among tuberculous children as it is in tuberculous adults. None of the patients who had a positive lavage, coughed, and only seven, i.e., 21 per cent of those who had a negative lavage, coughed noticeably. Four of these patients also had bronchiectasis, and three, some form of pleurisy. The severity of the tuberculosis and the cough did not seem to parallel each other.

### ONSET OF TUBERCULOSIS

Our information as to the onset of tuberculosis is inaccurate because we had to take the word of the family and also because the onset in some cases was insidious. In many of the cases there were never any symptoms. The child was sent to Sea View Hospital on the basis of a positive tuberculin test done in some health station or clinic as a routine. Judging as best we could, we estimated that the average duration of tuberculosis up to the present date in our negative stomach lavage group was twenty-nine months and in our positive stomach lavage group, twenty-one months. This bears out again the same point that we mentioned before; i. e., the fresher the tuberculous lesion, the more likely one is to find positive sputum or positive stomach lavage.

### TUBERCULIN TESTS

In all the cases but four, a Pirquet test preceded the Mantoux test. All the Pirquet tests were positive except three in the negative lavage group, but even these three cases gave a positive Mantoux test.

We tried to determine some relationship between the size of the reaction of the Mantoux test and the activity and intensity of the process. Although it is hard to evaluate our Mantoux tests because different doses of old tuberculin were used, there seems to be no relationship between the size of the test and the degree and activity of tuberculosis.

### PHYSICAL EXAMINATION

It is well known that the childhood type of tuberculosis frequently gives very meager clinical chest signs for percussion and auscultation. In our positive lavage group, we were not able to obtain pathologic physical signs in five out of seven cases, i. e., in 71 per cent; and in the negative stomach lavage group, twenty-one out of thirty-three cases, i. e., 64 per cent, were negative by percussion and ausculation. We expected to find negative chest signs less frequently in the cases that gave positive stomach lavage as compared with the negative group. It is interesting that among the patients who had tubercle bacilli in their stomachs, 71 per cent did not give positive physical signs at all, except on roentgen examination.

### CLASSIFICATION OF CASES FROM POINT OF VIEW OF TUBERCULOSIS

From the accompanying table one sees that pleurisy alone or combined with different forms of tuberculosis predominated in the group of children who gave positive stomach lavage results. By this we mean that out of seven patients five presented some sort of pleurisy; i. e., 71 per cent. On the other hand, in the negative lavage group, only seventeen out of thirty-three cases, i. e., 51 per cent, were combined with pleurisy. Of course, pleurisy in the different cases was in various stages of resorption, and even an interlobar line in the roentgenogram was considered as pleurisy.

The different forms of tuberculosis in our study are shown in the table.

### PROGNOSIS

We tried to evaluate all our cases from the point of view of prognosis, considering the type of tuberculous symptoms, age and general condition of the child. To those children who, according to our judgment, had the best chance for recovery, we gave a prognosis score of

100 per cent. To those children who, according to our opinion, will surely die of tuberculosis, we gave the score of 0 per cent. Patients who had an intermediate survival chance obtained a score between the extremes of 0 per cent and 100 per cent. Before knowing the result of the stomach lavage we gave a survival chance to our patients. The average survival grade on the patients who gave a positive lavage was 74 per cent, whereas on those giving negative results for tubercle bacilli by the stomach lavage the same score averaged 80 per cent. This again bears out the same point which was suggested in three previous instances, that a positive stomach lavage occurs more often in the presence of active tuberculous lesions and among young children. All these three factors, early age, fresh tuberculous process and active tuberculous process, make the prognosis worse. During the ten or twelve months that have elapsed since we started this study, twenty-five of the thirty-three, i. e. 75 per cent, of the children who gave negative gastric lavage left the hospital apparently cured, whereas only four of seven, i. e., 57 per cent, of the positive stomach lavage patients were ready for discharge. The eleven who are still in the hospital are presenting the same course as described in this article; i. e., they are gaining weight and are afebrile. By throat swabs none of them showed the presence of tubercle bacilli.

*Forms of Tuberculosis*

| Form of Tuberculosis | Positive Lavage | Negative Lavage |
|---|---|---|
| Osteomyelitis and hilus gland tuberculosis | 0 | 1 |
| Spondylitis | 1 | 0 |
| Latent tuberculosis | 0 | 5 |
| Hilus gland tuberculosis | 0 | 2 |
| Pleurisy with effusion | 1 | 3 |
| Interlobar pleurisy | 0 | 1 |
| Mediastinal pleurisy(?) | 0 | 1 |
| Pleurisy with effusion and central infiltration | 1 | 1 |
| Interlobar pleurisy and central infiltration | 1 | 2 |
| Interlobar pleurisy and parahilar infiltration | 1 | 1 |
| Interlobar pleurisy, central infiltration, scrofulosis | 0 | 1 |
| Pleurisy with effusion; interlobar pleurisy | 0 | 1 |
| Pleurisy with effusion and parahilar infiltration phlyctenular conjunctivitis | 0 | 1 |
| Mediastinal pleurisy(?) and bronchiectasis | 0 | 1 |
| Interlobar pleurisy and epituberculosis | 0 | 1 |
| Interlobar pleurisy, hilus gland tuberculosis phlyctenular conjunctivitis | 0 | 1 |
| Mediastinal(?) pleurisy, perihilar infiltration, phlyctenular conjunctivitis | 1 | 0 |
| Pleural adhesions and hilus gland tuberculosis | 0 | 1 |
| Empyema and latent tuberculosis | 0 | 1 |
| Hilus gland tuberculosis and bronchiectasis | 0 | 2 |
| Central infiltration and bronchogenic dissemination of tuberculosis | 0 | 1 |
| Central infiltration | 1 | 1 |
| Perihilar infiltration | 0 | 3 |
| Basal infiltration and tuberculosis verrucosa cutis | 0 | 1 |

### COMMENTS

The presence of tubercle bacilli in the stomach can be explained in three ways:

1. By far the most frequent cause is a tuberculous lung process which has connection with the air passages, and the bacilli are carried up to the pharynx either by the ciliary movement of the respiratory epithelium or by cough. From the pharynx the bacilli are swallowed.

2. Far less frequently there is a tuberculous lesion in the middle ear, in a sinus or in the nasopharyngeal cavity.

3. A third possibility is that the tubercle bacilli in the stomach were carried there by contaminated food. The probability of this is very small.

4. There is very rarely a secondary tuberculous lesion in the stomach itself. A primary lesion has never been described. This is usually developed as a part of a generalized tuberculosis.

In our study of the forty improving tuberculous patients who were all gaining weight and were all afebrile, the stomach lavage gave positive results in seven, i. e., 17.5 per cent. None of them had positive feces examination and only three of them (i. e., 7.5 per cent) gave positive sputum results at any time. Therefore, we think that stomach lavage is a useful method for the search of tubercle bacilli among children under 4 and 5 years of age who cannot be taught to expectorate.

### LITERATURE

The first author who suggested the use of stomach lavage for finding tubercle bacilli was Meunier in 1898. Armand-Delille, in 1927, published the next extensive article on the subject. Since that time similar articles have appeared in increasing numbers.[1] It is hard to compare other people's work with our own, because their selection of cases and the bacteriologic technic used is different from each other's and from ours.

### CONCLUSION

We succeeded in demonstrating in seven out of forty tuberculous children (17.5 per cent) tubercle bacilli in the stomach content. The average age of our group was 5.9 years. All of them were afebrile and gained weight.

1148 Park Avenue.

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[1] The following are all the articles that we were able to find on the subject up to January, 1932:

Cantonnet: Arch. de Pediat. d'Uruguay **1:** 575 (Nov.) 1930.

Christoffersen, N. R., and Frederiksen, J. A.: Ugesk. f. læger **93:** 587-589 (May 28) 1931.

Armand-Delille, P. F.: Pulmonary Tuberculosis in Infants, Am. J. Dis. Child. **34:** 547 (Oct.) 1927; Armand-Delille, P. F., and Vibert, J.: Presse méd. **35:** 402 (March 30) 1927; Paris méd. **1:** 18-20 (Jan. 3) 1931.

Drucker: Acta pædiat. **11:** 415, 1930.

Friedlaender, Axel: Jahrb. f. Kinderh. **127:** 178 (April) 1930; Acta pædiat. **11:** 190, 1930.

Meunier: Presse méd. **2:** 81 (Aug. 13) 1898.

Opitz, H.: Deutsche med. Wchnschr. **54:** 2139 (Dec. 21), 2175 (Dec. 28) 1928; **56:** 1995 (Nov. 21) 1930; Acta pædiat. **11:** 186, 1930; München. med. Wchnschr. **78:** 949 (June 5) 1931.

Poulsen, Valdemar: Jahrb. f. Kinderh. **125:** 206 (Oct.) 1929; Norsk. mag. f. lægevidensk. **91:** 1061 (Oct.) 1930; Pulmonary Tuberculosis in Children, Am. J. Dis. Child. **41:** 783 (April) 1931; Ugesk. f. læger **93:** 125 (Feb. 5) 1931.

Poulsen, Valdemar; Jensen, K. A., and Husted, E.: The Demonstration of Tubercle Bacilli in Small Children with Pulmonary Tuberculosis, Am. J. Dis. Child. **37:** 900 (May) 1929.

Wallgren, Arvid: Acta pædiat., XI, 191, 1930; Tubercle Bacilli in Children with Erythema Nodosum, Am. J. Dis. Child. **41:** 816 (April) 1931.

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**Glaucoma.**—Glaucoma is not a disease peculiar to the eye. Hypertension in the semicircular canals occurs in certain labyrinth diseases. But one must generalize still further and consider glaucoma as a syndrome which is found also in intracranial hypertension. When I speak of intracranial hypertensions I mean especially those which are associated with tumors of the brain. These are secondary cerebral glaucomas comparable to those secondary glaucomas known in the eye. One meets also with intracranial hypertensions in the course of meningitis and encephalitis. These resemble the glaucomas secondary to choroiditis and iridocyclitis. Lastly, in the condition which is designated by the term serous meningitis, a meningitis in which the spinal fluid is chemically normal, the disease evolves in a manner which reminds one strongly of simple chronic glaucoma. Other analogies could be found, but it is unnecessary to carry my point further; these comparisons suffice to show that the eye is but a department of the complete human organism and that ophthalmologists must turn toward general pathology in order to solve the problems which they encounter.—Magitot, A.: The Aqueous Humor in Glaucoma, *Arch. Ophth.* **6:** 661 (Nov.) 1931.

# *Clinical Notes, Suggestions and New Instruments*

## ACCIDENTAL DIVISION OF THE PANCREAS

Orville Harry Brown, M.D., and Loren C. Barlow, M.D.,†
Phoenix, Ariz.

A man, aged 44, was in an automobile accident, Dec. 25, 1930, in which the car turned over, pinning his trunk at the upper abdominal level between the car and the curbstone. No further details of the accident were obtainable.

The patient was admitted to the hospital about 4:40 p. m., shortly after the accident. He was in a stupor and was hiccuping. He lay in bed on the right side with the arms flexed, so that his hands were in front of his face, and with his knees drawn up. He was restless, slightly groaning. He answered questions dully and hesitatingly in a muffled voice difficult to understand. He complained of stomach pains. He admitted that he had been drinking and said that his car had turned over with him. Further information could not be elicited.

Examination of the scalp gave negative results. The face had two or three superficially abraded areas, each about 20 mm. in diameter. There was no bleeding nor other discharge from the ears, eyes or nose. He was vomiting a dark tarry mucous material. The nurse said that at first there was a definite alcoholic odor to the vomitus.

The left pupil was definitely larger than the right. Both were moderately contracted. There was no deviation of the eyes. On being requested, he protruded his tongue in the midline.

The facial muscles and lines appeared equal on the two sides. There was no neck rigidity. Tests of expression were impossible.

The neck and the chest showed no abnormality. The heart sounds were of fair quality without murmurs. The size of the heart was about normal. The blood pressure was 96 systolic and 70 diastolic. Once it registered definitely 110/70. An occasional impulse came through higher. The abdomen was flaccid throughout, and palpation of it did not cause any apparent pain. There were two or three slight abrasions on the abdominal wall, each about 25 mm. in diameter. The back was normal except that the buttocks were generally reddish and slightly abraded here and there. The legs seemed normal. The Babinski, Gordon, Oppenheim, Chaddock, patellar and achilles reflexes were all negative.

The diagnosis was alcoholism, concussion of the brain and blood in the stomach, probably having been swallowed from a cut tongue or a bleeding nose.

It was recommended that the patient be kept in bed and carefully watched. Frequent readings of the blood pressure were to be made and the patient examined for signs of internal injury, perhaps of the stomach or intestine. An ice bag was to be placed to the head; instructions were given to wash the stomach if the vomiting continued.

Notes were again taken at 9:30. At that time the pupils were nearly of equal size but were sluggish and a bit contracted. The face and eye movements seemed normal. The abdomen was markedly spastic, almost "boardlike" and tender, probably more on the right than on the left and probably more above the umbilicus than below. The evidence pointed to a ruptured viscus; a rupture of the duodenum or of a connected organ was thought of because of the tarry appearing vomitus. The rigid abdomen was of the type seen in ruptured gastric ulcer or acute pancreatitis.

The patient was taken to the operating room at 10:30 p. m. of the day of the accident and operated on under ether anesthesia. Through a high right rectus incision, a large amount of blood was found in the peritoneal cavity. There was no rupture of the intestine, liver or spleen. The gallbladder was large and full of bloody bile. The lesser peritoneal cavity was more filled with blood than was the greater cavity. The pancreas was found to have been torn crosswise into two about equal parts. The two parts of the pancreas were approximated and sutured together; the bleeding vessels were ligated. A drain was inserted into the lesser peritoneal cavity and the abdomen was closed.

The patient had a mildly stormy course for several days but made a good recovery with a pancreatic fistula. The dressings needed frequent changing, as they absorbed a large amount of the reddish yellow material, later becoming lighter in color. There was considerable skin irritation about the incision even though it was kept covered with petrolatum. The drain was removed gradually after the third day. The patient was discharged from the hospital twenty days after admission. The drainage continued in gradually lessened amounts.

The urine obtained shortly after admission to the hospital contained albumin and an occasional red blood cell. Otherwise it was normal. On the 26th and the morning of the 27th, four specimens of urine contained sugar. Thereafter it was normal. The blood sugar on several examinations was never found abnormal.

The leukocyte count of the blood on the 26th was 13,700, with 79 per cent polymorphonuclears and 21 per cent mononuclears.

About May 1, 1931, he entered the United States veterans' hospital at Whipple, Ariz. Dr. Gail D. Allee, medical officer in charge, reported, October 16, that practically the only treatment that he received while in the hospital was the keeping of the sinus open in order that free drainage might be established. This secretion was sent to the laboratory on several different occasions, but it was not possible to demonstrate the presence of pancreatic fluid.

May 6, the sinus had been injected and a roentgenogram was made which showed the sinus well outlined, with the appearance of being a small cavity about 3½ inches (9 cm.) long by 1½ inches (3.8 cm.) in width.

The patient was discharged, May 25. He was readmitted to this hospital a few days ago, and the sinus had entirely healed and showed no evidence of drainage at this time. However, he complained of epigastric disturbances at the present time, especially following a meal of certain foods.

In January, 1930, Elias L. Stern [1] gave a digest of the literature of traumatic injuries to the pancreas. Four cases were of divided pancreas.

Travers,[2] in 1827, recorded the case of a drunken woman who had a violent contact with the wheel of a coach and was thrown to the ground. She succumbed after several days, and at autopsy the liver was found ruptured and the pancreas torn completely across.

Wilks and Noxon [3] reported a case in which the pancreas was divided into two parts.

Stern further refers to a specimen in the St. Bartholomew Hospital Museum. A person had been crushed between two vans. Death ensued in three days and at autopsy the pancreas was found divided into two nearly equal parts.

Heineke [4] reports the fourth case, in which a man was caught in a fall of earth and sustained a division in the midline of the pancreas. He made a complete recovery. Presumably he was operated on.

Based on Stern's review of the literature, this is the fifth case of complete division of the pancreas through accident, and the second with recovery, to be recorded.

Dr. William K. Fast [5] reported the use of a method of healing pancreatic fistulas, suggested by Caryl Potter [6] for healing duodenal fistulas. This consists of a catheter held in the fistula and packed around with gauze soaked in a 10 per cent aqueous solution of Witte's peptone; through the catheter tenth normal hydrochloric acid is instilled into the fistula, at the rate of 20 minims (1.25 cc.) per hour. A high caloric diet was maintained. He reported that digestion of the wound promptly ceased within twenty-four hours. From the fourteenth to the twenty-first postoperative day the granulating wound was kept covered with beef extract paste. The fistula was entirely healed by thirty days after the operation.

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† Dr. Barlow died, June 2, 1931.

[1] Stern, E. L.: Am. J. Surg. 8: 58 (Jan.) 1930.

[2] Travers, B.: Lancet 12: 384, 1827, cited by Stern.

[3] Wilks and Noxon: Pathological Anatomy, eds. 2 and 3, London, J. & A. Churchill, 1875 and 1889, cited by Stern.

[4] Heineke, H.: Arch. f. klin. Chir. 84: 1112, 1907, cited by Stern.

[5] Fast, W. K.: The Treatment of Pancreatic Fistula Following Rupture of Pancreas, J. A. M. A. 95: 1668 (Nov. 29) 1930.

[6] Potter, Caryl: The Treatment of Duodenal Fistula, J. A. M. A. 88: 899 (March 19) 1927, cited by Fast.

We might have obtained early healing of the wound by the use of the Potter technic.

SUMMARY

A case of complete division of the pancreas from an accident without other serious injury is herewith placed on record. This is the fifth case of this type to be recorded and the second patient to recover.

15 East Monroe Street.

# Council on Physical Therapy

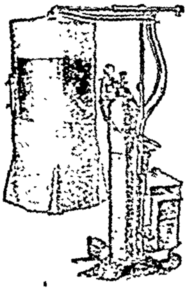
THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

H. A. CARTER, Secretary.

## HEIDBRINK MOTORLESS OXYGEN TENT, MODEL 40, ACCEPTABLE

The Heidbrink Oxygen Tent, Model 40, is manufactured by the Heidbrink Company, 2633 Fourth Avenue, Minneapolis. According to the firm, it is recommended for use as an adjunct in the administration of oxygen therapy where a supply of electric current is not available.

The Heidbrink Oxygen Tent, Model 40, consists essentially of a tent with a noninflammable window, an injector, a cabinet, a soda lime container and a supply of oxygen. The entire equipment is mounted on a triangular chassis, the wheels of which are equipped with roller bearings and are rubber tired. The shipping weight is about 230 pounds.



Heidbrink motorless oxygen tent, model 40.

The oxygen-air circulation is maintained by means of the energy of the oxygen under pressure forced through an injector which permits a flow of 6 cubic feet per minute in and through the tent; hence the confined oxygen-rich atmosphere is circulated and recirculated in the relatively closed gas system with the continuous addition of oxygen. A by-pass permits further addition of oxygen when needed.

The firm claims that the humidity is ordinarily maintained at less than 50 per cent and that a cooling at less than 15 degrees below room temperature may be reached.

The Heidbrink Company believes that the Heidbrink Oxygen Tent, Model 40, will provide suitable oxygen as a valuable aid in the early and permanent relief of anoxemia resulting from acute pulmonary edema, coronary thrombosis, cardiac decompensation, pneumonia, and carbon monoxide poisoning.

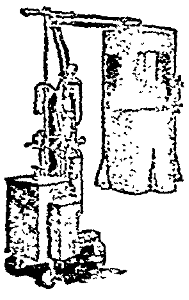
The Council on Physical Therapy declares the Heidbrink Motorless Oxygen Tent, Model 40, acceptable for inclusion in its list of accepted devices.

## HEIDBRINK OXYGEN TENT, MODEL 31, ACCEPTABLE

The Heidbrink Oxygen Tent, Model 31, manufactured by the Heidbrink Company, 2633 Fourth Avenue, Minneapolis, is recommended by the firm as a valuable "aid in the early and permanent relief of anoxemia resulting from acute pulmonary edema, coronary thrombosis, cardiac decompensation, pneumonia, and carbon monoxide poisoning."

The Heidbrink Oxygen Tent Model 31 consists essentially of a tent hood, a motor and blower, a soda lime container, a cooling chamber and an oxygen supply tank. The entire assembly is mounted on a chassis and is easily moved from place to place on roller bearing casters. The circulation of the oxygen-air mixture is maintained by a blower connected to a universal type motor totally enclosed to prevent open sparks from coming in contact with the air-oxygen mixture. The firm claims that the apparatus delivers oxygen to the patient, independently and under automatic regulation, in accurately measured quantities as desired, at from 1 to 15 liters per minute. Through an auxiliary valve, from 50 to 60 per cent and higher oxygen concentration may be built up in the tent within a few seconds; hence the oxygen-rich atmosphere is circulated and recirculated in the closed system with the continuous addition of oxygen to the atmosphere.

The motor blower unit is under rheostatic control; thus the volume of flow of oxygen-rich atmosphere through the closed circulating system may be controlled by the attending physician. Cooling of the oxygen-air mixture through the closed circulating system may be controlled by the attending physician. Cooling of the oxygen-air mixture is accomplished by passing the mixture over cracked ice. A temperature reduction of from 15 to 20 degrees F. below room temperature may be secured in the tent. It is claimed that the ice consumption is about 60 to 80 pounds for twenty-four hours. The firm claims that the oxygen-air mixture is deflected to avoid a strong draft directly hitting the patient.



Heidbrink oxygen tent, model 31.

Carbon dioxide is absorbed by soda lime packed in the blower return lead. A wire gauze basket (which holds about a twenty-four hour supply of soda lime) is conveniently located for removal and replacement of the soda lime from the circulation. A by-pass is provided in the circulating system to switch the soda lime in and out while the lime is being replenished. An attachment designed to administer carbon dioxide independently may be obtained, if desired, but is not recommended. The shipping weight is about 230 pounds.

The Council on Physical Therapy declares the Heidbrink Oxygen Tent, Model 31, acceptable for inclusion in its list of accepted devices.

## LASTEX SURGICAL STOCKINGS AND GARTER HOSE ACCEPTABLE

Lastex Surgical Stockings and Garter Hose are distributed and sold by Bauer & Black of Chicago.

The firm claims that the stockings and hose are knitted with Lastex yarn. This yarn has a rubber core thread made from Lastex rubber, around which is wound two layers of two-ply silk thread. The resulting yarn looks like silk and is knitted into fashion hosiery just as silk yarn is knitted.

The company claims that the fabric made of Lastex yarn stretches in all directions. The toe, heel and top of a Lastex stocking are made of nonelastic silk and lisle material far more serviceable than that ordinarily found in hosiery.

It is further claimed that the Lastex Stocking and Garter Hose are of light weight and relatively comfortable to the joints, and the pressure around the leg may be regulated by the height to which the garment is pulled. Lastex stockings may be worn without other hosiery, although the average woman will probably wear another stocking over it because of lack of color selection. Lastex is relatively inconspicuous when worn underneath regular hosiery. The firm claims that the Lastex Stocking is designed to be worn by women and the Lastex Garter Hose to be worn either by men or by women who do not need support above the knee. The Lastex stockings come in regular sizes 8½, 9, 9½, 10, 10½ and 11.

The Lastex Stockings and Garter Hose may be used as an adjunct in the treatment of varicose veins. This is the only therapeutic claim that the firm of Bauer & Black makes for the stockings and hose.

The Council on Physical Therapy declares the Lastex Surgical Stockings and Garter Hose acceptable for inclusion in its list of accepted devices.

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**Indoctrination.**—Children throughout the world must learn caution in the face of physical danger, skill in handling themselves and their immediate environment, respect for property, formulae of politeness, and consideration for the comfort of others. The method of teaching varies with different cultures. Nowhere is the process of indoctrination perfectly smooth and untroubled. The degree of conflict and the type of difficulty aroused, however, seem to be correlated with the style of discipline current in the particular society to which the child belongs.—Levy, John: The Impact of Cultural Forms upon Children's Behavior, *Ment. Hyg.* **16:**209 (April) 1932.

# *Council on Pharmacy and Chemistry*

## NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

**IODOBISMITOL** (See The Journal, Feb. 13, 1932, p. 554).

The following dosage form has been accepted:

*Ampules Iodobismitol 2 cc.:* Each 2 cc. contains sodium iodobismuthite 0.12 Gm., sodium iodide 0.24 Gm., in ethylene glycol.

**METAPHEN** (See New and Nonofficial Remedies, 1931, p. 283).

The following dosage form has been accepted:

*Tincture Metaphen 1:200:* Metaphen 0.5 Gm., dissolved in a liquid composed of acetone 10 cc., water 40 cc., and alcohol 50 cc.

**SOLUTION LIVER EXTRACT NO. 343.**—A sterile aqueous solution of liver extract No. 343, preserved with 0.3 per cent of cresol. Each cubic centimeter contains the active material derived from 5 Gm. of liver.

*Actions and Uses.*—Solution liver extract No. 343 is proposed for intramuscular injection in the treatment of pernicious anemia.

*Dosage.*—Determined by the condition of the patient. Daily intramuscular injection of 2 cc. has been followed by maximal reticulocyte count. The maintenance dose varies with the individual patient.

Manufactured by Eli Lilly and Co., Indianapolis, Ind. No U. S. patent. U. S. trademark 243,147.

*Ampoules Solution Liver Extract No. 343, 10 cc.:* Each cubic centimeter contains the active material derived from 5 Gm. of liver.

To prepare solution liver extract No. 343, livers from edible animals are ground directly into water, and the mixture adjusted to the isoelectric point (approximately *p*H 5 to *p*H 6). The mixture is then heated to coagulate protein (approximately 80 C.), stirred for thirty minutes, and filtered. The filtrate is reduced in vacuum to a small volume and enough 95 per cent alcohol added to produce a concentration of 70 per cent. The precipitate that is formed is discarded and the filtrate reduced to a small volume; it is added to alcohol and the precipitate separated, dried in vacuum, dissolved in water; 0.3 per cent of cresol is added, and the mixture is filtered, sterilized and filled into ampules.

## REPORTS OF THE COUNCIL

The Council has authorized publication of the following reports.

W. A. Puckner, Secretary.

### CALLAWAY'S CREOSOTE, DE-MONO-HYDRATED, NOT ACCEPTABLE FOR N. N. R.

According to the label, "Callaway's Cresote, de-mono-hydrated," is "A 2½% aqueous solution of Beechwood Creosote U. S. P., from which the mono-hydric phenols (carbolic acid etc.) have been REMOVED, . . ." In the information sent to the Council by the Creo-Chemical Distributing Co. it is stated that "In the manufacture of this preparation a 2½% Beechwood Creosote U. S. P., is used in an aqueous solution, from which the mono-hydric phenols (carbolic acid etc.) have been removed" and that it "Contains all the elements of Creosote U. S. P., minus the mono-hydric phenols" and that it is colored red by a dye made from certified colors, but no definite statement of the composition was furnished. The firm submitted a report of an analysis made by a firm of analytic chemists which stated that a specimen marked Cre-Cal-Co received from the Creo-Chemical Distributing Company had been analyzed and that the material was found to have been made up of cresol, guaiacol, alcohol and glycerin and to have been free from other phenols. This analytic report bears a note from the Creo-Chemical Distributing Company to the effect that "Cre-Cal-Co" is now presented to the Council under the new name Callaway's Creosote, de-mono-hydrated. According to a Notice of Judgment issued by the Food and Drug Administration of the U. S. Department of Agriculture (The Journal, April 11, 1931, p. 1251) Cre-Cal-Co was found to consist essentially of small amounts of creosote, traces of salts of calcium, magnesium and sodium, phosphates, chlorides, and sulphates in water colored with a red dye. From these conflicting statements it is evident that a frank declaration of composition has not been made.

No information was furnished the Council in regard to the method by which the claimed elimination of phenol (carbolic acid, etc.) is accomplished, nor were tests furnished which could be used to demonstrate the absence of phenol. According to the label for Callaway's Creosote, de-mono-hydrated, the removal of the monohydric phenols (carbolic acid, etc.) from the creosote eliminates "all harmful ingredients, without impairing its medicinal properties, permitting therefore of unusually large dosage to obtain quick constitutional saturation." It is claimed that with this preparation "noticeably effective results in the treatment of lung infections" have been obtained in a remarkably short time. In the information sent the Council it is asserted that the preparation is "indicated in the treatment of a series of diseases, starting from a severe cold to pneumonia and influenza." It is stated that in "the treatment of tuberculosis and especially in a number of serious, third stage cases" there is "unquestioned evidence of definite improvement." It is also claimed that the product "has shown remarkable efficacy in the treatment of diphtheria, scarlet fever, venereal diseases and erysipelas (internal plus topical)" and the firm believes that "it is fair to assume the practicing physician may find it of value in the treatment of many other germ diseases, perhaps in cholera, small pox and others." No evidence was submitted in support of these sweeping recommendations, nor was any evidence offered in support of the claim that the removal from the official creosote of any monohydric phenols that may be present permits the administration of unusually large doses of creosote.

Callaway's Creosote, de-mono-hydrated, is unacceptable for inclusion in New and Nonofficial Remedies because it is a preparation of indefinite composition offered with unwarranted claims under a proprietary name which is not descriptive of its composition.

### PEPTO-SALICYLAS COMPOUND NOT ACCEPTABLE FOR N. N. R.

Pepto-Salicylas Compound is stated by the proprietors, the Curtis Pharmacal Company, Denver, to be "a mixture, containing in each fluid ounce Salicylic Acid, thirty grains,—Phosphate of Iron,—eight grains, Phosphate of Soda, one hundred and five grains,—Pure Pepsin, six grains, and Colchicine one sixty-fourth grain, in aqueous solution, with one minim Fluid Cardamon Compound to the ounce as flavoring." The label on the trade package declares the amount of salicylic acid that is in the mixture but does not declare the amounts of any of the other ingredients.

The proprietors state that Pepto-Salicylas Compound is a "Uric Acid Solvent and Eliminant" and that the mixture is indicated in the treatment of "rheumatism fever, muscular and articular rheumatism, and for pain attending Arthritis." According to the label the mixture is "an agreeable and promptly efficient preparation of TRUE SALICYLIC ACID, in which proper combination and accurately balanced proportion obviate the gastric irritation usually encountered" and the mixture is stated to be "An eligible Vehicle for the Iodides." There is no reason to believe that the several components of this mixture will mitigate in any way the characteristic effects of salicylic acid when administered in the form of sodium salicylate: on the contrary, the other ingredients are a hindrance to the intelligent use of salicylates and the combination of colchicine with salicylates is irrational. The statement that this complex mixture is "an eligible vehicle for the Iodides" is an unwarranted recommendation for the administration of this salicylate preparation as a routine when iodides are given. As a vehicle for the administration of iodides there is nothing superior to an abundance of pure water as a diluent.

The Council finds Pepto-Salicylas Compound unacceptable for New and Nonofficial Remedies because it is a complex, unscientific mixture marketed with unwarranted claims under a name not descriptive of its composition, and without a declaration on the label of the amounts of the potent ingredients other than the salicylic acid claimed to be present, which are contained in it.

# Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## PORTOLA BRAND CALIFORNIA TUNA

(Extra Fancy) (Packed in High Grade Salad Oil)

*Manufacturer.*—K. Hovden Company, Monterey, Calif.

*Description.*—Canned cooked light meat of Yellowfin Tuna with added salt, refined cottonseed oil and sour pickle.

*Manufacture.*—Tuna fish are harvested from 300 to 500 miles off the coast of Mexico. For this brand, small (15 to 60 pounds) Yellowfin Tuna only, the most solid and tasty of the tuna species, is used. The fish are packed in ice immediately after catching and kept in refrigerator ships until delivered to the factory. All fish are inspected by the state board of health inspectors before they are taken into the plant. The inspected fish are eviscerated, washed with brushes, laid in baskets, cooked in closed cookers under pressure for three to five hours, cooled, brought to a cleaning table, cleaned, boned, cut into quarters, the brown meat is scraped away and the light meat only is used. The light strips of meat are carefully laid into trays, cut into chunks of proper size by a perforating machine to fit the cans and placed in cans, effort being made to retain the chunk in one piece. A proper quantity of salt, refined cottonseed oil and a piece of sour pickle are added on the bottom and top of the can. The cans are sealed and heat processed in retorts under the supervision of the state board of health both as to temperature and as to length of time of heating.

*Analysis* (submitted by manufacturer).—

| (analysis of entire can) | per cent |
|---|---|
| Moisture | 55.1 |
| Ash | 2.3 |
| Chlorides as sodium chloride | 1.4 |
| Fat (ether extract) | 17.9 |
| Protein (N × 6.25) | 24.6 |
| Glycogen | trace |
| Crude fiber | 0.02 |
| Carbohydrates (by difference) | 0.1 |
| Iodine (I) | 0.0001 |

*Calories.*—2.6 per gram; 74 per ounce.

*Claims of Manufacturer.*—These California tuna are for all table uses. A dietary source of iodine.

## REPORTS OF THE COMMITTEE

The Committee has authorized publication of the following report.

Raymond Hertwig, Secretary.

### "SWEANEY'S BUTTER KRUST BREAD" NOT ACCEPTABLE

Sweaney's Bakery, Canton, Ohio, submitted to the Committee on Foods a white bread called "Sweaney's Butter Krust Bread. This bread is prepared by the sponge dough method from patent flour, water, yeast, salt, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride, and potassium bromate, sucrose, lard, sweetened condensed skim milk and a hydrolyzed starch.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 36.0 |
| Ash | 1.2 |
| Fat (ether extraction method) | 1.0 |
| Protein (N × 6.25) | 9.4 |
| Crude fiber | 0.1 |
| Carbohydrates other than crude fiber (by difference) | 52.3 |

*Discussion of Name and Label Statement.*—The name "Sweaney's Butter Krust Bread" indicates either that the baking formula contains sufficient milk-fat or butter or that the bread crust has been specially treated with butter to impart to it a distinctive and characteristic butter flavor. Butter, however, is not an ingredient of the bread; furthermore, skim-milk and not whole milk is used in the baking formula. Neither the bread nor the crust has any detectable characteristic butter flavor. The name is considered inappropriate for the bread, and is misinformative and misleading.

The label statement "Is made with milk" is incorrect in that skim-milk and not milk is an ingredient; further, the statement implies that milk is used in place of water in the preparation of the bread dough, making the product a "milk bread," which is misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name or correct the label statement in accordance with the Committee's recommendations. This bread therefore cannot be listed among the Committee's "accepted" foods.

## GENERAL COMMITTEE DECISIONS

The Committee on Foods authorizes the publication of the following General Committee Decisions adopted for its own guidance and for that of food manufacturers and advertising agencies on food advertising.

Raymond Hertwig, Secretary.

### TESTIMONIALS OF A MEDICINAL OR THERAPEUTIC CHARACTER IN FOOD ADVERTISING

Testimonials of a "health," medicinal or therapeutic character, or with such implication, in food advertising by persons unqualified to express a scientific authoritative opinion or judgment on the subject of the testimonial are misleading or deceptive and are not permissible. Testimonials accompanied by the writer's name and used with his permission will be considered as to their acceptability *in* individual instances.

### ACADEMIC TITLES "DOCTOR" AND "M.D." AS INTEGRAL PARTS OF NAMES OF FOODS

Names of foods including the academic titles "Doctor" or "M.D." accompanied or unaccompanied by the name of a person lend themselves to misleading or deceptive advertising of a medicinal, quasimedicinal or therapeutic character and are not permissible. No objection will be taken to such names for products that have been on the market at least ten years before the institution of this rule (April 15, 1932).

### SUPERLATIVE AND COMPARATIVE CLAIMS

Objection will not be made to superlative and comparative claims without specific scientific or technical significance and which are overtly recognizable as without definite meaning provided they are not deceptive or misleading. Statements expressing or inferring exactness of comparison which is not scientifically or technically warranted or in accord with fact are not permissible.

*"One of the best"* instead of *"the best"*; *"an ideal"* instead of *"the* ideal"; *"one* of *the* richest" instead of *"the* richest"; and similar forms of expression exemplify possible acceptable claims in instances in which the specific superlative statement is not permissible.

### THE CLAIM "RECOMMENDED BY PHYSICIANS" AND EQUIVALENT STATEMENTS

The claim "recommended by physicians" and statements of similar import in food advertising are vague in meaning, usually assumed, have no factual significance, convey misleading implications of nutritional or therapeutic values, and therefore are not allowable. Proper and correct recommendations by food manufacturers for specific uses of their products or signed statements based on specific studies by recognized authorities are permissible.

### AMBIGUOUS AND INCORRECT USE OF THE TERM "ADEQUATE" IN FOOD ADVERTISING

The term "adequate" in connection with vitamin, mineral or other nutritional claims in food advertising shall be used with its correct scientific significance. The term is permissible only in connection with definite and stated quantities of food containing the adequate quantity and then only when the claim for adequacy is supported by established knowledge.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 28, 1932

## RATE OF HEALING OF BONE FRACTURES

The inevitable wear and tear to which the organism is subjected during life raises the mechanisms of defense and the processes of repair to a position of great importance. Attention has been called repeatedly to the details of such activities as the clotting of blood, the regeneration of nerves, the healing of superficial wounds and the restitution of functional hepatic tissue. Not only has the process itself been described, but factors that facilitate or retard it have been studied. Thus, much attention has been directed to the importance of sterility in the healing of wounds and, during recent years, the influence of diet has been extensively investigated. In view of the increase of accidental injuries correlated with modern life, it is not surprising that studies of the reparative processes in the body have found application in the clinic. It should not be overlooked, however, that much of the finer detail and relationships of the mechanisms of repair have been worked out through the use of experimental animals in the laboratory. In a recent study, McKeown, Lindsay, Harvey and Howes[1] have determined the rate of healing of fractures and certain related factors.

In this investigation, particular care was used to maintain the experimental animals (albino rats) under uniform dietary conditions. In one group the fibula of the right hind leg was fractured and allowed to heal. At stated intervals these rats were killed and the breaking strength of the callus was determined. This was compared to the breaking strength of the intact left fibula of the same animal as well as to that of the fibula of control animals without preliminary fractures. It was observed that the breaking strength of the fibula of the control rats was directly correlated with the length of the bone and with the body weight of the animal. The food intake and body weight of this control group decreased slowly in the course of the study and there occurred a diminution in breaking strength of the intact fibula, which roughly paralleled this decrease. Since the length of the experimental period was only forty-five days, it appears that the observed tendency of the breaking strength to decrease was associated with nutritive condition rather than with age.

The diameter of the callus of the broken bone, as seen in roentgenograms, increased progressively from the sixth postoperative day to the fifteenth. Apparently during this time salts were being laid down in the callus, although the depositions were noticeably irregular. At the same time there occurred a decalcification of the fractured surfaces. The breaking strength of the callus increased sharply to the fifteenth day, then decreased to the twenty-first day, and finally showed an increase to the forty-fifth day. Histologic examination of the callus indicated that the period of weakness between the fifteenth and the twenty-first day was associated with the fusion of the ingrowing blood vessels whereby the medullary space is formed. Subsequent thickening of the cortex and reorganization of the callus was correlated with the increased breaking strength after the twenty-first day.

It was further observed that the unfractured left fibula showed parallel variations in breaking strength with those of the callus of the fractured bone. This observation was found true of the breaking strength of the radii of the same rat. Whereas it has been shown that, under stress, the osseous tissue acts as a readily available reservoir for the characteristic mineral salts, it would appear from these studies that, under the particular experimental conditions imposed, there is a general response on the part of the body as a whole to the requirements in a local situation, and that this response is motivated through a mechanism which is not highly selective.

## GRAPES AND URINARY ACIDITY

One of the contributions made by biochemistry during the present century is the demonstration that the reaction of the foods which we eat, that is, their immediate acid or alkaline character, is by no means a dependable index of their behavior in metabolism. Citrus fruits, for example, are acid when tested by the usual methods employed by chemists for this purpose. They exhibit marked acidity toward litmus or many others of the various indicators in current use. This result is due to the well known presence of organic acids, notably citric acid, in such edible products. These acids are, as a rule, oxidized in the body, leaving a residue of basic ingredients to be disposed of. Hence there exists the seeming paradox that an acid food may be potentially alkaline, so far as its behavior in the organism is concerned. On this account it is readily possible to bring about with acid fruit juices metabolic consequences that are quite like those induced by the alkaline sodium bicarbonate. Sodium citrate is a potential alkali in the organism; it is now occasionally used in place of sodium bicarbonate when there is a desire to induce alkalization.

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[1] McKeown, R. M.; Lindsay, M. K.; Harvey, S. C., and Howes, E. L.: The Breaking Strength of Healing Fractured Fibulae of Rats, Arch. Surg. 24: 458 (March) 1932.

These now well known reactions have directed attention to the consideration of foods as potentially alkaline or acid. Protein foods and cereals as a rule give rise to acid end-products in the body; fruits and vegetables tend to be potentially alkaline. Milk, "the most nearly perfect food," is intermediate in its effects. True acidosis can therefore be combated by the ingestion of potentially alkaline foods, even though they are naturally acid in reaction; and the reverse is true of alkalosis. The urine of herbivorous animals is normally alkaline; that of carnivorous species is unmistakably acid as a rule. The capacity of the organism to oxidize organic acids in the way referred to is quite remarkable. For example, Blatherwick and Long[1] have reported that even when large amounts of acid orange juice are ingested there is a production of alkaline urine. They state that it was impossible to overreach the organism's ability to oxidize the contained citric acid even though the amounts of orange juice drunk in one day were the equivalent of 48 Gm. of acid. The excess of base in the orange juice in Blatherwick's experiments was sufficient to balance the organic acidity that escaped oxidation and to cause an alkaline urine, as well as a marked depression in the excretion of ammonia.

There are, however, a number of organic acids that occur naturally in foods and are not so readily oxidized. Oxalic acid is an extreme illustration. Benzoic acid and its salts are conjugated in the body with glycine to form hippuric acid. Tartaric acids have been reported to exhibit considerable resistance to oxidation. Grapes are notably rich in tartrates, grape juice forming a familiar source of "cream of tartar." There has accordingly been some doubt as to the behavior of grapes and grape juices from the standpoint of their potential reaction in the body. An elaborate study of this problem has been reported by Saywell[2] from the University of California College of Agriculture at Berkeley. It included observations of persons on a control diet and on the same "basal" regimen supplemented by fresh grapes, fresh natural grape juice, detartrated grape juice, natural grape juice concentrate, concentrate-tartrate mixture, Thompson seedless raisins and Muscat seeded raisins. An increase in the urinary hydrogen ion concentration occurred, ranging from 0.8 to 1.2 $p_H$ units. A decrease in the ammonia excreted and a corresponding decrease in the total acidity were noted. There was an increase of the alkali reserve above the normal for each person. A correlation between the alkalinity of the ash and the physiologic reaction was apparent. Grapes and grape products with the greater alkalinity of ash were associated with a more basic body reaction. An increase occurred in organic acids excreted. This may be explained by the presence in the urine of some incompletely oxidized tartaric acid. The most surprising feature, however, is that considerably more than 90 per cent of the organic acids ingested in grape products, sometimes exceeding 30 Gm. (1 ounce) was oxidized in the body as a rule. The crucial physiologic experiment thus shows that grapes and their derivative products behave like many other fruits in the body. Nevertheless, as 2 Gm. or more of the ingested acids of grapes was often excreted unoxidized, the possible nephrotoxic action of even such small quantities of an incriminated acid cannot be overlooked. Until further evidence is forthcoming, one may therefore question the physiologic advisability of the continued use of large quantities over long periods of time.

## SCHÜLLER-CHRISTIAN DISEASE—A DISTURBANCE OF THE LIPID METABOLISM

About forty years ago, Hand discussed in the Transactions of the Philadelphia Pathological Society a peculiar clinical and anatomic picture characterized by xanthomatous lesions of the bones and polyuria. Since the case also presented signs of tuberculosis, he considered the xanthomatous changes tuberculous. Hand's observations were apparently not repeated until more than twenty years later. Then Schüller called attention to sharply defined geographic defects of the skull in young persons, with signs of dyspituitarism. A similar combination was observed by Christian, who outlined a symptom complex consisting of defects of the membranous bones, diabetes insipidus and exophthalmos. Cases more or less related to those described by Hand, Schüller and Christian had been published from time to time under different names and had been interpreted as being granulomatous or blastomatous in nature. With an intuitive feeling for causal relations, Rowland collected this material, grouped together the common features and, basing his analysis on the careful study of two cases in his own experience, established the anatomic background for a disease entity. He demonstrated that osseous defects, dyspituitarism and exophthalmos had a common cause; namely, the formation of xanthomatous lesions in the dura mater and about the infundibulum of the brain. To this osseous form of xanthomatosis the name "Schüller-Christian disease" has been given.

The modern clinical and pathologic-anatomic literature contains many observations which indicate that the xanthoma is really the local manifestation of a disturbed lipid metabolism. Thus, Schüller-Christian disease becomes related to the other well defined disturbances of the lipid metabolism, in particular to Gaucher and to Niemann-Pick disease. According to our present knowledge the essential difference between the three diseases seems to be the chemical nature of the lipid substance, which is either formed or retained in excessive amounts and becomes deposited in the tissues, especially those with the greatest storing ability (the cells belonging to the reticulo-endothelial system). In Gaucher disease, the cerebroside kerasin is deposited in the liver, spleen, lymph nodes and bone marrow. In Niemann-Pick disease, excessive amounts of phospholipids appear in practically every organ of the body, including the brain. The characteristic lesions of Schüller-Christian disease are rich in cholesterol and cholesterol esters (E. Epstein).

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[1] Blatherwick, N. R., and Long, M. Louisa: Studies of Urinary Acidity: I. Some Effects of Drinking Large Amounts of Orange Juice and Sour Milk, J. Biol. Chem. 53:103 (July) 1922; II. The Increased Acidity Produced by Eating Prunes and Cranberries, ibid. J. Biol. Chem. 57:815 (Oct.) 1923.

[2] Saywell, L. G.: The Effect of Grapes and Grape Products on Urinary Acidity, J. Nutrition 5:103 (March) 1932.

In a recent exhaustive review of the anomalies of the lipid metabolism,[1] Rowland submits a tentative classification of these anomalies which should prove useful for further investigations. He distinguishes between essential or primary disturbances of the lipid metabolism, which include essential xanthomatosis, Schüller-Christian disease, Niemann-Pick disease and Gaucher disease, and symptomatic or secondary disturbances, which are observed in diabetes mellitus, icterus, pregnancy, menstrual anomalies and renal diseases. Though the clinical and anatomic picture of these conditions is well established, much further work is required in order to disclose the nature of the biochemical processes that lead to their manifestations.

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[1] Oxford Medicine, vol. iv, chapter vii-a, New York, Oxford University Press, 1931.

## *Current Comment*

### PARTURITION AND THE POSTERIOR HYPOPHYSIS

The demonstration of the marked physiologic potencies of epinephrine early led many students of endocrine function to the conclusion that the suprarenal medulla is indispensable to life. It was known that in suprarenal disease low blood pressure is often a characteristic symptom; and as epinephrine is extremely potent as a pressor substance, what could be more logical, seemingly, than to assume that the hypotension attending suprarenal destruction is due to a lack of epinephrine from the medulla? However, the hypothesis failed to be supported by the actual experiments. Epinephrine *does not supply complete replacement therapy* following removal of the suprarenals. Furthermore, there is conclusive evidence that the cortex of the suprarenals, rather than the epinephrine-secreting medulla, is the truly indispensable part of these structures. Removal of the medulla is not necessarily fatal; but loss of the suprarenal cortex results in death unless the newly investigated cortical hormone is supplied. A somewhat similar upset of an attractive hypothesis seems to have been made recently by studies of the posterior hypophysis. The effectiveness of extracts of this structure in strengthening the uterine contractions of parturition are well known to clinicians. The pharmacologic observations have made it seem probable to some observers that the posterior lobe plays an important or even essential part in the initiation and completion of this process. Experimental proof of the liberation of unusual amounts of the oxytocic principle of this lobe, especially into the cerebrospinal fluid at the termination of pregnancy, has even been claimed by a number of investigators. The crucial experiments have been undertaken by P. E. Smith[1] of the College of Physicians and Surgeons at Columbia University. The posterior hypophysis was removed in adult female animals and the effect on parturition noted. The completeness of the ablation was verified by a microscopic examination of serial sections of the pituitary capsule and its contents. In all cases some anterior lobe tissue also was removed, but a sufficient amount remained to maintain normal body growth and sex cycles. Six of these animals were mated and bore litters. Birth occurred at the usual time. The evidence thus shows that at least in the species studied a secretion of the posterior hypophysis is unnecessary for either the onset or the maintenance of the uterine contractions at parturition. Of course, such experiments do not negate the value of the familiar extracts in promoting uterine contractions or the possibility that oxytocic hormones may be supplied by other tissues.

### GRAVITATIONAL SPREAD OF LOCAL INFECTIONS

The pneumococcus forms an antithrombic substance which facilitates the spread by gravity of infected transudate throughout the lungs. The suggestion that this gravitational spread may be inhibited by intravenous injection of prothrombic agents is made in a recent report of research at the Rockefeller Institute. In order to study the mechanical factors in pneumococcic infections, Goodner[1] inoculated rabbits intradermally well up on the flank with virulent pneumococci; thus he produced a "dermal pneumonia . . . basically similar to the pulmonary lesion." The resulting dermal lesion was characterized by copious edema, the local transudate gradually spreading ventrally as a result of the gravitational factor. By mechanical drainage, from 5 to 10 cc. of the edematous fluid was obtained for serologic study. This fluid was found not only noncoagulable but capable of inhibiting normal blood coagulation. A thromboplastic substance added to the fluid, however, restored normal plasma coagulation. The local injection of the thromboplastic substance was therefore tried and was found to prevent the gravitational spread of the edematous fluid. Hourly intravenous injections with the thromboplastic substance were tried and were found effective in holding the gravitational spread in check. "Within two hours after discontinuation" of this intravenous prothrombic therapy, "the edema fluid began to move ventrally at the usual rate." While Goodner has not yet suggested a clinical application of this method, it seems to open a promising line for further research in experimental laboratories.

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[1] Smith, P. E.: The Nonessentiality of the Posterior Hypophysis in Parturition, Am. J. Physiol. 99: 345 (Jan.) 1932.

[1] Goodner, K.: J. Exper. Med. 54: 847 (Dec.) 1931.

# PROCEEDINGS OF THE NEW ORLEANS SESSION

## MINUTES OF THE EIGHTY-THIRD ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT NEW ORLEANS, MAY 9-13, 1932

*(Concluded from page 1820)*

## *Second Meeting—Tuesday Morning, May 10*

The House of Delegates was called to order at 9:30 a. m. by the Speaker, Dr. F. C. Warnshuis.

It was moved by Dr. Arthur J. Bedell, New York, seconded by Dr. J. W. Van Derslice, Illinois, and carried, that the signed attendance slips constitute the roll call of the House.

Dr. William H. Mayer, Pennsylvania, moved that the House dispense with the reading of the minutes. The motion was seconded by Dr. C. S. Gorsline, Michigan, and carried.

### Report of Reference Committee on Credentials

Dr. J. D. Brook, Chairman, reported that 149 delegates had filed satisfactory credentials.

The Speaker, hearing no objections, declared that the report of the Reference Committee on Credentials would be received.

### Report of Board of Trustees

Dr. Edward B. Heckel, Chairman, presented the following report:

1. Relative to the resolution presented by Dr. Gorsline of Michigan, the Board of Trustees reports that it has been giving every possible aid to the Bureau of Medical Economics in order to enable that bureau to secure and publish information on the subjects mentioned, and that as it becomes apparent to the Board that increased budget and personnel are needed, the Board of Trustees will attempt to provide what is necessary.

2. The Board of Trustees favors the recommendation contained in the resolution introduced by Dr. William R. Molony, California, relative to gathering and publishing in book form the legal decisions published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION from week to week. The Board feels, however, that these should be provided to the constituent state associations at cost.

3. Relative to the resolution introduced by Dr. Edgar A. Hines, South Carolina, the Board of Trustees reports that careful consideration was given to the matter of reducing the subscription price of THE JOURNAL before Dr. Hines' resolution was introduced as well as on other occasions, and it was not deemed wise or expedient to make any reduction at the present time.

Dr. C. S. Gorsline, Michigan, moved the adoption of the first section of the report, with respect to aid for the Bureau of Medical Economics. The motion was seconded by Dr. B. F. Bailey, Nebraska, and carried.

On motion of Dr. Arthur J. Bedell, New York, seconded by Dr. H. B. Everett, Tennessee, and carried, the second section of the report relative to publication of legal decisions was adopted.

Dr. Wells Teachnor, Sr., Ohio, moved the adoption of the third section of the report concerning reduction in subscription price of THE JOURNAL. The motion was seconded by Dr. B. F. Bailey, Nebraska, and carried.

On motion of Dr. Arthur J. Bedell, New York, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the report of the Board of Trustees was adopted as a whole.

### Report of Reference Committee on Legislation and Public Relations

Dr. Grant C. Madill, Chairman, presented the following report:

The meeting of the Reference Committee was held immediately after the adjournment of the morning session, every member of the committee being present.

1. Resolutions introduced through the secretary of the Michigan State Medical Society concerning the effect of doles and federal health and sick benefit appropriations were read and, after discussion, it was decided to approve of securing data bearing on the question and submit such information to the Board of Trustees.

2. The committee then considered the resolution introduced by Dr. Shoulders concerning the Veterans' Hospitalization Act, which elicited free discussion. It was decided to refer the question to the Committee on Legislative Activities and its Auxiliary Committee on Veterans' Legislation.

GRANT C. MADILL, Chairman.
JOHN F. HAGERTY, Secretary.
SOUTHGATE LEIGH.
C. J. WHALEN.
A. A. ROSS.

The first section of the report was adopted on motion of Dr. Madill, seconded by Dr. Albert E. Bulson, Indiana, and carried.

Dr. Madill moved the adoption of the second portion of the report. The motion was seconded by Dr. Arthur W. Booth, New York, and carried.

On motion of Dr. Madill, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the report of the Reference Committee on Legislation and Public Relations was adopted as a whole.

### Report of the Reference Committee on Amendments to the Constitution and By-Laws

Dr. N. B. Van Etten, Chairman, presented the following report:

1. Your Reference Committee on Amendments to the Constitution and By-Laws has carefully considered the proposal of Dr. D. E. Sullivan, New Hampshire, to amend section 2 of article 5 of the Constitution so that the section shall read as follows:

> The House of Delegates is composed of delegates elected by the constituent associations and by the sections of the Scientific Assembly, and of delegates from the medical departments of the Army and the Navy and the Public Health Service and Veterans' Bureau appointed by the Surgeon-General of the respective departments and by the Medical Director of the Veterans' Bureau. The Trustees, the ex-Presidents of the Association and the members of the several councils shall be ex officio members of the House of Delegates without the right to vote, provided that members of the Councils who are also elected delegates may exercise all of the rights of elected delegates.

Under this proposed amendment the Medical Director of the United States Veterans' Administration would be made a member of the House of Delegates.

Your Reference Committee believes that the designation of any one individual, regardless of qualifications, as a member of the House of Delegates violates the democratic principles on which the House of Delegates is organized.

Your Reference Committee further believes that the fact that only 457 of the 1,668 full time physicians who are members of the United States Veterans' Bureau, have membership in the American Medical Association, that only 257 of them are sufficiently interested to become Fellows of the American Medical Association, and that these members are distributed among forty-one constituent organizations, furnishes sufficient reason for denying special representation in the House of Delegates and therefore your Reference Committee disapproves this proposal to amend the Constitution.

2. Your Reference Committee believes that sections 1 and 2 of chapter XI of the By-Laws on membership and Fellowship in the American Medical Association are sufficiently

definite in their provisions concerning dual memberships and that strict observance of these provisions should be insisted on.

3. Your Reference Committee approves the recommendation of Dr. Isaac A. Abt, delegate from the Section on Diseases of Children, to amend section 1 of chapter XIV of the By-Laws by changing the title of the Section on Diseases of Children to Section on Pediatrics, substituting the word "Pediatrics" for the words "Diseases of Children."

N. B. Van Etten, Chairman.
J. W. Amesse.
John H. O'Shea.
H. M. Johnson.
Walter F. Donaldson.

On motion of Dr. Van Etten, duly seconded and carried, the first section of the report disapproving the amendment to section 2, article 5 of the Constitution was adopted.

Dr. Van Etten moved the adoption of the second section of the report. The motion was seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried.

It was moved by Dr. Van Etten that the third section of the report amending section 1, chapter XIV, of the By-Laws be adopted. The motion was seconded by Dr. J. W. Burns, Texas, and carried.

Dr. Van Etten moved the adoption of the report as a whole. The motion was seconded by Dr. Arthur J. Bedell, New York, and carried.

It was moved by Dr. Van Etten that the By-Laws be amended so that the Section on Diseases of Children be now designated "Section on Pediatrics." The motion was seconded by Dr. H. B. Everett, Tennessee, and carried.

### Report of Reference Committee on Sections and Section Work

Dr. F. W. Cregor, Chairman, presented the following report:

Mr. Speaker, your Reference Committee on Sections and Section Work, to which was referred the report of the Council on Scientific Assembly, excepting only that portion of the report having to do with amendment to the By-Laws, expresses its appreciation of the Council's program on scientific presentations. Fully understanding the immensity of their task in selecting lecturers of known skill to address the general assembly and the careful elimination of the sensational, we most heartily endorse its work.

F. W. Cregor, Chairman.

On motion of Dr. Cregor, seconded by Dr. Arthur J. Bedell, New York, and carried, the report was adopted.

### Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. W. F. Braasch, Chairman, read the report of the Reference Committee on the Report of the Secretary, and moved its adoption. On motions, seconded and carried, each section of this part of the report was adopted.

Dr. Braasch read the report of the Reference Committee dealing with the report of the Board of Trustees, consideration of which was postponed until the Executive Session of the House on motion of Dr. Walter F. Donaldson, Pennsylvania, seconded by Dr. William G. Ricker, Vermont, and carried.

### Report of Reference Committee on Credentials

Dr. J. D. Brook, Chairman, stated that Dr. J. J. Moore, who is the alternate delegate for Dr. D. J. Davis of the Section on Pathology and Physiology, presented no credentials whatever, but had been certified to by Dr. West. He moved that the House of Delegates seat Dr. Moore. The motion was seconded by Dr. William H. Mayer, Pennsylvania, and carried.

### The Surgeon General's Library

The Speaker introduced Gen. R. U. Patterson, Surgeon General of the United States Army, who addressed the House as follows:

*Mr. Speaker, Members of the House of Delegates of the American Medical Association:*

I am here today through the courtesy of the officers of your House of Delegates for the purpose of bringing to your attention the action of this body last June in Philadelphia, which, if it remains on your records unchanged, will result in doing a great injury to the medical education program of the Medical Department of the Army, and also will have an effect which you do not desire on the medical profession of the country itself. Without any further preliminaries, and knowing that your time is valuable, I will go into the matter as briefly as possible.

The Army Medical Library, commonly called the Surgeon General's Library, was started by Surgeon General Lovell in 1818. It never amounted to very much until after the Civil War. At the time of the Civil War there were some 500 or 600 volumes in the whole Army Medical Library. However, at that time the Surgeon General, General Barnes, allocated $80,000 of unallocated funds to the library for the purchase of books. The late distinguished and versatile medical man Colonel John S. Billings became librarian of the Surgeon General's Library, and under him it had an unprecedented growth and became one of the great libraries of the world. In the early eighties, $200,000 was expended on the present buildings in which the library and the museum of the Army are located.

There has always been plenty of advice available to the Surgeon General of the Army and the librarian of the library to assist them in the best policies and plans to follow out in the development of that library. I may say that while it should never be done officially without an act of Congress, the present Surgeon General, and I am sure all those who follow him, fully intend to seek the best advice that can be obtained in this country from those who are familiar with libraries, and with medical libraries in particular, and it is my intention to have what will be always an unofficial committee, but nevertheless a most effective one, to guide us and help us whenever we need counsel.

There are today some 409 incunabula and some 260 other rare books, all prior to the year 1525. The present contents of the library are 333,202 bound volumes, 47,171 unbound volumes, and 509,304 pamphlets; that is, there were on April 29 of this year a total of 889,677 publications in the Surgeon General's Library.

In 1879 the Surgeon General's Library began to publish what was known as the *Index Medicus*. Through lack of funds in recent years it was turned over in 1927 to the American Medical Association, which now publishes it as a part of the *Quarterly Cumulative Index Medicus*. In 1880 the compilation of the *Index Catalogue* was begun by the library and has been continued ever since. They have just completed the ninth volume of the third series of this catalogue. The tenth is about to be published. The last one cost some $22,107 and a few odd cents. The next volume will be more costly and will embrace in it information that has never been placed in one volume; it has been scattered heretofore in the whole series as they were published. Hereafter, though, in the tenth volume you will find listed by name all the incunabula and the rare books.

At the present time the Surgeon General's Library, I believe, is the largest collection of medical works in the world. There is a question about that; we are not sure that the library in Paris may not have more volumes, but they don't know themselves what they have got.

The Medical Department of the Army has always recognized, since its inception, the idea of an army medical library as a national asset and as a trust held by them for the whole profession of the country. However, in that connection it is proper to mention the fact that the Medical Department of the Army was in existence for seventy-odd years before we had an American Medical Association, and that the library was started thirty-five years before the American Medical Association was actually organized in 1847. I simply throw that out as an indication of the fact that we started it and have taken care of it for 112 years.

There has always been an earnest desire on the part of everybody in the Medical Department to make that library useful not only to the profession in this country but to the world. Previous to the war we didn't have a very liberal policy. Our policy was that of most libraries, particularly the Library of Congress; books were not sent out. Men had to come to Washington and consult the works in the library itself, but a much more liberal policy was started during the war and it has become a lending library in its principal activity. For instance, during the last year more than 11,000 volumes were sent out to some 308 libraries throughout the country, so that anybody who wants to get a book does not need to come to Washington unless he wishes to consult one of the incunabula.

The library is an absolutely essential part of our medical educational system in the Army. It is utilized freely by the officers of the Medical Corps of the Navy, of the Public Health Service, of the Veterans' Administration, and by the physicians who are members of the Medical Society of the District of Columbia.

There has been a complaint made on one or two occasions that the library was not open at night. Gentlemen, it doesn't make a bit of difference whether we have it or the Library of Congress has it, whoever has it can keep it open at night only if there are more funds made available for the employment of personnel. There is a far greater chance of our being able to keep it open without additional expense at the Army Medical Center, where we have lots of enlisted men, than there is of its ever being kept open in any other location in the city of Washington without very much increasing the funds for the employment of personnel.

Congress has repeatedly recognized the value of the library of the Surgeon General's Office.

About thirty years ago, the dean who has just retired from George Washington Medical School, Dr. Boyden, conceived the idea of a great army medical center at the capital of the nation, something better than we have in any country in the world. They made their plans. The idea was to have first a large hospital as the clinic, and then the Army Medical School and the veterinary and dental schools, which, as you know, are postgraduate schools, and then the library and the museum alongside, making a complete institution. Today the essential buildings of the Walter Reed General Hospital have been completed. The Army Medical School and the veterinary and dental schools (and they are very handsome buildings) have just been completed. The Army Medical School has been in operation in its present building since 1923, but these other buildings have been built, the additions have been put on, and it is now complete. The only thing we lack to make the center complete is the Army Medical Library and the Army Medical Museum.

In these times it is hard to predict when we will get that money, but the influence, moral and otherwise, of an association like this can assist us very much in getting that money when the time is ripe in this country.

Last June certain gentlemen were interested in the library, and I know they meant the very best in the world. But I think they did what I consider was an extraordinary thing.

I was in Philadelphia myself at your last meeting and would have been more than willing and glad to have an opportunity to say something on the action that was taken. However, though we were the greatest and the most concerned of anybody, we weren't consulted, and your body passed a resolution which will potentially do us great harm, and the record will prove the fact that the American Medical Association desires to have our library placed somewhere else, where it will do us no good and do you some harm if you are interested in libraries.

I am going to state briefly just what happens if this thing prevails. First of all, that is our library. We originated it. We have cared for it and developed it for a hundred and twelve years, and the present resolution that stands on your books would take that thing away from us and put it up somewhere where we don't want it. It would be exactly as if some of you decided that you would prefer, when you go to Baltimore, to have a library down at the Union Station or at the Mount Royal Station, instead of going two and a half miles, probably, to the Johns Hopkins Hospital and the Medical School where the library is located, exactly near those buildings, where it is available and useful. That is a parallel of what you have unwittingly attempted to do to the Medical Department of the Army. It is the first time in my life, and certainly in my thirty-one years of service, that I have ever seen the American Medical Association apparently opposing something that is necessary to the Medical Department of the Army. It has never happened before, and I know it was not done advisedly.

The Planning and Beautification Committee of Washington is planning to beautify that city. We are in the way. Our location is not satisfactory; it will obstruct it. Furthermore, it is too small.

When the Army Medical School was started in 1893, it was with the Army Medical Museum. The library got too large and so did the museum. Finally we were located in the Army Medical Center, where the school is now. But to put it up in the Library of Congress or adjacent to it will make it necessary to condemn a site at great expense, because it is all built up around there, as you well know. Here we have a site available right across from the Army Medical School, and it has been available since 1922, when Congress, for a second time, appropriated funds for the purpose of purchasing land on which to place the Army Medical Library. Many of you know that place; if you do not, the next time you go to Washington, go up and see the school buildings and the hospital and look at the site immediately across the street. There is no finer site for the library. It is absolutely essential for our purposes. It would just ruin the Army Medical Center if we don't have it there. So much for the expense of the site.

If the building were erected near the Library of Congress it would mean that it must be built in harmony with the architecture of those federal buildings on that hill, a very much more expensive proposition than if it should be located where we want it and where it ought to be. The buildings of the Army Medical Center, as you know, are brick and will cost much less than if we have to put up a granite or stone building at the Library of Congress.

As to accessibility, in these days of travel, figures show that fewer and fewer men are coming and consulting that library in person. Most of those who come drive over in automobiles. If they are coming from the north or west, the Walter Reed is five miles out of the city from the center where it is now, and although the city has grown up all around it, it is still nearer Baltimore than it has ever been. There would be ample parking space there, which could not be provided adequately over near the Library of Congress.

Finally, if your motion remains unchanged, it may result in the plans of thirty years of the War Department being frustrated, and the library, originated, developed and cared for by the Medical Department of the Army, will be practically taken away from it for unjustifiable reasons.

Even if the proponents of this motion had thoroughly realized what they were doing, if they did realize it, and I doubt it very much, the Delegates did not, because that was referred to one of your committees here and it came back, as I understand, as a report of that committee, I think it was the Committee on Education, and the whole thing went through very hastily. I am sure that the House of Delegates did not realize just what it was doing to us.

What harm has been done already, if any? I myself have had to answer many, many letters on account of that action, both for the Secretary of War and the President of the Senate, and I would have for the Speaker of the House only he died, and Mr. Garner has been too busy since he got in Congress, since the House opening, to take any notice of that. But your action plays into the hands of a member of Congress who told me not many weeks ago, and General Ireland, that he is going to take the library away from us anyway. He doesn't care whether it hurts you or hurts the Army. He is not very friendly to the Army and he is going to do it willy-nilly. I imagine he is too busy now, but when he gets a little time on his hands I haven't any doubt that he will try to put that through Congress. So long as your action remains unchanged, you are playing right into his hands, and you will be doing a hurt that you never intended to do.

Mr. Putnam, the librarian of Congress, has said distinctly that he doesn't want it, that it will be uneconomical. He doubts whether the efficiency will be increased, and that for many reasons it should be retained as a specialized library, just as the Department of Agriculture library and the library of the Geological Survey, and there is another bureau in Washington that has an entirely independent library.

Since your action of last June I have had many expressions of regret from the groups in Baltimore, in Boston and in Philadelphia. I received a resolution dated Nov. 28, 1931, from the Mayo Library Committee, approved by the Board of Governors of the Mayo Foundation, in which they deplored very much that you had taken the action you did.

Finally, the members of the District of Columbia Medical Society, who were familiar with the library, passed a resolution, Jan. 6, 1932, in which they deplored such action and advocated that no such action be taken as was contemplated by the resolution passed by the House of Delegates last June.

That resolution went through hastily. As long as it remains on your records it has potential power to do us injury, which I know you do not intend to do. I hope that some one will get up and move for a recession or rescinding of the action that you took last June, as it will do us a great deal of help. I feel confident I can ask this great body to be ready to stand behind the Medical Department of the Army if it becomes necessary to combat, I may say, certain malign influences in Congress; I might say one influence; that is the only one whose plans will harm us seriously, and if they carry through will do you harm. Don't make any mistake that if it becomes incorporated into the Library of Congress you will never be able to get books from it. You will have to go to the library to see them.

I hope you will take action in this very body at this time. In conclusion, I wish to thank you for giving me this opportunity and also to say that I appreciate very much your patience in listening to me.

The Speaker referred the remarks and the request of General Patterson to the Reference Committee on Medical Education for consideration and recommendation, after discussion by Dr. H. G. Stetson, Massachusetts, Dr. Thomas S. Cullen, a Trustee, Dr. C. B. Wright, Minnesota, and Dr. W. R. Steiner, Connecticut.

### Resolutions on Site of Surgeon General's Library

Dr. Wright presented the following resolutions, which were referred to the Reference Committee on Medical Education:

Whereas, At the Annual Convention of the American Medical Association held at Philadelphia in June, 1931, the House of Delegates passed a resolution advocating that when the Army Medical Library has to be moved to a new site it be placed adjacent to the Library of Congress; and

Whereas, At that time the House of Delegates did not have before it complete information concerning this status of the Army Medical Library and the plans of the War Department with respect to the Library; and

Whereas, That information being now fully available, it is evident that any departure from those plans of many years' standing with respect to the future location of the Army Medical Library will seriously interfere with the proper development of the Army Medical Center in Washington and will also render it less useful to the medical profession of the country as a whole; be it

*Resolved*, By the House of Delegates of the American Medical Association in convention assembled, that the resolution of the House of Delegates in June, 1931, at Philadelphia, with reference to the location of the Army Medical Library be, and is hereby, rescinded; and be it further

*Resolved*, That a copy of this resolution be sent to the President of the United States, the President of the Senate, the Speaker of the House of Representatives, and the Secretary of War.

We recommend that the House of Delegates offer its cooperation in obtaining a suitable fireproof building to house these priceless volumes.

### Remarks of Dr. T. C. Routley

The Secretary presented Dr. T. C. Routley, secretary of the Canadian Medical Association, who addressed the House as follows:

*Mr. Speaker, Mr. President and Gentlemen:*

It gives me, indeed, a great deal of pleasure to come here this morning and present to you greetings from the Canadian Medical Association, of which body I have the honor to be General Secretary.

There is a story told up in our country about two railroads, one of which you no doubt have heard, the other I doubt you have heard of. One is called the Canadian Pacific Railway and the other is the Cumberland Railway. The Canadian Pacific Railway has many thousands of miles of rails. The Cumberland Railway is a little organization with five miles of rails.

The president of the Cumberland Railway decided one time that he would like to have a pass over the Canadian Pacific, so he went up to the then president, Sir William Van Horn, and presented his card as president of the Cumberland Railway. Sir William, in inviting him in, said, "I never heard of this railway."

He said, "Sir William, it is not as long as yours but it is just as wide."

The Canadian Medical Association, in stature, is dwarfed beside you, but in its ideals and aspirations for progressive medicine, I trust that it is just as wide. I know that our men always delight in coming to your meetings, and you have always extended to them, as you have to me, a most cordial invitation and a delightful welcome. On their behalf and on my own behalf I desire to thank you.

I hope that some day this great body will see fit to join hands with us and meet in Canada. We would give you a most cordial welcome, indeed.

### Report of Reference Committee on Rules and Order of Business

Dr. R. W. Fouts, Nebraska, read the following report of the *Reference Committee on Rules and Order of Business:*

This report deals with the report of the Judicial Council except that part which was referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Your Reference Committee endorses the sentiment expressed in the second paragraph of the Council's report, calling attention to the danger of attempting to overturn some of the older traditions by submitting untried methods of practice and suggests the continuance of this procedure.

Your Reference Committee likewise believes that the present Principles of Medical Ethics is adequate and should be strictly adhered to in dealing with "Patents and Perquisites."

Your Reference Committee calls attention to the incorrect address of Dr. Donald Macrae, Jr., deceased, and in order that the records may be correct, recommends that this be changed to Council Bluffs, Iowa.

Your Reference Committee also recommends that some suitable memorial be devised for those who die during their term of service as officers of the American Medical Association.

Respectfully submitted.

Bertram L. Bryant, Chairman.
R. W. Fouts, Secretary.

Dr. Fouts moved that the report be adopted. The motion was seconded by Dr. Arthur J. Bedell, New York, and carried.

### Report of Reference Committee on Miscellaneous Business

Dr. James R. Bloss, Chairman, read the following report of the Reference Committee on Miscellaneous Business:

1. Your Reference Committee recommends that the Secretary of the Association be instructed to comply with the request of F. V. Cargill that a letter be written to the Woman's Auxiliary expressing the appreciation of the House of Delegates for the activities of the Auxiliary and that the Secretary write the letter as asked.

2. The resolution presented by Dr. W. R. Molony, California, in the opinion of your committee, should be referred to the Bureau of Medical Economics. Your committee recommends that the Bureau of Medical Economics secure the information required by the resolution and that the report of the information requested by the California Medical Association be given at the earliest possible moment.

Respectfully submitted.

James R. Bloss, Chairman.
H. B. Everett.
William R. Bathurst.

On motion of Dr. Bloss, seconded by Dr. Randolph Winslow, Maryland, and carried, the report was adopted.

## NEW BUSINESS

### Resolution on Approval of Standard Classified Nomenclature of Disease

Dr. Frederic E. Sondern, New York, presented the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

Whereas, A standard classified nomenclature of disease has been compiled by the National Conference on Nomenclature of Disease; and

Whereas, The said national conference is composed almost entirely of delegates from national clinical societies and other interested organizations, including a delegate from the American Medical Association; and

Whereas, The said Standard Classified Nomenclature of Disease has been prepared through the joint efforts of these delegates and committees appointed by their parent organizations and has been unanimously approved by the assembled delegates; and

Whereas, The national conference is now seeking the approval of the nomenclature as published in preliminary form for this purpose, before the publication of an official edition for general use; and

Whereas, The official edition will be substantially the same as the preliminary edition, differing from it not in design but only to a small extent in detail; and

Whereas, The purpose of the said national conference is to provide a uniform authoritative standard of nomenclature of disease for use throughout the country; and

Whereas, The approval of the American Medical Association will materially further this worthy object; therefore be it

*Resolved,* That the American Medical Association approve the said Standard Classified Nomenclature of Disease and recommend its use as a standard throughout the United States.

### Resolutions on Closer Cooperation Between the County Societies and the American Medical Association

Dr. Southgate Leigh, Virginia, presented the following resolution, which was referred to the Board of Trustees:

Whereas, The profession is confronted with difficulties that are both serious and urgent; and

Whereas, There is pressing need for close and active cooperation on the part of all component societies, as well as the individual doctors; and

Whereas, With such earnest cooperation many problems may be readily solved; therefore be it

*Resolved,* By the House of Delegates of the American Medical Association that the officers and trustees of the Association be instructed to communicate with the various constituent state societies, advising them of the difficulties and suggesting that they take the following steps:

1. To keep in close touch with the national organization.
2. To strengthen the county society units, and as far as possible to arrange for an organization in each county in the state.
3. To continue with renewed energy the work of the various public relation committees in states and counties; and

*Resolved,* That the delegates from each state society present this matter vigorously and promptly to their respective organizations; and further

*Resolved,* That the officers and trustees communicate with the Woman's Auxiliary to the American Medical Association, requesting its continued active cooperation with the profession and urging that local auxiliaries be formed in connection with every county society.

On motion of Dr. J. W. Van Derslice, Illinois, seconded by Dr. Samuel P. Mengel, Pennsylvania, and carried, the meeting recessed at 11 o'clock to reconvene at 1:30.

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## *Third Meeting—Tuesday Afternoon, May 10*

The House of Delegates was called to order at 1:30 p. m. by the Speaker, Dr. F. C. Warnshuis.

### Report of Reference Committee on Medical Education

Dr. Irvin Abell, Chairman, presented the following report:

1. The Reference Committee has fully considered the report of the Council on Medical Education and Hospitals and desires to offer its commendation on the excellence of the amount of work detailed therein.

It is gratifying to note that cooperation of all but one of the acceptable medical schools was secured in publishing a record of the hospital training of their graduates, affording a distinct stimulus to graduate or fifth year education. The discouragement of the graduation of unqualified students is approved. It is suggested that a copy of the graphic chart on page 109 of the Handbook, showing the percentage of "repeaters," be sent to the schools listed therein.

It is further suggested that the resolution of the Council pertaining to the classification of foreign schools be affirmed.

The certification of specialists presents a problem of great practical importance and offers many angles to which the Council is devoting study but on which it is not yet prepared to make recommendations.

It is interesting to note that the number of medical graduates in the United States shows a steady increase, representing about 50 per cent more than the loss by death of the medical profession each year.

The hospital statistics presented by the Council show the results of decidedly active supervision with the resultant desire on the part of governing boards to comply with the essentials for registration and as well of an appreciable number for approval for internships and for residency in specialties; 6,612 are now on the register, while 684 have been approved for internships and 371 approved for residencies in specialties, offering at the present time facilities in graduate training in excess of the demand.

With the view of correlating hospital activities to meet the requirements of today to the end that its benefits may accrue in greatest measure both to the physician and the patient, the Council on Feb. 14, 1932, amended the "Essentials of a Registered Hospital" as adopted by the House of Delegates in 1928 and requests approval of these "Essentials" in the form submitted in supplement A, page 115, of the Handbook. The Reference Committee recommends this approval.

2. The "Essentials of an Approved Clinical Laboratory" were adopted by the Council in compliance with instructions received from the House of Delegates in 1923. For the more practical rating of laboratories, the Council at its February meeting adopted a statement of the "Essentials for the Listing of Physicians Specializing in Clinical Work and Pathology" and requests approval of the House of Delegates for these "Essentials" as submitted in supplement B, page 118, of the Handbook. The Reference Committee recommends this approval.

3. The "Essentials of an Approved Department of Radiology and Roentgenology" were approved by the House of Delegates in 1929. For the more satisfactory classification of such laboratories the Council in February, 1932, adopted "Essentials for Admission to List of Physicians Specializing in Radiology" and requests approval for these "Essentials" as submitted in supplement C, page 121, of the Handbook. The Reference Committee recommends this approval.

4. The following resolution, introduced by Dr. G. Henry Mundt, delegate from Illinois, was considered by the Reference Committee:

*Resolved,* That it is the opinion of the House of Delegates of the American Medical Association that physicians on the staffs of hospitals approved for intern training by the Council on Medical Education and Hospitals should be limited to members in good standing of the American Medical Association, this ruling to apply to all hospitals except federal, state, county and municipal institutions.

The Reference Committee regards this resolution as an expression of opinion in favor of a standard which should be striven for, and as such approves it, recognizing at the same time that it may not be desirable at present to make it a hard and fast rule.

5. The Reference Committee has considered the resolution introduced by Dr. C. B. Wright, delegate from Minnesota, pertaining to the Surgeon General's Library at Washington, and recommends the adoption of the resolution.

Irvin Abell, Chairman.
William Allen Pusey.
F. S. Crockett.
Seale Harris.
J. F. Burnham.

The first section of the report was adopted on motion of Dr. Abell, seconded by Dr. H. B. Everett, Tennessee, and carried.

Dr. Abell moved that the second section of the report dealing with essentials of an approved clinical laboratory, be adopted. The motion was seconded by Dr. Frederic E. Sondern, New York, and carried.

On motion of Dr. Abell, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the third section of the report, referring to essentials of an approved department of radiology and roentgenology, was adopted.

Dr. Abell moved that the fourth section of the report dealing with the resolution introduced by Dr. G. Henry Mundt, Illinois, be adopted. The motion was seconded by Dr. E. P. Sloan, Illinois, and carried.

On motion of Dr. Abell, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the fifth section of the report with reference to the resolution pertaining to the Surgeon General's Library was adopted.

Dr. Abell moved that the report be adopted as a whole. The motion was seconded by Dr. Mather Pfeiffenberger, Illinois, and carried.

It was moved by Dr. Abell that the motion of the House adopted a year ago, with reference to the location of the Surgeon General's Library, be rescinded. The motion was seconded by Dr. Albert E. Bulson, Indiana, and carried unanimously.

### Report of Reference Committee on Reports of Officers

The Vice Speaker, Dr. Albert E. Bulson, took the chair.

Dr. C. E. Mongan, Chairman, presented the following report:

#### ADDRESS OF SPEAKER

1. The speaker has called attention to the tremendous responsibility resting on the House of Delegates of molding and guiding public opinion and formulating the fundamental principles that will bring about acceptable readjustments wherein all the traditions and achievements of the medical profession will be conserved and its relationship to the patient and public enhanced. We heartily approve of that recommendation and in furtherance further recommend that the Delegates of the House of Delegates of the American Medical Association tender to their state societies at the annual meeting a full report of the transactions of the House of Delegates of the American Medical Association.

2. The Speaker stressed the point that all persons presenting resolutions to the House of Delegates should appear before the Reference Committees considering the resolution introduced and give reasons for its adoption, so that the Reference Committee should have full information concerning the offering of the resolution; and, further, those members who are opposed to resolutions offered in the House of Delegates should also appear and give argument sustaining their objections. Unless this procedure is followed, a Reference Committee cannot render to the House of Delegates an intelligent and comprehensive opinion.

3. In order that the Tuesday afternoon executive session shall not aimlessly concern itself with irrelevant matters, your Speaker recommends that you authorize your Secretary, Chairman of the Board of Trustees and Speaker to formulate a program of pending questions that the year's activities and experience indicate as meriting executive consideration. We recommend the adoption of that portion of the Speaker's address.

#### ADDRESS OF PRESIDENT

4. In the portion of the President's address which relates to the study of economics, he says: "It seems to me that a new committee might be formed, or that some member of a permanent staff might be delegated to cooperate with the Bureau and Councils for the purpose of further study of some of the plans in European countries and any new plan suggested. I am not at all sure how much change, if any, should be in our present plan, but I do think that if there were a committee working on these problems for possibly the next five years, it might be able to suggest some changes that would help solve problems in this country."

Your committee suggests that the study of medical economics deserves careful consideration and has already been studied by the Bureau of Economics and by the Committee on the Costs of Medical Care.

If it seems desirable that a permanent committee be appointed to study these problems in European countries and in our own country, as suggested by the President, we recommend that this committee be appointed by the Board of Trustees and that the committee cooperate with the Bureau of Medical Economics in the study of these problems.

5. We have given consideration to that portion of the President's address in which he says "There has been a tendency in some specialties and in certain communities to turn over certain cases to nurses, midwives or technicians. So far as I can see, there is no way to make the conscientious practice of medicine an easy task. And, furthermore, it has been asserted repeatedly that there are too many physicians. Although I do not believe that there are too many physicians, nevertheless, I do think that in order to give the people the best care, the actual practice of medicine must be kept in the hands of physicians."

We heartily endorse that statement in the President's address on the principle that all medical work be done by medical men.

6. We especially call attention of every member of the House of Delegates to the President's comment on "graduate training." This part of his address is too long to incorporate in the report, but it should be the conscientious duty of every member of the House of Delegates to read, consider and assimilate the good that is contained in these paragraphs. We heartily recommend the President's opinion on graduate training.

Concerning the President's comment on "specialization," we suggest the importance of the study of the question of proper classification and regulation of specialists. Last year, the House of Delegates requested the Council on Medical Education and Hospitals to investigate the subject of specialization, and we are awaiting their report on this subject.

#### ADDRESS OF PRESIDENT-ELECT

7. With reference to the President-Elect's comment on the development of a nation-wide scheme of postgraduate medical instruction by the Council on Medical Education and Hospitals, we realize the importance of postgraduate medical instruction and recommend that the Council on Medical Education and Hospitals of the American Medical Association promote this work by urging the state medical societies to conduct regional clinical meetings, and that the Council endeavor to provide, as far as possible, suitable information regarding material for such instruction.

8. In regard to the President-Elect's comment on a new building for the Association, we understand that the careful consideration of the erection of a new building is in the hands of the Board of Trustees and we may well await the result of their deliberation.

C. E. MONGAN, Chairman.
W. R. STEINER.
W. A. COOK.
J. F. SMITH, Secretary.

Dr. Mongan moved that the first section of the report, urging the delegates to render a full report of the transactions of the House to their respective state associations, be adopted. The motion was seconded by Dr. Joseph F. Smith, Wisconsin, and carried.

On motion of Dr. Mongan, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried, the second section of the report, urging persons who present resolutions in the House to appear before the reference committees to which the resolutions are referred, was adopted.

It was moved by Dr. Mongan, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried, that the third section of the report, referring to the executive session, be adopted.

Dr. Mongan recommended that the fourth section of the report be referred to the Board of Trustees, as it might entail the expenditure of money. Without further action the Vice Speaker referred this section of the report to the Board of Trustees.

The fifth section, endorsing the statement of the President that all medical work be done by medical men, was adopted on motion of Dr. Mongan, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried.

Dr. Mongan moved that the sixth section of the report, dealing with graduate training, be adopted. The motion was seconded by Dr. E. P. Sloan, Illinois, and carried.

Dr. Mongan moved that the seventh section of the report, dealing with postgraduate medical instruction, be adopted. The motion was seconded by Dr. Mather Pfeiffenberger, Illinois, and carried.

Dr. Mongan moved that the eighth section of the report, with reference to a new building, be adopted. The motion was seconded by Dr. Joseph F. Smith, Wisconsin, and carried.

Dr. Mongan moved the adoption of the report as a whole, excepting the portion that was referred to the Board of Trustees. The motion was seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried.

## *Executive Session—Tuesday Afternoon, May 10*

The Speaker resumed the chair and on motion of Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. H. B. Everett, Tennessee, and carried, the House went into executive session at 1:50.

### Report of the Special Committee on Legislative Activities

Dr. C. B. Wright, Chairman, presented the following report:

I. Pursuant to the action of the House of Delegates in Philadelphia in 1931, the Board of Trustees, on the recommendation of the Committee on Legislative Activities and the General Manager, Dr. West, appointed an Auxiliary Committee on Veterans' Legislation to act with the Committee on Legislative Activities. This committee consists of the following members:

Dr. Otho A. Fiedler, Sheyboygan, Wis.
Dr. Angus McLean, Detroit.
Dr. H. H. Shoulders, Nashville, Tenn.
Dr. E. A. Meyerding, St. Paul.
Dr. F. S. Crockett, La Fayette, Ind.
Dr. Holman Taylor, Fort Worth, Texas.

A combined meeting was held on Sept. 4, 1931. At this meeting the following were present:

Chairman, C. B. Wright.
Dr. J. H. J. Upham.
Dr. D. Chester Brown.
Dr. E. H. Cary.
Dr. Angus McLean.
Dr. H. H. Shoulders.
Dr. E. A. Meyerding.
Dr. F. S. Crockett.
Dr. Otho A. Fiedler.
Dr. Olin West.
Dr. Morris Fishbein.
Dr. William C. Woodward.

Methods of carrying out the instructions of the House of Delegates were discussed and the resolution submitted to the House of Delegates by Dr. H. H. Shoulders was carefully considered.

Following this meeting, Dr. Barrett, a former commander of the Wisconsin State Legion, attended the National Convention of the American Legion in Detroit. At Minneapolis Dr. E. A. Meyerding and the chairman arranged a meeting with Mr. E. V. Cliff, Minnesota member of the National Executive Committee of the American Legion. At this meeting the suggestion was made that a committee from the American Legion and one from the American Medical Association talk over the situation.

#### SECRETARIES' CONFERENCE

At the annual conference of state secretaries and editors of state journals in November, 1931, these committees had a second meeting. Following this meeting Dr. Barrett (through the influence of Dr. Fiedler) attended the meeting of the Executive Committee of the American Legion, then in session in Indianapolis.

Immediately following the secretaries' conference, Dr. West was informed by telephone that representatives of the American Legion would be glad to meet with the representatives of the American Medical Association in Indianapolis.

#### INDIANAPOLIS CONFERENCE

The Indianapolis conference was held on Nov. 19, 1931. Those attending were:

Representing the American Legion: Mr. Watson B. Miller, chairman of the Rehabilitation Committee of the Legion; Mr. John A. Hartman, National Liaison Officer; Mr. E. V. Cliff, and Mr. E. A. Hayes, members of the Executive Committee of the Legion, and Dr. Edward W. Thompson, president of the Indiana Hospital Association.

Representing the American Hospital Association: Mr. Paul H. Fesler, president.

Representing the American Medical Association: Dr. Olin West, Dr. H. H. Shoulders, Dr. F. S. Crockett, Dr. Otho A. Fiedler, Dr. E. A. Meyerding and Dr. C. B. Wright.

The Shoulders resolution was fully discussed and points of view on veterans' care were fully presented by the various groups. The result of this conference was a better understanding and a desire on the part of every one to continue the discussion. This resulted in the Chicago conference.

#### CHICAGO CONFERENCE

The Chicago conference was held at the headquarters of the American Medical Association on Dec. 30, 1931. There were in attendance, in addition to our committee, members of the Board of Trustees, Dr. Olin West, Dr. Morris Fishbein and Dr. William C. Woodward of the American Medical Association; Mr. E. A. Hayes, Mr. E. V. Cliff and Capt. Watson B. Miller, representing the American Legion; Mr. Paul H. Fesler (president) and Dr. Bert W. Caldwell (executive secretary) of the American Hospital Association; Dr. Martin Cooley, representing the United States Veterans' Administration; and a number of others from the various organizations who were interested in this subject.

This was a round table discussion of all aspects of veterans' care, and the representative of the Veterans' Administration spent a great deal of time discussing the subject from their standpoint. Again the Shoulders plan was very thoroughly presented.

A tentative basis of agreement was suggested by Dr. E. H. Cary and passed, as follows: (1) That the hospital building program should stop, except for the erection of hospitals for the care of patients suffering from nervous and mental diseases and tuberculosis, and all building plans should be modified as far as possible to meet the future needs of the civilian population by location and distribution; (2) that a modification of veterans' legislation should be asked, allowing that veterans be taken care of in the nonfederal hospitals at home and that all acute medical surgical conditions should be so cared for. All in attendance were urged to consider carefully this tentative agreement and as far as possible obtain reactions from their own organizations.

Mr. Miller then proposed that the representatives of the American Medical Association, American Hospital Association, Committee on Rehabilitation, Veterans' Administration and American Legion confer in Washington at a date to be determined later. This proposal was accepted.

#### WASHINGTON CONFERENCE

Sunday evening, Jan. 31, 1932, we had a preliminary meeting with the representatives of the American Hospital Association at the Mayflower Hotel in Washington.

On the morning of Feb. 1, 1932, we met with the Rehabilitation Committee of the American Legion. About 120 representatives of the Legion from all parts of the country were present. Dr. Shoulders explained his plan to this group and Mr. Fesler presented the resolution passed by the American Hospital Association in Toronto, urging the use of nonfederal hospitals for the care of veterans.

The same afternoon we attended a conference in the board rooms of the Veterans' Administration under the chairmanship of Dr. C. M. Griffith, medical director of the Veterans' Administration.

The representatives of the various groups present were:

Medical Advisory Council of the Veterans' Administration:

Dr. L. F. Barker, Baltimore.
Dr. Kennon Dunham, Cincinnati.
Col. W. F. Lorenz, Madison, Wis.
Dr. L. I. Dublin, New York.
Major Gen. R. U. Patterson, Surgeon General of the Army.

American Hospital Association:

Col. F. A. Washburn, Superintendent, Massachusetts General Hospital.
Dr. S. S. Goldwater, New York.
Dr. N. W. Faxon, Rochester, N. Y.
Dr. N. R. Kneifl, St. Louis, Catholic Hospital Association.
Mr. Paul H. Fesler, Minneapolis, president of the American Hospital Association.

American Legion:

Mr. E. A. Hayes, Illinois.
Mr. E. V. Cliff, Ortonville, Minn.
Capt. Watson B. Miller, Washington, D. C.
Dr. William M. Leffingwell, New York, represented by Dr. H. D. Shapiro, Washington, D. C.

American Medical Association:

Dr. E. H. Cary.
Dr. D. Chester Brown.
Dr. E. B. Heckel.
Dr. Thomas S. Cullen.
Dr. Olin West.
Dr. William C. Woodward.
Dr. Angus McLean.
Dr. Holman Taylor.
Dr. Otho A. Fiedler.
Dr. F. S. Crockett.
Dr. H. H. Shoulders.
Dr. E. A. Meyerding.
Dr. C. B. Wright.

At this conference the duties of the Medical Advisory Council were explained by Dr. Barker as simply advisory, not on policies but on individual problems which came up for solution. The Council has no initiative, no power, and no spontaneous action is taken, except in answer to definite requests for advice regarding specific problems. Dr. Barker stated that, so far as he knew, the Medical Council had never recommended the providing of beds in veterans' hospitals.

Dr. Dublin then explained that on request he had outlined a tentative plan along actuarial lines as to the number of beds necessary to carry out fully the provisions of the law if all the disabled veterans were to be taken care of. He stated that 129,000 beds would be necessary, but they never had recommended providing these beds and in fact their estimates were made for the purpose of showing how expensive the carrying out of this plan would be.

Dr. West spoke from the standpoint of the American Medical Association, urging the stopping of building of federal hospitals and the use of nonfederal hospitals of the country for the care of veterans. He felt that the government should take care of the veteran disabled because of service-connected injuries or illnesses, of nervous and mental and of tuberculous cases, and possibly of some other chronic cases. He also expressed the opinion that Mr. Cliff's idea of getting service in local institutions for emergency cases might be adopted, but he urged that the man whose disability has no service connection and who is able to take care of himself should do so and be made to do so and the government should not pauperize its citizens by giving to those who are able to provide for themselves.

The representatives of the American Legion expressed their opposition to the insurance plan of Dr. Shoulders. They stated that this plan had been fully presented and discussed by them and that rather than discuss concrete plans it would be better to try to arrive at some agreement on policies.

After discussions by Mr. Fesler, Dr. Goldwater, Mr. Cliff, Mr. Miller and Mr. Hayes, Dr. Cary suggested the formation of a smaller committee to formulate some policy that we could all agree on for future action and which would act as a liaison committee with the Veterans' Administration. This was agreed upon and the following committee was appointed:

Committee of the American Legion:

Mr. E. V. Cliff.
Mr. E. A. Hayes.
Dr. William M. Leffingwell (represented by Dr. Shapiro).
Capt. W. B. Miller.

Committee of the American Medical Association (appointed by the representatives of the Board of Trustees present):

Dr. E. H. Cary.
Dr. C. B. Wright.
Dr. William C. Woodward.
Dr. Holman Taylor.

Committee of the American Hospital Association:

Mr. Paul Fesler.
Dr. N. W. Faxon.
Dr. Hugh Scott.
Dr. F. A. Washburn.
Dr. N. R. Kneifl (*Catholic Hospital Association*).

The general meeting was then adjourned and the smaller committee went into session and elected Mr. Paul H. Fesler chairman. After a great deal of discussion, this committee reached a tentative agreement subject to endorsement by the various organizations.

This tentative agreement is the final result of the various meetings held. The principles laid down can be used as the foundation for future cooperation. While it does not represent the principles of the Shoulders resolution as to insurance, it does give an opportunity to work out constructive legislation. Many of the medical profession, who are not committee members, feel very much pleased with results so far and express the opinion that we have accomplished more in this short time than could have been expected. Dr. Shoulders is entitled to a great deal of credit for having brought his resolution before the House of Delegates. It offered a distinctly constructive proposal that has served to make possible conferences and discussions of a most helpful nature and has centered attention of all groups concerned on the undesirable features of the method now in use under government control.

We therefore wish you would give this tentative agreement which follows your careful consideration:

1. There are no available statistics on which a comparison could be made between the cost of care in federal and nonfederal hospitals, for the same class of cases. It was agreed that the chairman, Mr. Fesler, should obtain a study of treatment costs in federal and nonfederal hospitals, comparing the cost of care of like diseases.

2. At the request of the Legion a definition of an emergency was agreed on which was as follows: "An emergency case, in the opinion of this committee, is a case where there is need for medical or hospital service which cannot be furnished by veterans' hospitals promptly enough to prevent avoidable danger to the health and life of the patient or to prevent a lasting disabling condition." This is more of a legal than a medical definition—it covers a great deal.

3. It was recommended that the hospital program of the American Legion having to do with nervous and mental and tuberculous cases and service-connected cases be approved, including the extension of hospitals for the care of these cases where necessary, it being definitely understood, however, that the beds provided by the extension of hospitals for nervous and mental and tuberculous cases will not be used for the care of general medical and surgical non-service-connected cases. It was further agreed that there were non-service-connected general medical and surgical conditions of a chronic nature that the nonfederal hospital would not care to accept, and conversely there would be service-connected cases which might be more satisfactorily cared for in nonfederal hospitals.

4. On the motion of Dr. Cary, the chairman was authorized to appoint a committee to draw up an amendment to the existing law to permit veterans to be taken care of in home hospitals by their own doctors at government expense. On this committee are Dr. Woodward, Mr. Cliff and Dr. Faxon.

5. It was recommended that liaison committees be organized in every state, consisting of representatives of the State Hospital Association, the State Medical Association and the State Legion and the local regional representatives of the Veterans' Administration, looking toward better cooperation among these groups.

6. Mr. Hayes, representing the American Legion, urged the continued advice and cooperation of the members of the medical and hospital associations as the "best and most skilful care available was necessary in the treatment of disabled veterans."

The committee then adjourned, agreeing to meet at the call of the chairman. It was further agreed that a report should be made which could be sent to all the groups at the conference.

While in Washington, at the request of Representative McClintic, members of our committee presented arguments for the care of veterans with acute medical and surgical conditions in local hospitals by local physicians.

### DISCUSSION

An attempt to evaluate the concrete results of our year's work is difficult. We believe, however, that we have accomplished something. The result of educational work of all kinds is often intangible but, if properly done, in the long run is often more fruitful than concrete results without a secure foundation. As this work has progressed throughout the country, numerous plans have been suggested. A number of Legion posts have adopted the Shoulders insurance plan, a number have adopted the emergency care plan, and various other plans have been suggested or adopted throughout the country. When one realizes that there are approximately 10,000 Legion posts, the impossibility of reaching a majority of them before the Legion convention in September with our machinery is quite apparent. Regardless of concrete plans, however, we have been able to bring to the attention of an interested, and the most influential, group in this country the benefits of individualistic practice and the danger of any type of federal or state medicine for the general medical and surgical care of the veterans and the general population, and particularly the danger to the veteran suffering from acute medical or surgical conditions. This also holds true in the early diagnosis of cancer, tuberculosis, diabetes, nephritis and other diseases.

We believe that the work we have started should continue. On every side the medical profession is being confronted with health activities which, started with the highest motives in most instances, have through publicity and propaganda diverted the attention of the public from the practicing physician as the most essential factor in any public or private health program. The most essential factor in the proper care of the veteran is that he be taken care of by a doctor who is a well informed, interested practitioner of medicine in the local community, who is unfettered by official "red tape."

### SUMMARY

First, our committee has established, through the Board of Trustees, a standing committee cooperating with the American Legion, the American Hospital Association and the Veterans' Administration to work out some change in policy in regard to the care of veterans.

Second, we have stimulated the medical legionnaires and the profession throughout the country to interest the local Legion posts in the dangers of federalized medicine from the standpoint of the veteran and the country.

Third, members of our committee have discussed veterans' legislation before the secretaries' conference and before the Annual Congress on Medical Education, Medical Licensure, and Hospitals.

Fourth, we have written and stimulated editorials and articles in the state medical journals on veterans' legislation. In this work Dr. Shoulders has been particularly active.

Fifth, every member of the committee has talked before groups of medical men and legionnaires, not only in their own but also in other states.

Sixth, by stimulating the establishment of a permanent committee in all states, representing the American Legion, American Hospital Association, Veterans' Administration and the American Medical Association, the machinery is gradually being built up for better mutual understanding and to prepare the way for any change in policy which may come in the future.

| *Committee on Legislative Activities* | *Auxiliary Committee on Veterans' Legislation* |
|---|---|
| C. B. WRIGHT, Chairman. | H. H. SHOULDERS. |
| E. H. CARY. | ANGUS MCLEAN. |
| J. H. J. UPHAM. | F. S. CROCKETT. |
| THOMAS S. CULLEN. | E. A. MEYERDING. |
| D. CHESTER BROWN. | OTHO A. FIEDLER. |
| | HOLMAN TAYLOR. |

### II. HEARING ON RURAL INFANCY AND MATERNITY BILL

An additional matter of interest was the hearing on the Maternal and Infancy bill before the Committee on Commerce in the United States Senate on Feb. 4, 1932. Dr. Holman Taylor of Texas, Dr. H. M. Johnson (sent by the Minnesota State Medical Association), Dr. George W. Kosmak of New York, Dr. W. D. Chapman of Illinois, Dr. W. C. Woodward and Dr. C. B. Wright spoke against this bill.

We would urge the members of the House of Delegates to write to their senators for the report of the hearing on S. F. 572. Apparently there is a great need for information regarding this proposed legislation on the part of many members of our association, and we feel the members of the House of Delegates should be informed on this subject. There is a strong sentimental appeal in all legislation which purports to be for the benefit of mothers and children.

This bill differed from the old Sheppard-Towner bill in that it applied only to the rural population and to towns under 50,000. The reason for this limitation of course was not apparently well founded because statistical analyses, as brought out at the hearing, fairly uniformly showed that maternal and infancy death rates are less in rural than in urban districts.

It was also shown that as far as could be determined the operation of the Sheppard-Towner Act had no influence on maternity and infancy death rates.

This bill was referred out from the Committee on Commerce of the Senate with the rural aspects of the bill stricken out. There was also a minority report against this bill signed by Senators George H. Moses, Edwin S. Broussard, Hubert D. Stephens, Harry B. Hayes, Josiah W. Bailey, Marcus A. Coolidge and Hiram Bingham.

We would also recommend your reading, if you have not done so, Senator Bingham's careful analysis of how the money was actually spent which was appropriated under the Sheppard-Towner Act. We would also like to call attention to the careful analysis of the subject "Federal Subsidies for Rural Maternal and Infant Hygiene," by Dr. Woodward. This can be obtained from the office of the American Medical Association.

It might be worth while for the officers of the American Medical Association to arrange a conference between the Committee on Legislative Activities of the American Medical Association and representatives of the organization of state health officers to find out why the health officers so persistently lobby for federal instead of state control of health activities.

C. B. WRIGHT, Chairman.
E. H. CARY.
J. H. J. UPHAM.
THOMAS S. CULLEN.
D. CHESTER BROWN.
COMMITTEE ON LEGISLATIVE ACTIVITIES.

III. After careful consideration the committee agrees to the purpose and purport of the resolutions, introduced by Dr. Shoulders and referred to the Reference Committee on Legislation and Public Relations and then to the Committee on Legislative Activities and to its Auxiliary Committee on Veterans' Legislation, and recommends that the House of Delegates refer these resolutions back to the Committee on Legislative Activities without instructions.

C. B. WRIGHT, Chairman.
D. CHESTER BROWN.
E. H. CARY.
H. H. SHOULDERS.
E. A. MEYERDING.
F. S. CROCKETT.
HOLMAN TAYLOR.
THOMAS S. CULLEN.
WILLIAM C. WOODWARD, Ex Officio.

Dr. Wright moved that section I of the report dealing with veterans' legislation be adopted and that the committee be continued. The motion was seconded by Dr. B. F. Bailey, Nebraska, and carried, after discussion by Dr. Junius B. Harris, California.

It was moved by Dr. Wright that section II of the report, referring to the hearing on the rural infancy and maternity bill, be adopted. The motion was seconded by Dr. Mather Pfeiffenberger, Illinois, and carried.

Dr. Wright moved that section III of the report, referring to the resolutions introduced by Dr. H. H. Shoulders, Tennessee, be adopted. The motion was seconded by Dr. H. H. Shoulders, Tennessee, and carried.

On motion, duly seconded and carried, the report was adopted as a whole.

## Resolution on the Appointment of a Committee to Study Birth Control

Dr. J. D. Brook, Michigan, moved the adoption of resolutions providing for the appointment by the President of a suitable Committee on the Study of Birth Control.

The motion was seconded by Dr. Carl F. Moll, Michigan, and discussed by Dr. Charles E. Mongan, Massachusetts, and Dr. J. W. Van Derslice, Illinois.

### REPORT OF REFERENCE COMMITTEE ON EXECUTIVE SESSION

Dr. Samuel P. Mengel, Pennsylvania, for the Reference Committee on Executive Session, presented the following report:

This is a controversial subject and the committee believes that it would not be advisable at this time to inject this subject before the profession. The committee therefore disapproves the adoption of the resolutions.

J. W. VAN DERSLICE, Chairman.
S. P. MENGEL.
ARTHUR W. BOOTH.
J. F. D. COOK.

Dr. J. W. Van Derslice, Illinois, moved, as a substitute for Dr. Brook's motion, that the recommendation of the Reference Committee on Executive Session be adopted. The motion was seconded by Dr. John F. Hagerty, New Jersey, and carried, after discussion by Dr. Holman Taylor, Texas.

## Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. W. F. Braasch, Chairman, presented the report of the Reference Committee dealing with the Report of the Board of Trustees.

Dr. J. H. J. Upham, a Trustee, read a statement from the Board of Trustees in reply to questions raised in the report of the Reference Committee.

The subjects in the report of the Reference Committee were discussed by Dr. W. F. Braasch, Minnesota; Dr. Junius B. Harris, California; Dr. J. W. Van Derslice, Illinois; Dr. Olin West, Secretary; Dr. C. B. Wright, Minnesota; Dr. William Duffield, California; Dr. Wendell C. Phillips, a Past President; Dr. H. H. Shoulders, Tennessee; Dr. B. F. Bailey, Nebraska; Dr. Isaac A. Abt, Section on Pediatrics; Dr. Holman Taylor, Texas; Dr. G. Henry Mundt, Illinois; Dr. J. W. Burns, Texas; Dr. H. M. Johnson, Minnesota, and Dr. A. E. Bulson, Indiana.

On motions duly seconded and carried, the following report of the Reference Committee on Reports of Board of Trustees and Secretary was adopted section by section and as a whole:

Your committee notes with commendation the evidence of progress made during the past year as shown by the reports submitted to the Board of Trustees by the various bureaus and committees. Unless the members of the House of Delegates have taken the time to review carefully each item of the report, they cannot conceive of the volume and variety of progressive work carried on under their supervision. It is a great pity that such information cannot be disseminated among the entire membership of the Association. If it were possible, every Fellow would appreciate how much is being accomplished by his financial support, which amounts individually to so modest a sum. The action taken by the trustees in maintaining the present Fellowship dues receives our whole-hearted approval. This is no time to diminish the Association activities, which a reduction in income would necessitate. Rather than diminish our activities, we should increase them. The ever increasing problems confronting organized medicine as the result of the present social and economic upheaval demand vigorous consideration and early solution if possible, at our hands.

### THE JOURNAL

Your committee sets its stamp of approval on its official publication; namely, The Journal of the American Medical Association. We are glad to know that it is generally regarded as a recognized leader in its field by both medical and lay critics. The Journal offers every one of us the opportunity to keep in touch with the developments of modern medicine. Every member of the Association should regard it his duty to read its contents carefully. Your committee is glad to know of the continued support accorded the special journals published by the Association, which are maintaining the high standard set by the organization. The Association is to be complimented on the high character of its publication.

### HYGEIA

Your committee desires to commend the continuous progress made by Hygeia in the development of its circulation and the increased interest among physicians as well as the laity. The fact that, in spite of the present financial conditions, the management is able not alone to pay operating costs but to make a modest net income, merits hearty approval. We particularly approve of the improvements made by its editorial department, embracing the cover, the type, and the general make-up. We note with satisfaction the character of the articles and the adaptation of features employed with success by other magazines. Hygeia is deserving of support by the medical profession. The least that could be done is to see that it is in every public library in the country.

### QUARTERLY CUMULATIVE INDEX MEDICUS

Your committee notes with interest the fact that this is the first year that the Association has become solely responsible for the financial support of the Quarterly Cumulative Index Medicus. Although it will be a source of additional expense, we believe that continuation of this important publication is essential to scientific medicine and, in assuming this responsibility, the Association is conveying a great benefaction to the future of scientific medicine.

### LIBRARY

Your committee would especially recommend the continued development of the package library service, which has been increased during the year some 20 per cent. The importance of this work is difficult to appreciate in that it makes available a wide range of material ordinarily unobtainable in outlying districts. This, together with the correspondence regarding medical references, is a most important service of the Association.

### COUNCIL ON PHARMACY AND CHEMISTRY

We note that the work of the Council on Pharmacy and Chemistry has been going on apace. No activity sponsored by the Association has done more to raise the standard of medicine than the extraordinary work carried on by the Council and its subsidiary, the Chemical Laboratory. It has been a most important factor in establishing the high standard of therapy set by our association. We would especially commend The Journal for its action in giving full publicity to the investigations of the Council. The Council has done distinct service through its publication of New and Nonofficial Remedies, the annual printing of the Council Reports, of special reports, of Useful Drugs and the Handbook for Interns, all of which are of the greatest practical importance to the profession. We would also commend the study recently carried on by the Council in the field of intravenous therapy. The wiles of advertisers have led some of the profession to believe that intravenous therapy offers special merits over other forms of medication. The Council deserves great credit for demonstrating that many of these claims were inspired by commercialism, and that intravenous therapy is indicated only in special conditions. The Council has shown quite conclusively that, for routine medication, the oral or rectal route is safer and to be preferred.

The importance of the Committee on Foods, which has recently been given an independent status, is becoming quite evident. While it may be too early to pass judgment as to the final value of its work, nevertheless it would seem that what it has already accomplished is of a distinctly constructive nature. If it can influence and correct any untruthful statements made in the advertising of foods, it will be of great value to the public. If it can be of help in giving the profession a better idea of the value of certain nutritional products, it will also be worth while.

### BUREAU OF HEALTH AND PUBLIC INSTRUCTION

The important work done by the Bureau of Health and Public Instruction merits commendation. Efforts to stimulate the interest of the laity in medical problems should be furthered in every legitimate way. The influence of the radio seems to be increasing apace. We who are forced to listen to the so-called health messages given out by charlatan advertisers naturally resent their blatant audacity. We urge the continuance of the efforts that have been made to stop this obnoxious publicity.

Your committee commends the efforts made to stimulate interest in periodic health examinations. In this connection it should be emphasized that the examination given must be thorough and include all the modern clinical methods. Without complete physical and laboratory data, periodic health examinations will fail of future approval.

We commend the close cooperation established with lay organizations, such as the Parents and Teachers Congress. Every effort should be made to have the medical profession take the lead in all matters pertaining to health.

### BUREAU OF LEGAL MEDICINE AND LEGISLATION

The work of the Bureau of Legal Medicine and Legislation has been of value to the medical profession in keeping the Association and its members informed in regard to the ever increasing legislative problems, both state and national, which affect the practice of medicine. The staff of this bureau has been of great aid in the past year in giving freely of legal advice and in helping to solve the various legislative problems that have arisen.

### INCOME AND EXPENDITURE

Although many rightful demands are undoubtedly made on the Board of Trustees for increased funds by the various bureaus and committees, nevertheless your committee believes that some of the activities which the Association is now carrying on are inadequately financed. We refer particularly to the work carried on by the Committee on Legislation and by the Bureau of Medical Economics.

### BUREAU OF MEDICAL ECONOMICS

The significance of the work carried on by the Bureau of Medical Economics in its bearing on the future of organized medicine cannot be overestimated. Taking advantage of its accumulating data, and guided by the experience of the medical profession in other countries, the solution of economic problems in the future should be made more easy. The need of such a movement has long been widely recognized and sporadic attempts to cope with the various problems have been made by individual state societies during the past decade. It may be remembered that the demand for the institution of this all important bureau was made in the House of Delegates last year by the delegates from California and passed with much enthusiasm. The pity is that such a movement was not started years ago, so that the data which might have been accumulated could now be available when sorely needed. Now that the machinery has been tardily erected for this all important work, it would seem that everything possible should be done to quicken its aims. Its director undoubtedly deserves credit for what he has already accomplished and for the wide scope outlined for the future activities of his department. It appears to your committee, however, that the need for immediate results in obtaining all possible data, the desirability of making them available to every state association, and the furtherance of their adoption, is imperative.

While the wide range of topics for investigation noted in his report is to be commended, it is evident that if all the subjects were properly investigated, years of work with the present personnel would be necessary in order to arrive at any conclusions. In the solution of the many problems involved, not alone is it essential to have an accumulation of facts bearing on the problems, but principles for their solution must be recommended. The question might well be raised whether it would not be advisable to single out a few of the most urgent problems and pursue them to an immediate constructive conclusion. The difficulties of solving the problems peculiar to various districts of the country again call our attention to the desirability of regional supervision.

In reviewing the financial budget of the Board of Trustees, we note that the sum made available for carrying on the operations of this bureau was inadequate. Your committee recommends that this amount should be greatly increased and that the scope and the personnel of this department be augmented.

### HOUSE OF DELEGATES

Your committee desires to call attention to the fact that resolutions and instructions adopted by the House of Delegates are occasionally overlooked by the Board of Trustees or other officers of the Association and fail to receive any executive action. Doubtless, in some cases, logic and common sense would explain such action. To be specific, we refer to a recommendation made by the President of the Association and adopted last year by the Reference Committee on Reports of Officers and approved by the House of Delegates, which endorsed the arrangement of scientific meetings in various sections of the country by association officers. A word of explanation in regard to its disposition might have been included in the report of the Trustees to the House of Delegates.

In conclusion your committee would raise the question whether the members of the House of Delegates representing the membership of our Association are given sufficient opportunity to discharge their duties as such representatives and to take part in the activities of the Association. It is open to question whether they can become familiar with its policies in the short annual sessions now held. In raising the question, we do not reflect on the ability and judgment of the Board of Trustees and the officers who direct the affairs of the Association. It is possible, however, that a more permanent influence and contact with the activities by members of the House of Delegates might be of mutual benefit. This could be attained either by meeting several days prior to the week of the annual session, or by semiannual meetings of the House of Delegates instead of annual as at present. We realize that this subject has been brought up before and has met with adverse action. It is only after discussion with a number of the delegates that the desirability of further cooperation on the part of the House of Delegates is brought up for further consideration.

Your committee presents these suggestions for your consideration. It is recommended that the Delegates record their desires definitely for further guidance.

On request, the Secretary explained the methods used in trying to build up Fellowship.

## NEW BUSINESS

### Resolution on Increase of Burden of Taxation on Medical Profession

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Whereas, The relief of economic chaos is dependent on the restoration of confidence and stability of thought among the American people in the place of hysteria, confusion and indecision;

Whereas, The Congress of the United States has in contemplation a return to the income tax in effect during the World War;

Whereas, The burden of earned income tax falls heavily as class legislation on the physician and surgeon who works day and night for the small fees he may be able to collect; be it

*Resolved,* That Congress be immediately advised of the injustice, inequality and the burden of this taxation on the medical profession in this time of depression and that they be requested to ponder, stop, look and listen to our appeal against injustice to the medical profession of America.

### Resolution on Assistance to Small Hospitals in Raising Their Standards

Dr. R. W. Fouts, Nebraska, presented the following resolution, which was referred to the Reference Committee on Medical Education:

Whereas, At the annual meeting of the American Medical Association held in Detroit in June, 1930, a resolution was unanimously passed directing the Council on Medical Education and Hospitals of the American Medical Association to begin a program of standardizing the small hospitals of the country; and

Whereas, No classification of the small hospitals has been established, and many of these small institutions would gladly welcome a survey and constructive advice relative to improving their service and adding to their efficiency; and

Whereas, The majority of the 6,612 hospitals now on the official register of the American Medical Association are small hospitals which should have created for their benefit certain definite standards which they desire to meet; and

Whereas, It is the belief of many hospital authorities that the American Medical Association, composed of practitioners of medicine and surgery in all specialties, is the one organization best able to give them constructive information relative to improving hospital service; therefore be it

*Resolved,* That this House of Delegates urge the Council on Medical Education and Hospitals to give all possible assistance to the small hospitals so that their standards may be raised and their efficiency accordingly improved.

### Memorandum Concerning Reduction in Number of Officers in the United States Army

Dr. Holman Taylor, Texas, presented the following statement, which was referred to the Reference Committee on Legislation and Public Relations:

For many years, from time to time, since the World War, there has been discussion in Congress looking to a reduction in the number of officers in the army. Whenever this has come up, even in the time of President Coolidge, it was thoroughly understood that the Medical Department of the Army was already underofficered to meet the present peace time needs of the army adequately, particularly so with respect to the officers of the Medical Corps and the Dental Corps. So it was a complete surprise when on last Friday (May 5) the Committee on Appropriations of the House recommended to Congress the passage of the proposed army appropriation bill for 1933, to see that a cut or reduction of 2,000 officers from the army was recommended, and that it would affect the Medical Department. It was always understood that any cut would not be made applicable to the Medical Department, known as the "non-promotion list," but it would come from the "promotion list," or line of the army, which in time of peace can best stand a reduction in the number of officers, if any is to be made.

It is now known that a study of that bill by the general staff indicates that the heaviest reduction of all will fall on the Medical Department. In other words, the Medical Department will stand to lose 323 officers, of which number 260 will be from the Medical Corps alone. A greater percentage loss than any other branch or service. The Medical Department has had a hard time for many years to keep up with the many demands made on it with its present strength. A further reduction at this time will literally ruin the Medical Department. It will be forced to withdraw from practically all the activities now carried on under War Department policies which are considered essential and will render the Medical Department unable to continue to operate efficiently many of its station hospitals and otherwise care for the different military posts. This will cause suffering, inefficiency and a lowering of morale. The situation is a most serious one, in which the American Medical Association is naturally interested, both from the standpoint of interest in their brothers in the Medical Corps of the Army and as patriotic citizens who naturally do not desire to see the welfare of the enlisted men of the army adversely affected. They will suffer because of lack of proper medical attention if this reduction takes place.

A statement of such interest on the part of the President of the American Medical Association, or other proper official, addressed to those in authority in Washington, would be most timely, and probably produce prompt results.

RECOMMENDATIONS

1. Send a telegram to the President in substance as follows:

"Recent newspaper articles indicate that there will be a cut of 2,000 officers from the army. Although the Medical Department is well known to be underofficered at the present time, it is understood that this reduction in officers will seriously affect the Medical Department; in fact, the largest cut will fall on that department. The American Medical Association is deeply concerned that such action is even contemplated and earnestly hopes that no action will be taken that will so reduce the personnel of the Medical Department of the Army that its efficiency may thereby be impaired.

2. Similar telegrams to be sent to the speaker of the House of Representatives and to the Secretary of War.

### Request for Discussion of Restriction of Prescriptions of Medicinal Alcohol

Dr. J. W. Van Derslice, Chairman of the Reference Committee on Executive Session, presented the following message, which the Reference Committee had not received through the usual channels, and with which it felt it had nothing whatever to do:

A member of the New York delegation requests that the Committee on Executive Session provide, in their order of business, time for the general discussion of the present status of legislation in regard to restriction of prescriptions of medicinal alcohol.

The Speaker referred this to the committee composed of the Chairman of the Board of Trustees, the Secretary of the Association and the Speaker of the House, which was appointed by the House to arrange a program of subjects for consideration at the executive session.

### Report of Board of Trustees

Dr. J. H. J. Upham, a Trustee, presented the following report: The Board reports that it endorses the resolutions introduced by Dr. Southgate Leigh, Virginia, relative to the need for closer cooperation between the county and state associations and the American Medical Association.

Dr. F. S. Crockett, Indiana, moved that the report be adopted. The motion was seconded by Dr. Arthur J. Bedell, New York, and carried.

### Request for Publicity by Reference Committees Concerning Hearings on Matters Referred to Them

Dr. D. E. Sullivan, New Hampshire, presented the following request, which was referred to the Reference Committee on *Rules and Order of Business:*

Whenever a resolution or motion is referred to a Reference Committee it shall be the duty of the chairman of such committee to give it publicity in the Daily Bulletin and by such other means as may be convenient, stating the subject-matter and the time and place at which a hearing will be given.

### Report of Committee on Medicinal Alcohol

Dr. William H. Mayer, Chairman, presented the following statement:

A request was made that this committee report to the House of Delegates the present status of the legislation which has been the subject of so much controversial discussion before this group for some years. The committee felt some years ago that it was best that this subject be discussed in executive *session because of the tenderness of the situation.*

When the Lambert-Yellowley suit was before the Supreme Court, the House of Delegates felt that, in the event that section 7 of the Volstead Act were declared unconstitutional, the prescription of alcohol should have some adequate regulation. A committee consisting of Dr. Southgate Leigh, Dr. Paul White, Dr. Tom B. Throckmorton and myself was created to draft such regulations in the event of the success of this suit. The committee had referred to it from time to time certain other resolutions, one of which was that certain bills should be prepared against the continuance of the irrelation of the United States government limiting the practice of medicine and the principle involved in section 7 of the Volstead Act.

This committee was also required to draft, and make a part of this bill, certain reasonable regulations. We studied the proposition. We understood the practical side of it; we appealed to the various governmental officers for their suggestions, and we felt that our time would be wasted were we to present any such legislation under the conditions which then existed.

We appeared before the Wickersham Committee, feeling that this subject was germane. Dr. Woodward and myself represented the American Medical Association, and I think that I may say with pardonable pride that, of all the recommendations of the Wickersham Commission, one unanimous report was in complete support of the principle outlined by our association.

These bills were eventually drafted after the Wickersham Commission recommended that the irrelation contained in the limitation from nine to ten days be removed from the Volstead Act. These bills were prepared and introduced at the present session of Congress. There were similar bills in the House, one presented by Senator Copeland of New York and the second by Representative James Beck of Pennsylvania. Hearings were held on these bills. Dr. Woodward appeared before the House hearings, at which time Colonel Woodcock and Commissioner Doran felt that we had placed in those bills no statement concerning the amount which might be prescribed at any one time. You can readily see our difficulty. Were we to have made this amount a large quantity of alcohol, our recommendation would have been the subject of considerable criticism; secondly, had we put a small quantity in, say four ounces of prescription, immediately we would have been accused of trying to increase the service charge to our patients by repeated subscriptions. Being between Scylla and Charybdis, we simply stated that we felt that that should be subject to adequate regulation. Commissioner Doran and Colonel Woodcock asked that the bill be so amended that it would contain definite legal restrictions to the point that it would place in the hands of the Secretary of the Treasury and the Attorney-General, now jointly controlling the medicinal alcohol situation, the power to put down those regulations governing the prescription of whisky.

Now, gentlemen, I want to say that I don't know what the medical association would do without Dr. Woodward at Washington. His contacts and his associations, the high plane on which you are represented, is something that you could not buy elsewhere. His commissionership of health in the District of Columbia for over twenty years has given him an entrée and a standing there which makes him respected by all people, and you gentlemen derive reflected credit from his career. So our motives were always understood in these things; but we have first fought for a principle, that principle which reserves the right to you to prescribe in the legitimate practice of medicine anything that God has created or may create, for the benefit of your patient. Aside from that I think that we have also represented your point of view in that we have insisted that regulatory measures should always be in force so that the intent and purpose of the laws of these United States might be safeguarded.

We have no other statement to make concerning this. I don't care whether they put all the whisky six miles under the ocean so far as I am concerned, but I do say if this principle were extended it might be just as easy for Congress to say that you must consult with a recognized chiropractor before you do an appendectomy.

I have made some thirty-six trips to Washington, back and forth, during the last six years. I may say that the representatives of the departments of the government are most cordial gentlemen. Our bills at the present time have been postponed in one committee, mainly because one of our state association groups did not play ball. They simply went to one legislator and he had letters from the doctors that this was not necessary, so why bother with it, and for that reason his adverse vote resulted in the postponement of this thing at least temporarily. It may not be carried out this session, but the favorable report of the committee I think will eventually be gotten and that this thing will eventually become a law.

Until the Wickersham Commission made its report, the President had really no obligation not to veto this bill. At the present time I think he has. You know he is on record as saying that modification means nullification, so therefore if he sticks to that principle he must veto this legislation if it is passed by both Houses of Congress.

What I would like to have from you gentlemen is your expression of confidence in your Board of Trustees and its committee appointed for this purpose. Six years of work in this has been a distinct pleasure. Gentlemen, that is the situation. I hope you understand it and that this House will either express its confidence in its committee and the Board of Trustees in this matter, or see fit to advise us as to a course which will be acceptable to you.

Some organizations throughout the country have gone in the wrong direction and have taken unto themselves to dictate policies which have become confused with ours. In one particular case an estimable gentleman stepped into the committee and gave, I think, the most remarkable lecture on the medicinal values of beer that I have ever heard, so much so that I was convinced when he got through that I thought it was wonderful, and yet I recognized that the people there did not understand, that it was clouding the issue on a principle and helped to defeat our purposes at the time. For that reason I wish your committee might have your complete confidence in this matter so that we might go forward in the future.

Dr. Samuel J. Kopetzky, New York, moved that the report be adopted and that it is the sense of the House that it express its thanks, its appreciation, and its confidence in the committee which has just reported, the motion was seconded by Dr. Carl F. Moll, Michigan, and carried after discussion by Dr. Southgate Leigh, Virginia.

### Time of Thursday Meeting

Dr. Arthur C. Morgan, Pennsylvania, moved that the Thursday afternoon meeting be called to order at 1 o'clock. The motion was seconded by Dr. Samuel J. Kopetzky, New York, and carried.

Dr. B. F. Bailey, Nebraska, moved that the House arise from executive session. The motion was seconded by Dr. Samuel J. Kopetzky, New York, and carried.

The House recessed at 5:10 p. m., to meet at 1 o'clock, Thursday afternoon, May 12.

## *Fourth Meeting—Thursday Afternoon, May 12*

The House of Delegates was called to order at 1 p. m., by the Speaker, Dr. F. C. Warnshuis.

### Report of Reference Committee on Credentials

Dr. J. D. Brook, Chairman, stated that Dr. L. C. Ingram, who had been vouched for by Dr. G. H. Edwards, president of the Florida Medical Association, and by the other delegate from Florida, Dr. Bundy Allen, but whose name did not appear on the Secretary's list of delegates, had made application to be seated in place of Dr. C. D. Christ. Dr. Brook moved that Dr. Ingram be seated. The motion was seconded by several delegates, and carried, and Dr. L. C. Ingram was seated.

Dr. Brook stated that a total of 157 delegates had filed proper credentials, and moved that the report of the Reference Committee be adopted. The motion was seconded by Dr. Charles J. Whalen, Illinois, and carried.

On motion of Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. Arthur J. Bedell, New York, and carried, the House dispensed with the reading of the minutes.

### Report of Reference Committee on Rules and Order of Business

Dr. R. W. Fouts, Nebraska, presented the following report:

The following resolution was introduced by Dr. D. E. Sullivan of New Hampshire:

> *Resolved*, That whenever a resolution is referred to a reference committee it shall be the duty of the chairman of such committee to give publicity to the same in the Daily Bulletin and by such other means as may be convenient, stating the subject matter, the time and place at which a hearing will be given.

Your committee feels that it would be impractical to establish a hard and fast rule, such as implied in this resolution, but would suggest that any one interested in a resolution referred to a reference committee immediately communicate with the chairman of said committee as to the time and place of their meeting.

B. L. Bryant, Chairman.
R. W. Fouts, Secretary.

On motion of Dr. Fouts, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the report of the Reference Committee on Rules and Order of Business was adopted.

### Report of Reference Committee on Legislation and Public Relations

Dr. Grant C. Madill, Chairman, presented the following report:

1. Your committee has considered the statement presented by Dr. Holman Taylor, objecting to the reduction of officers in the Medical and Dental Corps of the Army, and approves of the recommendations contained therein.

2. Your committee also approves of the resolutions introduced by Dr. Burt R. Shurly, relative to increasing the burden of taxation on the medical profession.

Grant C. Madill, Chairman.
J. F. Hagerty.
Southgate Leigh.
C. J. Whalen.
A. A. Ross.

It was moved by Dr. Madill that the first section of the report, protesting against the reduction of medical officers in the army, be adopted. The motion was seconded by Dr. Alexius McGlannan, Maryland, and carried.

Dr. Madill also moved that the second section of the report, dealing with the burden of taxation on the medical profession, be adopted. The motion was seconded by Dr. Samuel P. Mengel, Pennsylvania, and carried.

On motion of Dr. Madill, seconded by Dr. Alexius McGlannan, Maryland, and carried, the report of the Reference Committee on Legislation and Public Relations was adopted as a whole.

The House recessed for ten minutes.

### Report of Reference Committee on Amendments to Constitution and By-Laws

Dr. N. B. Van Etten, Chairman, read the following report:

Considering the request of the Secretary for a decision of the House of Delegates on the question of either amending the By-Laws or adding a standing rule, incorporating the sense of the resolution adopted at the Philadelphia session in 1931, which reads as follows:

> *Resolved,* That it is the sense of the House of Delegates of the American Medical Association that these provisions of the Constitution and By-Laws of the American Medical Association dealing with the credentials of constituent state associations shall be so construed by the Reference Committee on Credentials that when a constituent state association reports that one of its delegates and his respective alternate are both unable to attend a specified annual session of the American Medical Association in which one of them could have functioned as a delegate, under such conditions (provided the constituted body or council of such a constituent state association is authorized by its state constitution and by-laws to act for the state association and its house of delegates), when such authorized state body has duly elected others of its members to fill the vacancies caused by the absence of both a delegate and his respective alternate, such a duly elected substitute delegate, or his duly elected substitute alternate who presents proper credentials shall be eligible to regular membership in the House of Delegates of the American Medical Association for such a specified annual session.

Your Reference Committee on Amendments to Constitution and By-Laws believes that a standing rule may wisely be added to the section on rules for the guidance of the Committee on Credentials which shall be 5 and shall read as follows:

> When a constituent state association reports that one of its elected delegates and his elected alternate are both unable to attend a specified annual session of the American Medical Association, the constituted authority of said constituent state association may fill the vacancies caused by the absence of both an elected delegate and his elected alternate, and such a substitute delegate or his substitute alternate who presents proper credentials signed by the president and secretary of said constituent state association shall be eligible to regular membership in the House of Delegates of the American Medical Association in such a specified session.

N. B. Van Etten, Chairman.
Walter F. Donaldson.
John H. O'Shea.
H. M. Johnson.

It was moved by Dr. Van Etten, seconded by Dr. Frederic E. Sondern, New York, and carried after discussion by Dr. Holman Taylor, Texas, that the report be adopted.

Dr. Van Etten moved that the Standing Rules be amended by the addition of this rule as number 5 under the heading Rules for the Guidance of the Committee on Credentials. The motion was seconded by Dr. Grant C. Madill, New York, and carried.

### Report of Reference Committee on Medical Education

Dr. Irvin Abell, Chairman, presented the following report:

Your Reference Committee has considered the resolution introduced by Dr. R. W. Fouts urging the Council on Medical Education and Hospitals to give all possible assistance to the small hospitals so that their standards may be raised and their efficiency be accordingly improved, and recommends its adoption.

Irvin Abell, Chairman.
William Allen Pusey.
J. F. Burnham.
Seale Harris.
F. S. Crockett.

On motion of Dr. Abell, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the report of the Reference Committee on Medical Education was adopted.

### Report of Judicial Council

Dr. George Edward Follansbee, Chairman, presented the following supplementary report of the Judicial Council, which was adopted on motion of Dr. Follansbee, seconded by Dr. G. Henry Mundt, Illinois, and carried:

The privilege of healing the sick as a profession is a right granted only to those properly qualified and licensed by the state. It is a privilege belonging only to the medical profession. It is a sacrifice of professional dignity that this exclusive right of medicine is so often sold for individual gain or its possessor deprived of it against his will. In increasing numbers, physicians are disposing of their professional attainments to lay organizations under terms which permit a direct profit from the fees or salaries paid for their services to accrue to the lay bodies employing them. Such a procedure is absolutely destructive of that personal responsibility and relationship which is essential to the best interests of the patient.

Outstanding examples of this type of unearned gain are not difficult to find. There are insurance companies administering workmen's compensation benefits wherein the salaries or fees paid to the physician by the insurance company are so much below the legal fees on which the premium paid by the industry is based as to furnish a large direct profit to the insurance company. As mentioned in a former report of the Council, certain hospitals are forbidding their staffs of physicians to charge fees for their professional services to "house cases" but are themselves collecting such fees and absorbing them in the hospital income. Some universities, by employing full time hospital staffs and opening their doors to the general public, charging such fees for the professional care of the patients as to net the university no small profit, are in direct and unethical competition with the profession at large and their own graduates. They are making a direct profit by a practice of questionable legality, from the professional care. There are other examples which could be cited but those mentioned suffice.

The increasing number of such instances indicates either a thoughtlessness or a selfishness on the part of the participants that is disturbing to the Judicial Council and in its opinion warrants the Council in bringing the practice, with the disapproval, again to the attention of the House of Delegates and through it to the profession at large.

## NEW BUSINESS

### Proposed Amendment to Constitution

Dr. Southgate Leigh, Virginia, requested that section 2, article 5, of the Constitution be amended so that the presidents of the state societies shall be ex officio members of the House of Delegates.

The Speaker announced that this proposed amendment would lie over until the next annual session.

### Resolutions of Appreciation to Dr. Edward B. Heckel

Dr. C. W. Roberts, Georgia, presented the following resolutions, which were adopted on motion of Dr. Roberts, seconded by Dr. Frederic E. Sondern, New York, and carried unanimously by a rising vote:

> Whereas, Dr. Edward B. Heckel has served this House of Delegates for a quarter of a century; and
>
> Whereas, He has served continuously as a member of the Board of Trustees for eight years, during seven of which he has been unanimously chosen by the Board as its Chairman, in recognition of the faithfulness, self-sacrifice and efficiency that he has displayed; be it
>
> *Resolved,* That the House of Delegates extend to Dr. Heckel a rising vote of thanks; and be it further
>
> *Resolved,* That this resolution be spread on the minutes of the House of Delegates and that a copy of it be suitably engraved and presented to Dr. Heckel.

### Report of Reference Committee on Credentials

Dr. J. D. Brook, Chairman, stated that Dr. G. F. Zinninger, Ohio, who presented no credentials but whose name appeared on the Secretary's list and who was vouched for by other delegates from Ohio, desired to be seated as alternate delegate for Dr. C. W. Waggoner, Ohio.

Dr. J. Newton Hunsberger, Pennsylvania, moved that Dr. Zinninger be seated. The motion was seconded by Dr. John P. De Witt, Ohio, and carried.

It was announced that there were now 158 delegates who had filed proper credentials. The Secretary called the roll and stated that more than a quorum was in attendance.

### Report of Reference Committee on Hygiene and Public Health

Dr. Junius B. Harris, Chairman, stated that the Reference Committee had considered "A Standard Classified Nomenclature of Disease" as submitted by the National Conference on Nomenclature of Disease in a temporary draft, and recommended that, until the conference had completed its report, the Reference Committee would have no report to make except that, on completion of the draft by the conference, the matter in toto should be submitted to the International Bureau of Vital Statistics and then to the American Medical Association. Dr. Harris moved that the report be adopted.

Dr. Frederic E. Sondern, New York, moved as a substitute for Dr. Harris's motion that the House favor the endorsement of the preliminary draft of "A Standard Classified Nomenclature of Disease." This motion was seconded by Dr. Arthur J. Bedell, New York, and carried, after discussion by Dr. Junius B. Harris, California, and Holman Taylor, Texas.

## ELECTION OF OFFICERS

### Election of President-Elect

The Speaker called for nominations for the office of President-Elect of the American Medical Association.

Dr. Randolph Winslow, Maryland, nominated Dr. Dean Lewis, Baltimore. The nomination was seconded by Dr. Irvin Abell, Kentucky; Dr. Mather Pfeiffenberger and Dr. G. Henry Mundt, Illinois; Dr. E. G. Wood, Tennessee; Dr. Walter Ralph Steiner, Connecticut; Dr. J. F. Hassig, Kansas; Dr. Walter F. Donaldson, Pennsylvania; Dr. John H. O'Shea, Washington; Dr. A. W. Skelsey, North Dakota, and Dr. Alexius McGlannan, Maryland.

Dr. Southgate Leigh, Virginia, nominated Dr. Hugh S. Cumming, Washington, D. C. The nomination was seconded by Dr. Edmond F. Cody, Massachusetts; Dr. Stanley H. Osborn, Section on Preventive and Industrial Medicine and Public Health; Dr. Bertram L. Bryant, Maine; Dr. Carl F. Moll, Michigan; Dr. J. N. Baker, Alabama, and Dr. H. W. Wade, Philippine Islands.

Dr. Fred Moore, Iowa, nominated Dr. Walter L. Bierring, Des Moines, Iowa. The nomination was seconded by Dr. William Duffield in behalf of the full California delegation.

The Speaker declared the nominations closed, and appointed as tellers Dr. Samuel J. Kopetzky, New York; Dr. William R. Molony, California; Dr. T. O. Freeman, Illinois; Dr. S. L. Baysinger, Missouri, and Dr. E. G. Wood, Tennessee.

The Secretary announced that 152 members of the House had recorded themselves as present, and that 151 votes had been cast, of which Dr. Dean Lewis, Baltimore received 73; Dr. Hugh Cumming, Washington, D. C., 47, and Dr. Walter L. Bierring, Des Moines, Iowa, 31. The Speaker declared that none of the candidates had received a majority vote of the House.

The Secretary announced as the result of the second ballot that there were 153 members of the House who had recorded themselves as present and that 152 votes had been cast, of which Dr. Dean Lewis, Baltimore, received 98 and Dr. Hugh Cumming, Washington, D. C., 54.

The Speaker declared Dr. Dean Lewis, having received the majority of the votes cast, elected President-Elect of the American Medical Association.

On motion of Dr. Southgate Leigh, Virginia, duly seconded and carried, the election of Dr. Dean Lewis was made unanimous.

### Election of Vice President

Dr. H. A. Miller, New Mexico, nominated Dr. W. H. Seemann, New Orleans. Dr. John H. O'Shea, Washington, seconded the nomination and moved that the nominations be closed and the Secretary cast the unanimous ballot of the House for Dr. Seemann.

The Speaker declared that as Dr. Seemann was a member of the House of Delegates, he was not eligible to election as Vice President.

Dr. Louis J. Hirschman, Michigan, nominated Dr. Rudolph Matas, New Orleans, as Vice President. The nomination was seconded by Dr. Seale Harris, Alabama, who moved that the nominations be closed and the Secretary be instructed to cast the unanimous ballot of the House for Dr. Matas as Vice President. The motion was regularly seconded and carried, and the Secretary cast the unanimous vote of the House of Delegates for Dr. Rudolph Matas. The Speaker declared Dr. Matas elected as Vice President of the American Medical Association for the ensuing year.

### Election of Secretary

Dr. A. E. Bulson, Indiana, nominated Dr. Olin West, Chicago, as Secretary, and the nomination was seconded by Dr. H. H. Shoulders, Tennessee.

Dr. Samuel P. Mengel, Pennsylvania, moved that the nominations be closed and the unanimous ballot of the House be cast for Dr. Olin West as Secretary. The motion was seconded by Dr. H. B. Everett, Tennessee, and carried unanimously.

The Vice Speaker cast the ballot of the House for Dr. Olin West, Chicago, as Secretary, and the Speaker declared Dr. West elected unanimously for the ensuing year.

### Election of Treasurer

Dr. Edward B. Heckel, Chairman, Board of Trustees, nominated Dr. Austin A. Hayden, Chicago, to succeed himself as Treasurer.

Dr. Arthur J. Bedell, New York, moved that the nomination be confirmed. The motion was seconded by several delegates, and carried, and the Speaker declared the nomination confirmed and Dr. Austin A. Hayden, Chicago, elected to the office of Treasurer.

### Election of Speaker of the House of Delegates

The Vice Speaker, Dr. A. E. Bulson, took the chair and announced that nominations were in order for Speaker of the House of Delegates.

Dr. Louis J. Hirschman, Michigan, nominated Dr. F. C. Warnshuis, Grand Rapids, Mich., as Speaker of the House of Delegates. Dr. T. O. Freeman, Illinois, seconded the nomination and moved that nominations be closed and the Secretary cast the unanimous ballot of this House for Dr. Warnshuis as Speaker. The motion was seconded by several delegates, and carried unanimously.

The Secretary cast the vote of the House and Dr. F. C. Warnshuis, Grand Rapids, Mich., was declared Speaker of the House of Delegates for the ensuing year.

### Election of Vice Speaker of the House of Delegates

The Speaker resumed the chair and called for nominations for Vice Speaker of the House of Delegates.

Dr. R. L. Sensenich, Indiana, nominated Dr. Albert E. Bulson, Fort Wayne, Ind. The nomination was seconded by Dr. John A. Card, New York; Dr. William G. Ricker, Vermont; Dr. Walter F. Donaldson, Pennsylvania; Dr. R. W. Fouts, Nebraska, and Dr. W. Albert Cook, Oklahoma, who moved that the nominations be closed and the Secretary cast the ballot for Dr. Bulson as Vice Speaker. The motion was seconded by Dr. Samuel J. Kopetzky, New York, and carried.

The Secretary cast the unanimous ballot of the House of Delegates for Dr. A. E. Bulson, Fort Wayne, Ind., for Vice Speaker of the House of Delegates and the Speaker declared Dr. Bulson elected as Vice Speaker of the House for the ensuing year.

### Election of Trustees

The Speaker announced that the next order of business was the election of a Trustee for a term of five years to succeed Dr. Edward B. Heckel, whose term of office had expired and who because of constitutional provisions was not eligible for reelection.

Dr. N. B. Van Etten, New York, nominated Dr. Arthur W. Booth, Elmira, N. Y. The nomination was seconded by Dr. Daniel S. Dougherty, New York; Dr. Samuel P. Mengel, Pennsylvania; Dr. R. H. Walker, West Virginia; Dr. R. L. Sensenich, Indiana; Dr. H. G. Stetson, Massachusetts; Dr. B. S. Pollak, New Jersey, and Dr. H. B. Everett, Tennessee, who moved that the nominations be closed and the Secretary cast the unanimous ballot of the House for Dr. Booth as Trustee of the Association. The motion was seconded by several members, and unanimously carried.

The secretary cast the unanimous vote of the House of Delegates for Dr. Arthur W. Booth, Elmira, N. Y., to succeed Dr. E. B. Heckel as a member of the Board of Trustees and the Speaker declared Dr. Booth elected as a Trustee of the Association for a term of five years.

The Speaker called for nominations for the office of Trustee to succeed Dr. Rock Sleyster, Wauwatosa, Wis., whose term of office had expired.

Dr. Joseph F. Smith, Wisconsin, placed in nomination Dr. Rock Sleyster, Wauwatosa, Wis., to succeed himself as Trustee of the American Medical Association, for a term of five years. The nomination was seconded by Dr. C. B. Wright, Minnesota; Dr. Walter F. Donaldson, Pennsylvania; Dr. J. W. Van Derslice, Illinois; Dr. William R. Molony, California; Dr. H. M. Johnson, Minnesota; Dr. D. E. Sullivan, New Hampshire; Dr. Seale Harris, Alabama; Dr. E. A. Hines, South Carolina, and Dr. E. P. Sloan, Illinois, who moved that the nominations be closed and the Secretary be instructed to cast the ballot of the House for Dr. Sleyster. The motion was seconded by Dr. Mather Pfeiffenberger, Illinois, and carried unanimously.

The Secretary cast the unanimous ballot of the House for Dr. Rock Sleyster, to succeed himself as a member of the Board of Trustees, and the Speaker declared Dr. Sleyster elected as a member of the Board for a term of five years.

## Nominations for Standing Committees

Dr. E. H. Cary, President, presented the following nominations:

Dr. E. P. Sloan, Bloomington, Ill., to succeed Dr. Donald Macrae, Jr. (deceased), on the Judicial Council for a term of five years.

Dr. Ray Lyman Wilbur, Washington, D. C., to succeed himself as a member of the Council on Medical Education and Hospitals for a term of seven years, and Dr. F. A. Washburn, Boston, for a term of six years to succeed on that Council Dr. Dean Lewis, Baltimore, who had just been elected President-Elect.

Dr. Frank H. Lahey, Boston, to succeed himself as a member of the Council on Scientific Assembly, for a term of five years, and Dr. Irvin Abell, Louisville, Ky., to succeed himself on the Council on Scientific Assembly to fill out the term of Dr. Lewis H. McKinnie (deceased), ending in 1934.

Dr. C. E. Humiston, Illinois, moved that these nominations be confirmed by the House. The motion was seconded by Dr. G. Henry Mundt, Illinois, and carried.

## Address of President-Elect Dean Lewis

The Speaker introduced President-Elect Dean Lewis, who addressed the House as follows:

*Mr. Speaker and Members of the House of Delegates:*

It is needless for me to tell you how highly honored I am. You know every one has an ambition; it has always been my ambition to be President of the American Medical Association. The only sad thing about it is that it seems like the journey's end. I don't know how I can show my appreciation for the honor that you have conferred on me more than by filling to the best of my ability the duties of the office. I am greatly indebted to you.

## Election of Affiliate and Associate Fellows

The Secretary read the following nominations for Affiliate and Associate Fellowship:

### APPLICANTS FOR AFFILIATE FELLOWSHIP APPROVED BY COUNCIL ON SCIENTIFIC ASSEMBLY

Craig, John W., Lohrville, Iowa.
Finch, H. C., Pulaski, Iowa.
Hofstetter, George, Clinton, Iowa.
Smith, Ferdinand J., Milford, Iowa.
Smith, Frank S., Nevada, Iowa.
Bennet, Eben H., Lubec, Maine.
Cobb, Oliver, W., Easthampton, Mass.
Twombley, Edward L., Boston, Mass.
Moorhead, Martha B., Minneapolis.
Rishmiller, J. H., Minneapolis.
Warham, Thomas T., Minneapolis.
Wright, C. D'A., Minneapolis.
Sweetman, R. H., Sauk Center, Minn.
Delavan, D. Bryson, New York.
Fox, George Henry, New York.
McEncroe, John F., Schenectady, N. Y.
Hawkins, John A., Solebury, Pa.
Mahon, John B., Pittston, Pa.
Stevens, J. V., Janesville, Wis.

### APPLICANTS FOR ASSOCIATE FELLOWSHIP FROM AMERICAN MEDICAL MISSIONARIES APPROVED BY JUDICIAL COUNCIL

Baker, Donald H., Mondome, Belgian Congo.
Baugh, Harold T., Andong, Chosen.
Brinkman, Harry, Resht, Persia.
Calvert, R. N., Shanghai, China.
Carman, John S., Hanumakonda, India.
Dorman, Henry G., Beirut, Syria.
Gibbons, Howard C., Burma, India.
Harley, George W., Monrovia, Liberia, West Africa.
Harris, Edwin A., Sake, Belgian Congo.
King, Judson C., Belgian Congo.
Manley, Charles R., South India.
Rue, George Henry, Seoul, Chosen.
Stannard, Raymond E., Ningpo, China.
Tuttle, Glen Willis, Belgian Congo.
Werelius, Walter R., Manipur, Assam, India.
Westcott, George W., Belgian Congo.

### APPLICANTS FOR ASSOCIATE FELLOWSHIP NOMINATED BY THE SECTIONS INDICATED

### Laryngology, Otology and Rhinology

Boyko, G. Victor, Paterson, N. J.
Gilden, Charles T., Jr., Philadelphia.
Lieban, E. Alan, New York.

### Pathology and Physiology

Cunningham, Robert S., Nashville, Tenn.
Fulton, John F., New Haven, Conn.
Langston, W. C., Little Rock, Ark.
LeCount, E. R., Chicago.
Looney, J. M., Philadelphia.
Taylor, Walter F., Dallas, Texas.

### Nervous and Mental Diseases

Jungeblut, Claus W., New York.

### Preventive and Industrial Medicine and Public Health

Brokaw, Raymond V., New York.
Exner, Max Joseph, New York.
Luckett, George S., Stanford University, Calif.
Norton, John F., Detroit.

On motion of Dr. Arthur C. Morgan, Pennsylvania, seconded by Dr. Daniel S. Dougherty, New York, and carried, the applicants listed were elected to Affiliate or Associate Fellowship in the American Medical Association, as indicated.

## Place of the 1933 Annual Session

The Speaker announced that the next order of business was the selection of the place of the 1933 annual session and requested that the Board of Trustees present nominations:

Dr. Edward B. Heckel, Chairman, Board of Trustees, stated that the officers of the Association had investigated the facilities of the cities from which invitations for the 1933 annual session of the Association had been received and reported that the following cities, mentioned in alphabetical order, had adequate facilities to accommodate a successful meeting of the Association: Atlantic City, Cleveland and Milwaukee.

Dr. F. Gregory Connell, Wisconsin, extended an invitation from Milwaukee; Dr. Walt P. Conaway, New Jersey, an invitation from Atlantic City, and Dr. C. W. Stone, Ohio, an invitation from Cleveland.

The Secretary announced that 153 delegates were registered and that of 128 votes cast, 73 were for Milwaukee, 44 for Cleveland, and 11 for Atlantic City.

The Speaker declared Milwaukee the place for the next annual session of the American Medical Association, as it had received a majority of the votes cast.

## Unfinished Business

Dr. N. B. Van Etten, New York, moved that the House of Delegates unanimously express its appreciation by a hearty vote of thanks to the Louisiana State Medical Society, to the local medical societies, to the Woman's Auxiliary, to the city of New Orleans and to the press, for their delightful hospitality. The motion was seconded by Dr. Irvin Abell, Kentucky, and carried unanimously. The Secretary was requested to tender the appreciation of the House.

The House of Delegates adjourned sine die at 3 o'clock.

# MINUTES OF THE SECTIONS

## SECTION ON PRACTICE OF MEDICINE

### WEDNESDAY, MAY 11—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. G. Gill Richards, Salt Lake City.

Dr. Adolph S. Rumreich, Washington, D. C., read a paper on "The Typhus-Rocky Mountain Spotted Fever Group: Developments in Epidemiology and Clinical Considerations." Discussed by Drs. Victor H. Bassett, Savanah, Ga.; G. Gill Richards, Salt Lake City, and Adolph S. Rumreich, Washington, D. C.

Drs. John W. Towey, Powers, Mich., Henry C. Sweany, Chicago, and Willis H. Huron, Iron Mountain, Mich., presented a paper on "A Severe Bronchial Asthma Apparently Due to Fungus Spores Found in Maple Bark." Discussed by Drs. Francis M. Rackemann, Boston; Frank Smithies, Chicago; N. F. Thiberge, New Orleans, and John W. Towey, Powers, Mich.

Dr. Walter L. Bierring, Des Moines, Iowa, introduced the lecturer for this year, Dr. William S. Thayer, Baltimore, who read a paper on "Thoughts on Medical Education in the United States."

Dr. Augustus B. Wadsworth, Albany, N. Y., read a paper on "The Value of Serum Therapy in Pneumonia, Meningitis, Scarlet Fever and Other Streptococcus Infections." Discussed by Drs. W. G. Smillie, Boston; Harold L. Amoss, Durham, N. C.; Virgil E. Simpson, Louisville, Ky., and Augustus B. Wadsworth, Albany, N. Y.

Dr. H. Milton Conner, Rochester, Minn., read a paper on "Injection of Liver Extract in the Treatment of Pernicious Anemia." Discussed by Drs. John H. Musser, New Orleans, and H. Milton Conner, Rochester, Minn.

### THURSDAY, MAY 12—AFTERNOON

A joint meeting was held with the Section on Preventive and Industrial Medicine and Public Health.

The following papers were read as a symposium on "The Relation of Private Practice to Preventive Medicine":

Dr. Frank G. Boudreau, Geneva, Switzerland: "The Relationship of the Doctor to Society." Discussed by Dr. John L. Morse, Boston.

Dr. Roger I. Lee, Boston: "Preventive Medicine in General Medical Practice." Discussed by Dr. Stewart R. Roberts, Atlanta, Ga.

Dr. J. N. Baker, Montgomery, Ala.: "Organized Medicine and Public Health." Discussed by Dr. H. F. Vaughan, Detroit.

Dr. Morris Fishbein, Chicago: "Present-Day Trends of Private Practice in the United States." Discussed by Dr. E. Starr Judd, Rochester, Minn.

The four papers were discussed by Drs. G. Henry Mundt, Chicago, and J. Cyril Eby, Plaquemine, La.

### FRIDAY, MAY 13—AFTERNOON

The following officers were elected: chairman, Dr. Reginald Fitz, Boston; vice chairman, I. I. Lemann, New Orleans; secretary, William J. Kerr, San Francisco; delegate, James S. McLester, Birmingham, Ala.; alternate, J. E. Paullin, Jr., Atlanta, Ga. Executive Committee: Dr. Ernest E. Irons, Chicago; Dr. L. W. Gorham, Albany, N. Y.; Dr. Reginald Fitz, Boston.

Dr. Alexius M. Forster, Colorado Springs, Colo., read a paper on "Nontuberculous Respiratory Diseases." Discussed by Drs. William S. Thayer, Baltimore; Frank Smithies, Chicago, and Alexius M. Forster, Colorado Springs, Colo.

Dr. Eugene S. Kilgore, San Francisco, read a paper on "Treatment of Coronary Thrombosis." Discussed by Drs. I. I. Lemann, New Orleans; William S. Thayer, Baltimore; O. P. J. Falk, St. Louis, and Eugene S. Kilgore, San Francisco.

Dr. G. Gill Richards, Salt Lake City, read the chairman's address, entitled "The Family Doctor and the Pioneer Physician of the West."

Dr. John O. Bower, Philadelphia, read a paper on "The Mortality in Acute Appendicitis." Discussed by Drs. Donald Guthrie, Sayre, Pa.; William E. Robertson, Philadelphia, and John O. Bower, Philadelphia.

Drs. Willard O. Thompson, Chicago, and James H. Means, Boston, presented a paper entitled "A Comparison of Exophthalmic Goiter in Boston and Chicago with Special Reference to the Iodine Reaction." Discussed by Drs. Frank H. Lahey, Boston; Jacob Lerman, Boston; Harry B. Friedgood, Ann Arbor, Mich.; Eugene S. Kilgore, San Francisco, and Willard O. Thompson, Chicago.

Dr. John B. Youmans, Nashville, Tenn., read a paper on "Endemic Nutritional Edema." Discussed by Drs. Roy H. Turner, New Orleans, and John B. Youmans, Nashville, Tenn.

## SECTION ON SURGERY, GENERAL AND ABDOMINAL

### WEDNESDAY, MAY 11—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Hubert A. Royster, Raleigh, N. C.

Drs. Eslie Asbury and H. Kennon Dunham, Cincinnati, presented a paper on "Thoracoplasty in Pulmonary Tuberculosis." Discussed by Drs. Alton Ochsner, New Orleans; E. J. O'Brien, Detroit; Frank K. Boland, Atlanta, Ga.; A. M. Forster, Colorado Springs, Colo.; Horace Reed, Oklahoma City, and H. Kennon Dunham, Cincinnati.

Dr. C. R. Edwards, Baltimore, read a paper on "Acute Intestinal Obstruction Due to Mesenteric Defects Requiring Massive Resection." Discussed by Drs. Owen H. Wangensteen, Minneapolis; E. D. Martin, New Orleans; Harold M. Trusler, Indianapolis; Willard Bartlett, Jr., St. Louis, and C. R. Edwards, Baltimore.

The following papers were read as a symposium on "Traumatic and Industrial Surgery":

Dr. Lloyd Noland, Birmingham, Ala.: "Some Problems of Administration in Industrial Surgery."

Dr. Grover C. Penberthy, Detroit: "The Surgeon's Responsibility in the Readjustment of the Injured."

Dr. W. L. Estes, Jr., Bethlehem, Pa.: "After-Care of the Injured."

Dr. E. Dunbar Newell, Chattanooga, Tenn.: "An Outline of the Treatment of Fractures by the General Surgeon."

These four papers were discussed by Drs. George A. Hendon, Louisville, Ky.; Joseph F. Smith, Wausau, Wis.; Willis C. Campbell, Memphis, Tenn.; Wayland Morrison, Los Angeles; Muir Bradburn, New Orleans; John Darrington, Yazoo City, Miss.; Frank Warner, Columbus, Ohio; Robert Carothers, Cincinnati, and W. L. Estes, Jr., Bethlehem, Pa.

A moving picture on fractures was shown by Dr. Robert Carothers, Cincinnati.

### THURSDAY, MAY 12—MORNING

Dr. Frank K. Boland, Atlanta, Ga., read a paper on "Results of Treatment in Acute Appendicitis." Discussed by Drs. J. C. A. Gerster, New York; John O. Bower, Philadelphia; Southgate Leigh, Norfolk, Va.; Roland Hill, St. Louis; Harold M. Trusler, Indianapolis; Horace Reed, Oklahoma City; L. F. Barney, Kansas City, Kan., and Frank K. Boland, Atlanta, Ga.

Dr. Alfred W. Adson, Rochester, Minn., read a paper on "Thrombo-Angiitis Obliterans: Results of Sympathectomy." Discussed by Drs. Arthur W. Allen, Boston, and Alfred W. Adson, Rochester, Minn.

*Dr. Hubert A. Royster, Raleigh, N. C.*, read the chairman's address, entitled "Surgical Vision."

Dr. Frederick A. Coller, Ann Arbor, Mich., read a paper on "Dehydration Attendant on Surgical Operations." Discussed by Drs. Thomas G. Orr, Kansas City, Mo.; Isidore Cohn, New Orleans; George A. Hendon, Louisville, Ky.; J. Shelton Horsley, Richmond, Va., and Frederick A. Coller, Ann Arbor, Mich.

Dr. E. Starr Judd, Rochester, Minn., read a paper on "A Study of the Late Results of Operations for Diseases of the Biliary Tract."

Dr. J. Tate Mason, Seattle, read a paper on "The Conservative Treatment of Cholecystitis."

These two papers were discussed by Drs. R. L. Payne, Norfolk, Va.; Frank H. Lahey, Boston; Moses Behrend, Philadelphia; Willard Bartlett, Jr., St. Louis; I. S. Ravdin, Philadelphia, and J. Tate Mason, Seattle.

### Friday, May 13—Morning

The following officers were elected: chairman, Dr. F. W. Rankin, Rochester, Minn.; vice chairman, Dr. Lloyd Noland, Birmingham, Ala.; secretary, Dr. Howard M. Clute, Boston; delegate, Dr. J. Tate Mason, Seattle; alternate, Dr. Frank H. Lahey, Boston.

Dr. Géza de Takáts, Chicago, read a paper on "Surgical Attempts at Increasing Sugar Tolerance." Discussed by Drs. Joseph A. Danna, New Orleans; J. Shirley Sweeney, Dallas, Texas; Seale Harris, Birmingham, Ala., and Géza de Takáts, Chicago.

Dr. G. M. Dorrance, Philadelphia, read a paper on "Essential Factors in the Ideal Cleft Palate Operation." Discussed by Drs. Gordon B. New, Rochester, Minn.; G. V. I. Brown, Milwaukee; Vilray P. Blair, St. Louis, and G. M. Dorrance, Philadelphia.

Dr. Damon B. Pfeiffer, Philadelphia, read a paper on "Anterior Hemipylorosphincterectomy for Duodenal Ulcer and Pylorospasm." Discussed by Drs. Urban Maes, New Orleans; Norman McLeod Allen, Detroit, and Damon B. Pfeiffer, Philadelphia.

Drs. Howard C. Naffziger and Ottiwell Wood Jones, San Francisco, presented a paper on "The Operative Treatment of Progressive Exophthalmos Following Thyroidectomy."

Dr. R. S. Dinsmore, Cleveland, read a paper on "Hyperthyroidism in Children."

Dr. Howard M. Clute, Boston, read a paper on "The Results of Surgery in the Treatment of Exophthalmic Goiter."

These three papers were discussed by Drs. R. E. Semmes, Memphis, Tenn.; E. R. Arn, Dayton, Ohio; Donald Guthrie, Sayre, Pa.; R. M. Howard, Oklahoma City; Willard Bartlett, Jr., St. Louis; Frank H. Lahey, Boston; Howard C. Naffziger, San Francisco; R. S. Dinsmore, Cleveland, and Howard M. Clute, Boston.

## SECTION ON OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

### Wednesday, May 11—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Fred L. Adair, Chicago.

Dr. Percy W. Toombs, Memphis, Tenn., read a paper on "Preconceptional and Prenatal Care."

Dr. Alfred C. Beck, Brooklyn, read a paper on "The Management of Normal Labor."

Dr. J. C. Litzenberg, Minneapolis, read a paper on "Preventable Invalidism Following Childbirth."

These three papers were discussed by Drs. Grandison D. Royston, St. Louis; Phil C. Schreier, Memphis, Tenn.; Marie Pichel Levinson, New York; William F. Hewitt, Chicago; F. J. Schatz, St. Cloud, Minn.; Percy W. Toombs, Memphis, Tenn.; Alfred C. Beck, Brooklyn, and J. C. Litzenberg, Minneapolis.

Dr. Everett D. Plass, Iowa City, read a paper on "The Difficulties and Dangers of Forceps Deliveries."

Dr. W. E. Studdiford, New York, read a paper on "Breech Presentations and Their Delivery."

Dr. W. R. Cooke, Galveston, Texas, read a paper on "Contraindications to Cesarean Section."

These three papers were discussed by Drs. Edward L. King, New Orleans; Edward A. Schumann, Philadelphia; Grandison D. Royston, St. Louis; P. Brooke Bland, Philadelphia; H. G. Dorman, Beirut, Syria; J. Bay Jacobs, Washington, D. C.; E. D. Plass, Iowa City; W. E. Studdiford, New York, and W. R. Cooke, Galveston, Texas.

### Thursday, May 12—Afternoon

Dr. John T. Williams, Boston, read a paper on "The Relation of Respiratory Infections to Puerperal Infection." Discussed by Drs. Phillips John Carter, New Orleans; F. J. Schatz, St. Cloud, Minn., and John T. Williams, Boston.

Dr. P. Brooke Bland, Philadelphia, read a paper on "The Prevention of Maternal Injury Incident to Pregnancy and Labor from the Standpoint of the General Practitioner." Discussed by Drs. J. L. Baer, Chicago, and P. Brooke Bland, Philadelphia.

Dr. Fred L. Adair, Chicago, read the chairman's address, entitled "The Interrelationship of Mother and Fetus."

Dr. C. B. Upshaw, Atlanta, Ga., read a paper on "The Conservative Treatment of Eclampsia."

Dr. James C. Janney and Miss Elizabeth W. Walker, Boston, presented a paper on "Kidney Function in Pregnancy."

Dr. A. W. Rowe, Boston, read a paper on "The Toxemias of Pregnancy."

These three papers were discussed by Drs. E. L. King, New Orleans; Milton Smith Lewis, Nashville, Tenn.; Phil C. Schreier, Memphis, Tenn.; E. D. Plass, Iowa City; C. B. Upshaw, Atlanta, Ga.; James C. Janney, Boston, and A. W. Rowe, Boston.

Dr. George D. Huff, San Diego, Calif., read a paper on "Technic of Spinal Anesthesia in Lower Abdominal Surgery and Obstetrics." Discussed by Drs. John S. Lundy, Rochester, Minn.; H. G. Dorman, Beirut, Syria; J. B. Stoll, Fontanelle, Iowa, and George D. Huff, San Diego, Calif.

### Friday, May 13—Afternoon

The Committee on Maternal Welfare reported activity in connection with the White House Conference on Child Health and Protection. The volume on Obstetric Education has been published, and other manuscripts are now in the hands of the publishers. The members of the committee have been active in this work. The committee recommended that it be continued and that its activities be carried out in cooperation with the other organization represented on the Joint Committee for Maternal Welfare. It further recommended that the section sanction the incorporation of the Joint Committee on Maternal Welfare without the assumption of any financial responsibility by the section. The purpose of this committee is to further maternal welfare and to improve conditions surrounding maternity through the leadership of the medical profession.

On motion by Dr. Emil Novak, Baltimore, seconded by Dr. Arthur H. Curtis, Chicago, the report was adopted.

Dr. J. C. Litzenberg, Minneapolis, described the work of the American Board of Obstetrics and Gynecology.

The following officers were elected: chairman, Dr. Barton Cooke Hirst, Philadelphia; vice chairman, Dr. Willard R. Cooke, Galveston, Texas; secretary, Dr. James R. McCord, Atlanta, Ga.; delegate, Dr. Arthur H. Curtis, Chicago; alternate, Dr. Carl Henry Davis, Milwaukee.

Dr. W. H. Buecrmann, Portland, Ore., read a paper on "Vaginal Enterocele."

Dr. James C. Masson, Rochester, Minn., read a paper on "Consideration of Prolapse, Cystocele, Rectocele and True Vaginal Hernia."

These two papers were discussed by Drs. Harold E. Simon, Birmingham, Ala., and W. H. Buecrmann, Portland, Ore.

Dr. Arthur H. Curtis, Chicago, read a paper on "Adhesions of the Anterior Surface of the Liver." Discussed by Drs. Hilliard E. Miller, New Orleans; J. P. Pratt, Detroit, and Arthur H. Curtis, Chicago.

Dr. T. E. Jones, Cleveland, read a paper on "Cancer of the Cervix: A Review of Three Hundred and Seventy-Five Cases." Discussed by Drs. W. P. Healy, New York; L. Wallace Frank, Louisville, Ky., and James E. Davis, Detroit.

Drs. Emil Novak and S. M. R. Reynolds, Baltimore, presented a paper on "The Cause of Primary Dysmenorrhea, with Especial Reference to Hormonal Factors." Discussed by Drs. C. Jeff Miller, New Orleans; J. P. Pratt, Detroit, and Emil Novak, Baltimore.

## SECTION ON OPHTHALMOLOGY

### Wednesday, May 11—Morning

At the suggestion of the chairman, Dr. Harry Friedenwald, Baltimore, and on motion of Dr. Harry S. Gradle, duly seconded and carried, a committee consisting of Drs. Edward Jackson, William H. Wilder, Hunter H. McGuire, Joseph S. Lichtenberg, Arthur J. Bedell, Harry S. Gradle, Parker Heath and Harry Friedenwald was appointed to lay a wreath on the grave of the late Dr. Marcus Feingold, in token of the respect, esteem and affection of the members of the section.

Dr. Harry Friedenwald, Baltimore, read the chairman's address, entitled "The Progress of Ophthalmology."

Dr. Conrad Berens, New York, read a paper on "Resection Operation for Strabismus." Discussed by Drs. Luther C. Peter, Philadelphia; W. Thornwall Davis, Washington, D. C.; Walter B. Lancaster, Boston; Otis Wolfe, Marshalltown, Iowa, and Conrad Berens, New York.

Dr. Harry S. Gradle, Chicago, read a paper on "The Reaction Time of the Normal Pupil." Discussed by Drs. Charles A. Bahn, New Orleans; Edward B. Heckel, Pittsburgh, and Harry S. Gradle, Chicago.

Dr. William C. Finnoff, Denver, read a paper on "A Syndrome in Uveal Tuberculosis." Discussed by Drs. Ralph I. Lloyd, Brooklyn; Albert E. Bulson, Fort Wayne, Ind.; H. L. Hilgartner, Austin, Texas; Arthur J. Bedell, Albany, N. Y.; Jonas Friedenwald, Baltimore; Eugene R. Lewis, Los Angeles; Harry S. Gradle, Chicago; Sanford R. Gifford, Chicago; Sylvester J. Beach, Portland, Maine; William H. Crisp, Denver; T. B. Holloway, Philadelphia, and William C. Finnoff, Denver.

Dr. Arthur J. Bedell, Albany, N. Y., read a paper on "The Significance of Choroidal Hemorrhage." Discussed by Drs. Everett L. Goar, Houston, Texas, and William H. Wilder, Chicago.

Dr. Hunter H. McGuire, Winchester, Va., read a paper on "Gyrate Atrophy of the Choroid and Retina (Fuchs)." Discussed by Dr. T. B. Holloway, Philadelphia.

### THURSDAY, MAY 12—MORNING

Dr. Herbert Moulton, Fort Smith, Ark., exhibited specimens of choroidal sarcoma, shown later on the screen in connection with his paper.

Dr. Conrad Berens, New York, exhibited an eye speculum and a hand campimeter. (Description and cuts attached.)

Dr. Edward Jackson exhibited, for Dr. James M. Shields, Denver, a series of large photographs of specimens worked out from slides from the Clinic of Professor Fuchs, some furnished by Dr. Prentiss and some from the University of Iowa, illustrating the value of the large photograph in fixing the anatomy in the mind. These pictures showed:

1. The optic nerve entrance in a case of opaque nerve fibers.
2. A section showing the angle of the anterior chamber.
3. A section showing the retina with all its layers.
4. A further enlargement of the retina showing the rods and cones and their nuclei.

Dr. Jonas Friedenwald, Baltimore, presented a new ophthalmoscope.

Dr. John Green, Jr., St. Louis, exhibited epinephrine bitartrate powder. Also the 0.06 cross-cylinder.

Dr. Sanford R. Gifford, Chicago, exhibited cross-action iris forceps.

Dr. Derrick T. Vail, Jr., Cincinnati, exhibited an ingnipuncture conjunctival retractor.

Dr. Thomas D. Allen, Chicago, exhibited a modification of the well known instrument for implanting bone spheres into the orbit and muscle cone. In this instrument the size of the wires is increased, and there is a little slot at the bottom of the plunger so a muscle hook may be introduced, pressing on the bone sphere while the instrument is removed and the sutures tied.

Drs. Lloyd Mills and George Martyn, Los Angeles, presented a paper on "Urinary Proteose in Ocular Allergy." Discussed by Drs. Richard W. Whitehead, Denver; J. W. Jervey, Greenville, S. C.; George Piness, Los Angeles; Laura Lane, Minneapolis; Eugene R. Lewis, Los Angeles; Alan C. Woods, Baltimore; George W. Jean, Santa Barbara, Calif.; Edwin N. Robertson, Concordia, Kan.; Jonas Friedenwald, Baltimore, and George Martyn, Los Angeles.

Dr. Grady E. Clay, Atlanta, Ga., read a paper on "Angioid Streaks of the 'Retina' Associated with Pseudoxanthoma Elasticum: A Report of Seven Cases." Discussed by Drs. W. E. Fry, Philadelphia; Arthur J. Bedell, Albany, N. Y.; Jack Jones, Atlanta, Ga.; D. T. Vail, Jr., Cincinnati; Walter B. Lancaster, Boston, and Grady E. Clay, Atlanta, Ga.

Dr. Sanford R. Gifford, Chicago, read a paper on "The Permeability of the Normal and Pathologic Lens System: A Preliminary Report." Discussed by Drs. D. T. Vail, Jr., Cincinnati; Jonas Friedenwald, Baltimore, and Sanford R. Gifford, Chicago.

Dr. W. L. Benedict, Rochester, Minn., read a paper on "Foreign Proteins and Gold in the Treatment of Uveitis." Discussed by Drs. George Slocum, Ann Arbor, Mich.; Alan C. Woods, Baltimore, and W. L. Benedict, Rochester, Minn.

Dr. Edward Jackson, Denver, read a paper on "Aberrations of Eye and Lenses." Discussed by Dr. Henry C. Haden, Houston, Texas.

Dr. William T. Davis, Washington, D. C., read a paper on "Metastatic Carcinoma of the Optic Disk: Report of a Case." Discussed by Drs. George F. Suker, Chicago, and W. L. Benedict, Rochester, Minn.

Drs. Herbert Moulton and E. C. Moulton, Fort Smith, Ark., presented a paper on "Sarcoma of the Choroid: History of Six Cases with Early Operation." Discussed by Drs. Mary Knight Asbury, Cincinnati; Laura Lane, Minneapolis; Edward Jackson, Denver, and E. C. Moulton, Fort Smith, Ark.

Dr. Alan C. Woods, Baltimore, read a paper on "Uveal Pigment Hypersensitivity and Therapeusis." Discussed by Drs. Parker Heath, Detroit, and Jonas Friedenwald, Baltimore.

### FRIDAY, MAY 13—MORNING

The reports of the Committee on Compensation Tables, the Committee on the Knapp Testimonial Fund and the Committee on National Museum of Ophthalmic Pathology were published in the presession volume.

The report of the Committee on Optics and Visual Physiology was presented by Dr. Edward Jackson, Chairman.

Drs. Clifford B. Walker, Los Angeles, Bernard Samuels, New York, and F. Phinizy Calhoun, Atlanta, Ga., were elected members of the Committee on Awarding the Knapp Medal.

Dr. John Green, St. Louis, presented the report of the American Board for Ophthalmic Examinations, which was accepted.

Dr. William C. Finnoff, Denver, presented the report of the Committee to Cooperate with the National Society for the Prevention of Blindness. The report was accepted and the committee continued.

The secretary stated that in the report of the Committee on Scientific Exhibit, published in the presession volume, Dr. Bahn's name which came in too late for publication, should have been included.

Dr. Walter B. Lancaster, Chairman, presented the report of the Committee to Confer with the National Conference on Nomenclature of Disease. On motion, duly seconded, the report was received and the committee continued.

Dr. William H. Crisp, Delegate, made his report, which was accepted.

Dr. T. B. Holloway presented the report of the Executive Committee. On motion of Dr. W. B. Lancaster, seconded by Dr. Edward Jackson, the report was accepted.

The following officers were elected: chairman, Dr. F. H. Verhoeff, Boston; vice chairman, Dr. Charles A. Bahn, New Orleans; secretary, Dr. Parker Heath, Detroit; to the American Board for Ophthalmic Examination, Dr. John Green, St. Louis; to the Committee on Optics and Visual Physiology, Dr. Alfred Cowan, Philadelphia; chairman of Committee to Cooperate with National Society for the Prevention of Blindness, Dr. T. B. Holloway, Philadelphia.

The Executive Committee stated that no award was being made for ophthalmic research in the American Medical Association this year.

At the suggestion of Dr. T. B. Holloway, the members of the section stood for one minute in memory of Dr. George S. Derby.

The chairman announced that Dr. W. H. Luedde, vice chairman of the section, who had been seriously ill, was recovering.

Drs. John Green, Jr., and Carl C. Beisbarth, St. Louis, presented a paper on "Inexpert Refraction." Discussed by Drs. William H. Crisp, Denver; C. W. Rutherford, Iowa City; Laura Lane, Minneapolis; E. L. Jones, Cumberland, Md.; Hans Schroeder, New Orleans; S. B. Muncaster, Washington, D. C.; Thomas D. Allen, Chicago, and John Green, Jr., St. Louis.

Dr. C. W. Rutherford, Iowa City, read a paper on "Asthenopia, a Psychoneurosis and a Medical Responsibility." Discussed by Drs. Walter B. Lancaster, Boston; Hans Schroeder, New Orleans, and C. W. Rutherford, Iowa City.

Dr. Louis Bothman, Chicago, read a paper entitled "Further Report on the Relation of the Basal Metabolic Rate to Progressive Myopia." Discussed by Drs. W. R. Buffington, New Orleans, Meyer Weiner, St. Louis; and Louis Bothman, Chicago.

Dr. Jonas Friedenwald and Eugene Chan, Baltimore, presented a paper on "The Pathogenesis of Retinitis Pigmentosa, with a Note on the Phagocytic Activity of Müller's Fibers." Discussed by Drs. F. Herbert Haessler, Milwaukee; Parker Heath, Detroit; S. B. Muncaster, Washington, D. C., and Jonas Friedenwald, Baltimore.

Dr. Vilray P. Blair, St. Louis, showed slides illustrating "Repairs and Adjustments of the Eyelids." No discussion.

## SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

### Wednesday, May 11—Afternoon

The meeting was called to order by the chairman, Dr. Gabriel Tucker, Philadelphia.

Dr. Gabriel Tucker, Philadelphia, read the chairman's address, entitled "The Infant Larynx."

The following applications for Associate Fellowship in the section were read, and as the secretary announced that the qualifications of the applicants were satisfactory, on motion, duly seconded, they were nominated for Associate Fellowship: G. Victor Boyke, D.D.S., Paterson, N. J.; Charles T. Gilden, Jr., D.D.S., Philadelphia; E. Alan Lieban, D.D.S., New York.

Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia, presented a paper on "Benign Tumors of the Trachea and Bronchi, with Especial Reference to Those of Inflammatory Origin." Discussed by Drs. Joseph C. Beck, Chicago; Thomas E. Carmody, Denver; Frank W. Konzelmann, Philadelphia; Eugene R. Lewis, Los Angeles, and Chevalier Jackson, Philadelphia.

Dr. L. W. Dean, St. Louis, read a paper on "Laboratory Investigations as an Aid in Otolaryngologic Diagnosis." Discussed by Drs. Harris P. Mosher, Boston; Burt R. Shurly, Detroit; I. S. Kahn, San Antonio, Texas; George Piness, Los Angeles, and L. W. Dean, St. Louis.

Drs. Gordon B. New and Eleanor M. Fletcher, Rochester, Minn., presented a paper on "The Selection of Treatment in Carcinoma of the Larynx." Discussed by Drs. Albert C. Broders, Rochester, Minn.; William V. Mullin, Cleveland; Joseph C. Beck, Chicago, and Gordon B. New, Rochester, Minn.

Dr. John D. Kernan, New York, read a paper on "The Treatment of Carcinoma of the Bronchus with Radon Implantations and Diathermy."

Dr. M. F. Arbuckle, St. Louis, read a paper on "The Use of Radon Seeds in the Field of Otolaryngology and Endoscopy, with Case Reports."

These two papers were discussed by Drs. Henry K. Pancoast, Philadelphia; F. E. LeJeune, New Orleans; George Taquino, New Orleans; G. W. Walker, Fresno, Calif.; John D. Kernan, New York, and M. F. Arbuckle, St. Louis.

### Thursday, May 12—Afternoon

This being the first anniversary of the death of Dr. Robert C. Lynch, the section stood in silence for one minute in his memory, and the secretary announced that flowers had been sent to Mrs. Lynch.

Dr. Eugene R. Lewis, Los Angeles, read a paper on "Biochemical Aspects of Nasal Sinus Problems." Discussed by Drs. D. C. Jarvis, Barre, Vt.; Paul R. Nemours, St. Louis; James W. Jervey, Greenville, S. C., and Eugene R. Lewis, Los Angeles.

Dr. O. Jason Dixon, Kansas City, Mo., read a paper on "A Departure in the Management of Thrombophlebitis on Experimental Studies in the Dog." Discussed by Drs. George M. Coates, Philadelphia; Robert F. Ridpath, Philadelphia; Ernest M. Seydell, Wichita, Kan., and O. Jason Dixon, Kansas City, Mo.

Dr. J. A. Babbitt, Philadelphia, read a paper on "Some Studies in Middle Ear Infection." Discussed by Drs. John Raymond Hume, New Orleans; A. G. Fort, Atlanta, Ga., and J. A. Babbitt, Philadelphia.

Dr. Ralph A. Fenton, Portland, Ore., read a paper on "Local Agents Which Increase Tissue Immunity in Sinus Mucosa." Discussed by Drs. Arthur W. Proetz, St. Louis; Hugh L. McLaurin, Dallas, Texas; Robert F. Ridpath, Philadelphia, and Ralph A. Fenton, Portland, Ore.

Dr. H. Marshall Taylor, Jacksonville, Fla., read a paper on "Hygiene of Swimming." Discussed by Drs. Austin A. Hayden, Chicago; Harvey B. Searcy, Tuscaloosa, Ala.; Homer Dupuy, New Orleans; John J. Shea, Memphis, Tenn.; J. A. Babbitt, Philadelphia, and H. Marshall Taylor, Jacksonville, Fla.

### Friday, May 13—Afternoon

The following officers were elected: Chairman, Dr. Harris P. Mosher, Boston; vice chairman, Dr. J. L. Myers, Kansas City, Mo.; secretary, Dr. John J. Shea, Memphis, Tenn.; executive committee, Drs. Thomas E. Carmody, Denver; Gabriel Tucker, Philadelphia, and Harris P. Mosher, Boston; delegate, Dr. Burt R. Shurly, Detroit; alternate, Dr. John W. Carmack, Indianapolis.

Dr. Gabriel Tucker, Philadelphia, exhibited an infant bronchoscope and an infant tracheotomy tube.

Dr. J. B. Nail, Wichita Falls, Texas, exhibited an adaptation of the Davis mouth gag to the Lynch laryngeal speculum, enabling the operator to secure exposure of the larynx.

Dr. Arthur W. Proetz, chairman, presented the report of the Committee on Necrology.

Dr. Chevalier Jackson, chairman, presented the report of the Committee on Lye Legislation.

On motion of Dr. A. R. Crebbin, New Orleans, duly seconded, the report was accepted and the committee was thanked and continued.

In presenting the report of the Examining Board in Otolaryngology, Dr. Joseph C. Beck stated that since the board was formed in 1924 it had held twenty-one examinations and that the number of certified members was 1,933. Dr. Beck moved that the report be accepted and the committee continued; the motion was seconded and carried.

Dr. H. M. Taylor, chairman, presented the report of the Committee on Otorhinologic Hygiene of Swimming. On motion of Dr. Dupuy, duly seconded, the report was received and the committee was thanked and continued.

In presenting the report of the Committee to Confer with the National Inter-Society on Deafness Prevention, Dr. Austin A. Hayden, chairman, stated that largely because of the financial difficulties in which the American Federation of Organizations for the Hard of Hearing had found itself in the past year, little had been done by the committee. On motion, duly seconded, the report of progress was received and the committee was thanked and continued.

Dr. Ernest M. Seydell, Wichita, Kan., read a paper on "Disturbances of Olfaction." Discussed by Drs. Claude L. La Rue, Shreveport, La.; George B. Collier, New Orleans; William D. Gill, San Antonio, Texas, and Ernest M. Seydell, Wichita, Kan.

Dr. John W. Carmack, Indianapolis, read a paper on "After-Care of the Radical Mastoid Operation." Discussed by Drs. Joseph C. Beck, Chicago, and John W. Carmack, Indianapolis.

Dr. C. C. Cody, Houston, Texas, read a paper on "Acute Suppurative Otitis Media in Infancy and Early Childhood." Discussed by Drs. M. A. Lischkoff, Pensacola, Fla.; W. A. Wagner, New Orleans; J. W. Jervey, Greenville, S. C.; Burt R. Shurly, Detroit, and C. C. Cody, Houston, Texas.

Dr. J. L. Myers, Kansas City, Mo., read a paper on "Electrocoagulation of Tonsils." Discussed by Drs. Philip Boebinger, New Orleans; Frederick B. Balmer, Chicago; Austin A. Hayden, Chicago, and J. L. Myers, Kansas City, Mo.

Dr. Murdock S. Equen, Atlanta, Ga., read a paper entitled "A Clinical Study of Appendicitis Following Tonsillectomy." Discussed by Drs. Charles A. McWilliams, Gulfport, Miss.; S. S. Evans, Memphis, Tenn., and Murdock S. Equen, Atlanta, Ga.

## SECTION ON PEDIATRICS

### Wednesday, May 11—Morning

The meeting was called to order at 9:05 by the chairman, Dr. Jay I. Durand, Seattle.

Dr. Jay I. Durand, Seattle, read the chairman's address, entitled "Progress in the Nutrition of Infants."

Dr. George M. Retan, Syracuse, N. Y., read a paper on "Forced Spinal Drainage in Its Relation to Infections of the Central Nervous System." Discussed by Drs. H. Ward Williams, Rochester, N. Y.; B. H. Balser, Syracuse, N. Y., and George M. Retan, Syracuse, N. Y.

Drs. Béla Schick and Samuel Karelitz, New York, presented a paper on "Treatment of Alimentary Toxicosis." Discussed by Drs. Horton R. Casparis, Nashville, Tenn.; C. Ulysses Moore, Portland, Ore.; Harry Lowenburg, Philadelphia; F. J. Schatz, St. Cloud, Minn., and Béla Schick, New York.

Dr. Sidney V. Haas, New York, read a paper on "Celiac Disease: Its Specific Treatment and Cure Without Nutritional Relapse." Discussed by Drs. John Signorelli, New Orleans; John L. Morse, Boston; Charles G. Kerley, New York, and Sidney V. Haas, New York.

Dr. James W. Bruce, Louisville, Ky., read a paper on "Prognosis of Tuberculosis in Infancy."

Dr. Horton R. Casparis, Nashville, Tenn., read a paper on "The Pediatrician's Responsibility in the Tuberculosis Problem."

These two papers were discussed by Drs. O. O. Miller, Louisville, Ky.; William H. Park, New York; Béla Schick, New York; W. Ambrose McGee, Richmond, Va.; Eli Friedman, Boston; James W. Bruce, Louisville, Ky., and Horton R. Casparis, Nashville, Tenn.

### Thursday, May 12—Morning

Dr. M. G. Peterman, Milwaukee, read a paper on "Convulsions in Childhood." Discussed by Drs. Harry Lowenburg, Philadelphia, and M. G. Peterman, Milwaukee.

Drs. Louis A. Lurie and J. Victor Greenebaum, Cincinnati, presented a paper on "Pituitary Medication in the Treatment of Abnormal Mental and Physical Conditions in Childhood." Discussed by Drs. Isaac A. Abt, Chicago, and J. Victor Greenebaum, Cincinnati.

Dr. Charles G. Kerley, New York, read a paper on "Intestinal Stasis in Children." Discussed by Drs. Maud Loeber, New Orleans; Joseph S. Wall, Washington, D. C.; C. Ulysses Moore, Portland, Ore., and Charles G. Kerley, New York.

Dr. W. Lloyd Aycock, Boston, read a paper on "The Problem of the Control of Poliomyelitis." Discussed by Drs. Edward B. Shaw, San Francisco; S. D. Kramer, Boston; A. C. Silverman, Syracuse, N. Y.; Claus W. Jungeblut, New York, and W. Lloyd Aycock, Boston.

Dr. Henry F. Helmholz, Rochester, Minn., read a paper on "The Ketogenic Diet in the Treatment of Pyuria in Childhood." Discussed by Drs. Clifford G. Grulee, Chicago; Fred W. Schlutz, Chicago; Harry Lowenburg, Philadelphia; C. Ulysses Moore, Portland, Ore., and Henry F. Helmholz, Rochester, Minn.

Drs. Fred W. Schlutz and Dorothy Fetter, Chicago, presented a paper on "The Influence of Various Milk Products and Processed Milk on Gastric Motility." Discussed by Dr. L. R. De Buys, New Orleans.

### Friday, May 13—Morning

The following officers were elected: chairman, Dr. Fred W. Schlutz, Chicago; vice chairman, Dr. M. G. Peterman, Milwaukee; secretary, Dr. Alfred A. Walker, Birmingham, Ala.; delegate, Dr. Isaac A. Abt, Chicago; alternate, Dr. A. Graeme Mitchell, Cincinnati. Executive Committee, Drs. Fred W. Schlutz, Chicago; Jay I. Durand, Seattle, and Dr. C. A. Aldrich, Winnetka, Ill.; representative on Scientific Exhibit, Dr. F. Thomas Mitchell, Memphis, Tenn.

Drs. William Weston, Columbia, S. C., Henry F. Helmholz, Rochester, Minn., and John L. Morse, Boston, were appointed to represent the section at the third International Pediatric Congress, to be held in London in 1933.

The following resolution was endorsed by the section and referred to the Committee on Foods of the American Medical Association:

> At the business meeting of the Pediatrics Section of the California Medical Association held Tuesday, May 3, 1932, the following resolution was passed:
>
> "The Section on the Diseases of Children respectfully asks the council of the California Medical Association to strongly urge the Association of Certified Milk Producers to oppose the certification of soft curd milk and milk containing added vitamin and mineral content.
>
> "It is further requested that a copy of this resolution be forwarded to the secretary of the Section on Pediatrics of the American Medical Association."

Dr. Frank C. Neff, Kansas City, Mo., presented the report of the Jacobi Fund Committee.

Dr. Harold K. Faber, San Francisco, retired from the Jacobi Fund Committee, and Dr. Jay I. Durand, Seattle, automatically became a member for a four-year term.

On motion regularly made and seconded, the report of the Jacobi Fund Committee was adopted.

Dr. Isaac A. Abt, Chicago, reported that the House of Delegates passed the necessary amendment to the By-Laws so that hereafter the section will be known as the Section on Pediatrics in place of the Section on Diseases of Children.

Resolutions on the death of Dr. Stafford McLean were presented by Dr. Frank Leech, Washington, D. C., and on the death of Dr. John Brown Manning by Dr. Oscar Reiss, Los Angeles.

The following resolution, presented by Dr. Joseph A. Henske, Omaha, was adopted:

> In view of the place of pediatrics in the medical curriculum of class A medical schools and its importance in practice, the Section on Pediatrics of the American Medical Association requests that the National Board of Medical Examiners consider the inclusion of a requirement in their examinations so that pediatrics will be considered as a major subject.

The following resolution, presented by the Executive Committee, was adopted:

> *Resolved*, By the Section on Pediatrics, that the thanks of the section be extended to the local profession of New Orleans, particularly to Dr. John Signorelli and Dr. Robert A. Strong of the pediatric group.

Dr. M. Hines Roberts, Atlanta, Ga., read a paper on "Studies in Congenital Syphilis." Discussed by Drs. Hugh McCulloch, St. Louis; Joseph Yampolsky, Atlanta, Ga., and M. Hines Roberts, Atlanta, Ga.

Dr. I. Newton Kugelmass, New York, read a paper on "The Management of Hemorrhagic Problems in Infancy and Childhood." Discussed by Drs. Heyworth N. Sanford, Chicago, and I. Newton Kugelmass, New York.

Drs. William W. Anderson, Atlanta, Ga., and Robert L. Ware, Philadelphia, presented a paper on "Sickle Cell Anemia." Discussed by Drs. George S. Graham, Birmingham, Ala., and Thomas B. Cooley, Detroit.

Drs. Hugh L. Dwyer and Frank C. Neff, Kansas City, Mo., presented a paper on "Complemental Feeding in the New-Born: Its Effect on Breast Feeding." Discussed by Drs. J. H. Eugene Rosamond, Memphis, Tenn.; Robert A. Strong, New Orleans; Milton S. Lewis, Nashville, Tenn.; Béla Schick, New York; C. Ulysses Moore, Portland, Ore.; F. J. Schatz, St. Cloud, Minn., and Hugh L. Dwyer, Kansas City, Mo.

Dr. F. Thomas Mitchell and Stephen W. Coley, Memphis, Tenn., presented a paper on "A Study in the Prevention of Rickets." Discussed by Drs. Charles J. Bloom, New Orleans; William Weston, Columbia, S. C.; J. Victor Greenebaum, Cincinnati; Martha M. Eliot, New Haven, Conn., and F. Thomas Mitchell, Memphis, Tenn.

## SECTION ON PHARMACOLOGY AND THERAPEUTICS

### Wednesday, May 11—Morning

The meeting was called to order at 9:05 by the chairman, Dr. R. L. Levy, New York.

Drs. George R. Herrmann, C. T. Stone, W. W. Bondurant and E. H. Schwab, Galveston, Texas, presented a paper on "Some Studies of Diuresis in Patients with Congestive Heart Failure." Discussed by Drs. Willard O. Thompson, Chicago, and George R. Herrmann, Galveston, Texas.

Dr. Charles M. Gruber and Isaac Y. Olch, St. Louis, presented a paper on "Myocarditis in Rabbits Produced Experimentally by Drugs." Discussed by Drs. John H. Musser, New Orleans; E. S. Kilgore, San Francisco, and Charles M. Gruber, St. Louis.

Dr. John J. Sampson, San Francisco, and Evelyn M. Anderson, Montreal, presented a paper on "The Treatment of Certain Cardiac Arrhythmias with Potassium Salts." Discussed by Drs. T. R. Harrison, Nashville, Tenn.; Louis F. Bishop, New York; J. Marion Read, San Francisco; William J. Kerr, San Francisco, and John J. Sampson, San Francisco.

Dr. Charles W. Barrier, Fort Worth, Texas, read a paper on "The Effect of Digitalis in Arrhythmias Other Than Flutter and Fibrillation of the Auricles." Discussed by Drs. Wallace M. Yater, Washington, D. C.; Louis F. Bishop, Jr., New York; W. E. Garrey, Nashville, Tenn., and Charles W. Barrier, Fort Worth, Texas.

Drs. Stewart R. Roberts, Atlanta, Ga., and Shelton P. Sanford, Savannah, Ga., presented a paper on "A Clinical Sign of Right Bundle Branch Block, with Remarks on the Disturbance of the Mechanism, the Results and Treatment." Discussed by Dr. Louis F. Bishop, New York.

Dr. J. S. McLester, Birmingham, Ala., read a paper on "The Diet in Bright's Disease." Discussed by Drs. W. B. Penney, Tacoma, Wash.; W. E. Garrey, Nashville, Tenn., and J. S. McLester, Birmingham, Ala.

### Thursday, May 12—Morning

Dr. L. Minor Blackford, Atlanta, Ga., read a paper on "Bismuth and the Treatment of Cardiovascular Syphilis." Discussed by Drs. Stewart R. Roberts, Atlanta, Ga.; William H. Goeckermann, Rochester, Minn.; Louis F. Bishop, Jr., New York, and L. Minor Blackford, Atlanta, Ga.

Dr. R. L. Levy, New York, read the chairman's address, entitled "Therapeutics and Medicine."

The following papers were read as a symposium on "Anesthesia":

Dr. Frank H. Lahey, Boston: "Advances in Anesthesia from the Standpoint of the Surgeon."

Dr. V. E. Henderson, Toronto: "The Practical Aspect of the Theories of Narcosis."

Drs. M. H. Seevers and R. M. Waters, Madison, Wis.: "Respiratory and Circulatory Changes During Spinal Anesthesia."

Dr. John S. Lundy, Rochester, Minn.: "Advances in Anesthesia from the Standpoint of the Anesthetist."

These four papers were discussed by Drs. J. T. Halsey, New Orleans; E. Starr Judd, Rochester, Minn.; A. M. Caine, New Orleans; H. M. Trusler, Indianapolis; M. H. Seevers, Madison, Wis., and John S. Lundy, Rochester, Minn.

### Friday, May 13—Morning

The following officers were elected: chairman, Dr. E. M. K. Geiling, Baltimore; vice chairman, Dr. John H. Musser, New Orleans; delegate, Dr. N. M. Keith, Rochester, Minn.; alternate, Dr. Cary Eggleston, New York; secretary, Dr. C. H. Greene, Rochester, Minn.

Dr. Henry J. John, Cleveland, read a paper on "Ten Years' Study and Follow Up of Cases of Hyperthyroidism Showing Carbohydrate Metabolism Disturbances." No discussion.

Drs. Frank A. Hartman, Clayton W. Greene, Byron D. Bowen and George W. Thorn, Buffalo, presented a paper on "Further Experience with Cortin Therapy." Discussed by Drs. A. W. Rowe, Boston; C. H. Greene, Rochester, Minn.; J. T. Halsey, New Orleans, and Frank A. Hartman, Buffalo.

Drs. J. P. Sanders, Caspiana, La., and W. T. Dawson, Galveston, Texas, presented a paper on "Efficacy of Quinidine in Malaria." Discussed by Dr. W. J. Sandidge, Shreveport, La.

Drs. Paul D. Lamson, Harold W. Brown and Charlotte B. Ward, Nashville, Tenn., presented a paper on "Some Therapeutic and Practical Considerations on the Use of Anthelmintics." Discussed by Drs. W. G. Smillie, Boston, and Paul D. Lamson, Nashville, Tenn.

Drs. W. J. Merle Scott and John J. Morton, Rochester, N. Y., presented a paper on "The Principles of Treatment in the Common Arterial Diseases of the Extremities." Discussed by Drs. Rudolph Matas, New Orleans; Edgar V. Allen, Rochester, Minn.; A. W. Allen, Boston; Alfred W. Adson, Rochester, Minn., and W. J. Merle Scott, Rochester, N. Y.

## SECTION ON PATHOLOGY AND PHYSIOLOGY

### Wednesday, May 11—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. J. Harvey Black, Dallas, Texas.

On a motion, regularly made and seconded, the following were nominated for Associate Fellowship in the section, for submission to the House of Delegates:

John F. Fulton, New Haven, Conn.
W. C. Langston, University of Arkansas, Little Rock.
E. R. Le Count, University of Chicago, Chicago.
J. M. Looney, Philadelphia.
Walter F. Taylor, Baylor University, Dallas, Texas.
Robert S. Cunningham, Vanderbilt University, Nashville, Tenn.

Dr. Carroll L. Birch, Chicago, read a paper on "Hemophilia." Discussed by Drs. Frank J. Heck, Rochester, Minn.; Owen H. Wangensteen, Minneapolis; Robert Kapsinow, Lafayette, La.; J. H. Woolsey, San Francisco, and Carroll L. Birch, Chicago.

Dr. Henry N. Harkins, Chicago, read a paper on "Granulopenia and Agranulocytic Angina." Discussed by Drs. Clyde Brooks, New Orleans; Merton M. Minter, San Antonio, Texas; Oliver W. Hill, Knoxville, Tenn., and Henry N. Harkins, Chicago.

Dr. Russell L. Haden, Cleveland, read a paper on "Simple Achlorhydric Anemia." Discussed by Drs. A. C. Ivy, Chicago; H. M. Conner, Rochester, Minn., and Russell L. Haden, Cleveland.

Dr. Max Cutler, Chicago, read a paper on "Relation of 'Chronic Mastitis' to Cancer of the Breast." Discussed by Drs. Ira H. Lockwood, Kansas City, Mo.; Charles F. Geschickter, Baltimore; William H. Harris, New Orleans, and Max Cutler, Chicago.

Dr. Charles F. Geschickter, Baltimore, read a paper on "Tumors of the Kidneys." Discussed by Drs. Alvin G. Foord, Pasadena, Calif., and Charles F. Geschickter, Baltimore.

Dr. Albert C. Broders, Rochester, Minn., read a paper on "Carcinoma in Situ Contrasted with Benign Penetrating Epithelium." Discussed by Dr. Max Cutler, Chicago.

Drs. John G. Mateer and F. W. Hartman, Detroit, presented a paper on "Carcinoma of the Duodenum: Clinical and Pathologic Aspects." Discussed by Drs. George B. Eusterman, Rochester, Minn.; Alfred S. Giordano, South Bend, Ind., and John G. Mateer, Detroit.

### Thursday, May 12—Afternoon

The following papers were read as a symposium on "Poliomyelitis":

Dr. S. D. Kramer, Boston: "Immunity to Poliomyelitis: The Mechanism of Its Production in the General Population."

Dr. Harold L. Amoss, Durham, N. C.: "Etiology and Pathology."

Dr. J. E. Gordon, Detroit: "The Diagnosis of Early Poliomyelitis."

Dr. William H. Park, New York: "The Therapeutic Use of Antipoliomyelitis Serum in Preparalytic Cases of Poliomyelitis."

Dr. Arthur T. Legg, Boston: "Paralytic Treatment."

Dr. Frank W. Laidlaw, Middletown, N. Y.: "Poliomyelitis in the State of New York."

These six papers were discussed by Drs. W. Lloyd Aycock, Boston; Edward B. Shaw, San Francisco; Lewis J. Pollock, Chicago; J. P. Leake, Washington, D. C.; A. C. Silverman, Syracuse, N. Y.; S. D. Kramer, Boston; Harold L. Amoss, Durham, N. C.; J. E. Gordon, Detroit; William H. Park, New York, and Frank W. Laidlaw, Middletown, N. Y.

### Friday, May 13—Afternoon

The following officers were elected: chairman, Dr. Clyde Brooks, New Orleans; vice chairman, Dr. William Carpenter McCarty, Rochester, Minn.; secretary, Dr. J. J. Moore, Chicago;

delegate, Dr. D. J. Davis, Chicago; alternate, Dr. J. J. Moore, Chicago; Executive Committee, Drs. A. C. Ivy, Chicago; J. Harvey Black, Dallas, Texas, and Clyde Brooks, New Orleans.

Dr. J. Harvey Black, Dallas, Texas, read the chairman's address, entitled "Some Pressing Problems in Allergy."

Drs. I. S. Kahn and B. F. Stout, San Antonio, Texas, presented a paper on "Practical Value of the Cytologic Examination of the Nasal Smear in the Differential Diagnosis Between Allergy and Infection."

Drs. Ray M. Balyeat and Herbert J. Rinkel, Oklahoma City, presented a paper on "Pathology and Symptomatology of Headaches Due to Specific Sensitization."

Dr. Samuel M. Feinberg, Chicago, read a paper on "Sustained Artificial Fever in the Treatment of Intractable Asthma: Physiologic and Therapeutic Consideration."

These three papers were discussed by Drs. Milton B. Cohen, Cleveland; George Piness, Los Angeles; M. Murray Peshkin, New York; Alfred M. Goltman, Memphis, Tenn.; N. F. Thiberge, New Orleans; B. G. Efron, New Orleans; Clyde Brooks, New Orleans; I. S. Kahn, San Antonio, Texas; Ray M. Balyeat, Oklahoma City, and Samuel M. Feinberg, Chicago.

Dr. Harry J. Corper, Denver, read a paper on "Tissue Substrate Micro Culture for Tubercle Bacilli." Discussed by Drs. Joseph E. Pottenger, Monrovia, Calif., and Harry J. Corper, Denver.

Drs. William G. Exton and Anton R. Rose, Newark, N. J., presented a paper on "The Clinical Partition of Blood Protein by Scopometry." Discussed by Drs. Foster M. Johns, New Orleans, and William G. Exton, Newark, N. J.

## SECTION ON NERVOUS AND MENTAL DISEASES

### Wednesday, May 11—Morning

The meeting was called to order at 9:15 by the chairman, Dr. Franklin G. Ebaugh, Denver.

Dr. George S. Johnson, Denver, read a paper on "Forensic Psychiatry: Review of the Procedure in Colorado." Discussed by Drs. Edward Delehanty, Denver, and George S. Johnson, Denver.

Dr. Herman Chor, St. Louis, read a paper on "Nerve Degeneration in Poliomyelitis: Changes Observed in Motor Nerve Endings." Discussed by Drs. W. Lloyd Aycock, Boston; William H. Harris, New Orleans; George B. Hassin, Chicago; Walter Freeman, Washington, D. C., and Herman Chor, St. Louis.

Drs. Claus W. Jungeblut and Earl T. Engle, New York, presented a paper on "Resistance to Poliomyelitis: The Relative Importance of Physiologic and Immunologic Factors." Discussed by Drs. W. Lloyd Aycock, Boston; Foster M. Johns, New Orleans, and Claus W. Jungeblut, New York.

Dr. Theodore T. Stone, Chicago, read a paper on "The Rôle of the Anterior Roots in Visceral Sensibility." Discussed by Drs. Lewis J. Pollock, Chicago, and Francis M. Pottenger, Monrovia, Calif.

Dr. David C. Wilson, University, Va., read a paper on "Atypical Facial Neuralgias." Discussed by Drs. Edgar F. Fincher, Jr., Atlanta, Ga.; Carrol C. Turner, Memphis, Tenn., and David C. Wilson, University, Va.

Dr. Harry B. Friedgood, Ann Arbor, Mich., read a paper on "Experimental Exophthalmos and Its Relation to the Pathogenesis of Exophthalmic Goiter." Discussed by Drs. John D. Humber, San Francisco; Charles A. Bahn, New Orleans, and Harry B. Friedgood, Ann Arbor, Mich.

Dr. S. Bernard Wortis, New York, read a paper on "Experimental Epilepsy." Discussed by Drs. Henry Daspit, Jr., New Orleans; Wilmot S. Littlejohn, Birmingham, Ala.; Walter Freeman, Washington, D. C., and S. Bernard Wortis, New York.

### Thursday, May 12—Morning

Dr. Franklin G. Ebaugh, Denver, read the chairman's address, entitled "The Crisis in Psychiatric Education."

Dr. Sanger Brown II, Albany, N. Y., read a paper on "Comments on Some Current Criticisms of Psychiatry." Discussed by Drs. H. Douglas Singer, Chicago; George W. Hall, Chicago; George Stevenson, New York, and Sanger Brown II, Albany, N. Y.

Drs. Henry R. Viets and Francis T. Hunter, Boston, presented a paper on "Lymphoblastomatous Involvement of the Nervous System." Discussed by Drs. George W. Holmes, Boston; Frank J. Heck, Rochester, Minn.; George B. Hassin, Chicago, and Henry R. Viets, Boston.

Dr. George B. Hassin, Chicago, read a paper on "Amyotrophic Lateral Sclerosis Complicated by Subacute Combined Degeneration of the Cord." Discussed by Drs. Theodore T. Stone, Chicago; Walter F. Schaller, San Francisco; Walter Freeman, Washington, D. C.; Henry R. Viets, Boston, and George B. Hassin, Chicago.

Drs. R. P. Mackay and George W. Hall, Chicago, presented a paper on "Syphilitic Amyotrophy." Discussed by Drs. Henry Daspit, Jr., New Orleans; George B. Hassin, Chicago; Theodore T. Stone, Chicago, and Carroll Turner, Memphis, Tenn.

Drs. Walter F. Schaller, Archie M. Roberts and Edward F. Stadtherr, San Francisco, presented a paper on "Acute Myelitis: Syndrome of Occlusion of the Anterior Spinal Artery at the Fifth Cervical Cord Segment." Discussed by Drs. Edwin G. Zabriskie, New York; Edmund McCollam Connely, New Orleans, and Walter F. Schaller, San Francisco.

Drs. John L. Eckel, Buffalo, and N. W. Winkelman, Philadelphia, presented a paper on "Focal Lesions of the Spinal Cord Due to Vascular Disease." Discussed by Drs. Michael Osnato, New York; Irving J. Sands, Brooklyn, and John L. Eckel, Buffalo.

### Friday, May 13—Morning

The following officers were elected: chairman, Dr. George B. Hassin, Chicago; vice chairman, Dr. Titus Harris, Galveston, Texas; secretary, Dr. Henry W. Woltman, Rochester, Minn.; delegate, Dr. Tom B. Throckmorton, Des Moines, Iowa; alternate, Dr. Edward Delehanty, Denver; Executive Committe, Drs. Walter Freeman, Washington, D. C.; Frank G. Ebaugh, Denver, and George B. Hassin, Chicago.

Dr. Edward Delehanty, Denver, alternate, presented his report.

Dr. William C. Menninger, Topeka, Kan., read a paper on "Experiments with Therapeutic Aids in a Psychiatric Hospital." Discussed by Drs. F. Garm Norbury, Jacksonville, Ill.; Thomas Heldt, Detroit, and George S. Johnson, Denver.

Dr. Edgar V. Allen, Rochester, Minn., read a paper on "Raynaud's Disease." Discussed by Drs. W. J. Merle Scott, Rochester, N. Y.; William J. Kerr, San Francisco; Arthur W. Allen, Boston, and Edgar V. Allen, Rochester, Minn.

Dr. Francis C. Grant, Philadelphia, read a paper on "Mortality from Brain Abscess." Discussed by Drs. Ernest Sachs, St. Louis; R. E. Semmes, Memphis, Tenn., and Francis C. Grant, Philadelphia.

Drs. Edward L. Hunt, New York, and James R. Lisa, Brooklyn, presented a paper on "Metastatic Abscesses of the Brain of Intrapulmonary Origin." Discussed by Drs. Gilbert C. Anderson, New Orleans; Henry Daspit, Jr., New Orleans, and James Gardner, Cleveland.

Dr. Irving J. Sands, Brooklyn, read a paper on "The "Anatomic Basis of the Clinical Manifestations of Cerebral Vascular Disorders." Discussed by Drs. George B. Hassin, Chicago, and Irvin J. Sands, Brooklyn.

Dr. Michael Osnato, New York, read a paper on "Diagnostic Criteria for the Diagnosis of Brain Tumor: General Symptoms." Discussed by Drs. Henry Daspit, Jr., New Orleans; Walter J. Otis, New Orleans; H. R. Unsworth, New Orleans; Edward Delehanty, Denver; Franklin G. Ebaugh, Denver; Henry R. Viets, Boston; Ernest Sachs, St. Louis, and Michael Osnato, New York.

## SECTION ON DERMATOLOGY AND SYPHILOLOGY

### Wednesday, May 11—Morning

The meeting was called to order at 9:10 by the chairman, Dr. George M. MacKee, New York.

Dr. MacKee presented the report of the joint committee consisting of members of this section and of the American Dermatological Association concerning the creation of a board of examiners in dermatology and syphilology.

Dr. Howard Fox, New York, moved the adoption of the report. The motion was seconded by Dr. Arthur J. Markley, Denver, and unanimously carried.

As members of this examining board, Drs. Howard Morrow, San Francisco (one year), William H. Mook, St. Louis (two years), George M. MacKee, New York (three years), and C. Guy Lane, Boston (four years) were elected.

Dr. George M. MacKee, New York, read the chairman's address, entitled "Physical Therapy in Dermatology."

Dr. O. E. Denney, Carville, La., read a paper on "Leprosy: Comments on the In Vitro Behavior of Lepra and Certain Other Acid-Fast Micro-Organisms in the Presence of Leukocytes." Discussed by Drs. Charles W. Duval, New Orleans; Harold N. Cole, Cleveland; H. Windsor Wade, Culion, P. I.; Ralph Hopkins, New Orleans, and O. E. Denney, Carville, La.

Dr. H. Windsor Wade, Culion, P. I., read a paper on "Observations on Leprosy with Special Reference to Treatment, Classification and the Tuberculoid Lesion." Discussed by Drs. Ralph Hopkins, New Orleans; Howard Fox, New York; Charles W. Duval, New Orleans; O. E. Denney, Carville, La.; Elmore B. Tauber, Cincinnati; Fred D. Weidman, Philadelphia; Hamilton Montgomery, Rochester, Minn.; C. F. Lehmann, San Antonio, Texas; George M. MacKee, New York, and H. Windsor Wade, Culion, P. I.

Drs. Sidney J. Wilson and Sim H. Hulsey, Fort Worth, Texas, and Fred D. Weidman, Philadelphia, presented a paper on "Chromoblastomycosis in Texas (the Second North American Case)." Discussed by Drs. Clark W. Finnerud, Chicago; C. Guy Lane, Boston; Bedford Shelmire, Dallas, Texas, and Fred D. Weidman, Philadelphia.

Dr. Olin J. Cameron, Ann Arbor, Mich., read a paper on "Primary Actinomycosis of the Tongue." Discussed by Drs. Bedford Shelmire, Dallas, Texas; Fred D. Weidman, Philadelphia; Howard Fox, New York; O. H. Wangensteen, Minneapolis, and Olin J. Cameron, Ann Arbor, Mich.

Dr. Norman N. Epstein, San Francisco, read a paper on "Scleredema Adultorum (Buschke)." Discussed by Drs. Harold N. Cole, Cleveland; Fred D. Weidman, Philadelphia; George M. MacKee, New York, and Norman N. Epstein, San Francisco.

Dr. J. P. Thornley, New York, moved that the section express its appreciation and thanks to Dr. O. E. Denney, Carville, La., and his staff and to Dr. Ralph Hopkins, New Orleans, for their splendid arrangements for the visit to Carville on Tuesday. The motion was seconded and unanimously carried by rising vote.

### Thursday, May 12—Morning

Dr. J. P. Thornley, New York, read a paper on "Reactions and Serologic Results Following Arsphenamine or Neoarsphenamine Treatment for Syphilis." Discussed by Drs. Ralph Hopkins, New Orleans; Clyde Cummer, Cleveland; Edward White, Dallas, Texas, and J. P. Thornley, New York.

George W. Raiziss, Ph.D., and Dr. Marie Severac, Philadelphia, presented a paper on "Further Studies of Asymptomatic Syphilis and the Effect of Various Drugs on Spirochaeta Pallida in the Brain of Rabbits and Mice." Discussed by Drs. Earl D. Osborne, Buffalo; Harold N. Cole, Cleveland; Jeffrey C. Michael, Houston, Texas; J. P. Thornley, New York; Frank W. Cregor, Indianapolis, and George W. Raiziss, Philadelphia.

Drs. Harold N. Cole, Torald H. Sollmann and Nora Schreiber, Cleveland, presented a paper on "Excretion of Mercury After Calomel Inunctions, with Some Observations on the Method of Absorption of Mercury when Used by the Inunction Route." Discussed by Drs. William H. Guy, Pittsburgh; J. P. Thornley, New York; Robert C. Jamieson, Detroit, and Harold N. Cole, Cleveland.

Drs. William H. Goeckerman and Paul A. O'Leary, Rochester, Minn., presented a paper on "Erythroderma Psoriaticum." Discussed by Drs. C. F. Lehmann, San Antonio, Texas; Harold N. Cole, Cleveland; Fred D. Weidman, Philadelphia; J. R. Allison, Columbia, S. C.; Clark W. Finnerud, Chicago; William Allen Pusey, Chicago; G. E. Johnson, Ardmore, Okla.; Ralph Hopkins, New Orleans, and William H. Goeckerman, Rochester, Minn.

Drs. Earl D. Osborne and E. D. Putnam, Buffalo, presented a paper on "Industrial Dermatoses with Special Reference to Mycotic Dermatitis in Industry."

Dr. M. E. Obermayer, Chicago, read a paper on "Eczema Due to Contact with Commercial Rubber Preparations."

These two papers were discussed by Drs. C. Guy Lane, Boston; Harry E. Alderson, San Francisco; Harry R. Foerster Milwaukee; Jeffrey C. Michael, Houston, Texas; Leste Hollander, Pittsburgh; Bedford Shelmire, Dallas, Texas; N. Anderson, Los Angeles; William Allen Pusey, Chicago; Cla W. Finnerud, Chicago; Fred D. Weidman, Philadelph Harold N. Cole, Cleveland; Everett S. Lain, Oklahoma Ci Earl D. Osborne, Buffalo, and M. E. Obermayer, Chicago.

### Friday, May 13—Morning

The following officers were elected: chairman, Dr. Francis Eugene Senear, Chicago; vice chairman, Dr. Howard T. Phillips, Wheeling, W. V.; secretary, Dr. Harry R. Foerster, Milwaukee; delegate, Dr. Frank W. Cregor, Indianapolis alternate delegate, Dr. Bedford Shelmire, Dallas, Texas.

Drs. J. V. Van Cleve and Henry F. DeWolf, Clevelan presented a paper on "Lymphogranuloma Inguinale (Lymph granulomatosis Inguinalis of Nicholas and Favre)." Discuss by Drs. Fred D. Weidman, Philadelphia; Elmo D. Fren Miami, Fla.; Lester Hollander, Pittsburgh; Harold N. C Cleveland; Howard Fox, New York, and J. V. Van Cleve, Cleveland.

Dr. Henry D. Niles, New York, read a paper on "The Relation of Roentgen Therapy to Scarring in Acne Vulgaris." Discussed by Drs. Jeffrey C. Michael, Houston, Texas; Howard Fox, New York; C. F. Lehmann, San Antonio, Texas; Fred D. Weidman, Philadelphia; Clark W. Finnerud, Chicago; J. R. Allison, Columbia, S. C.; W. J. MacDonald, Boston; George M. MacKee, New York; Elmo D. French, Miami, Fla.; Earl D. Osborne, Buffalo; E. R. Seale, Houston, Texas; William A. Rosenberg, Chicago, and Henry D. Niles, New York.

Drs. Jack W. Jones, Herbert S. Alden and Everett L. Bishop, Atlanta, Ga., presented a paper on "Pseudoxanthoma Elasticum: Report of Five Cases Showing Its Association with Angioid Streaks of the Retina." Discussed by Drs. Grady E. Clay, Atlanta, Ga.; Jeffrey C. Michael, Houston, Texas; Fred D. Weidman, Philadelphia; Hamilton Montgomery, Rochester, Minn.; Laurence R. Taussig, San Francisco, and Jack W. Jones, Atlanta.

Drs. Clinton W. Lane and C. Malone Stroud, St. Louis, presented a paper on "Pyoderma Gangrenosum with Report of an Unusual Case." Discussed by Drs. William H. Goeckerman, Rochester, Minn.; William H. Guy, Pittsburgh; Jack W. Jones, Atlanta, Ga.; M. F. Engman, Jr., St. Louis, and C. Malone Stroud, St. Louis.

Dr. Ernest K. Stratton, San Francisco, read a paper on "Cutis Verticis Gyrata (of Inflammatory Origin)." Discussed by Drs. Harry R. Foerster, Milwaukee; Harry E. Alderson, San Francisco, and Ernest K. Stratton, San Francisco.

Dr. Harold N. Cole, Cleveland, moved a rising vote of thanks to Dr. Ralph Hopkins, Dr. M. T. Van Studdiford, Dr. Henry E. Menage, Dr. J. N. Roussel, Dr. R. A. Oriol, Dr. John A. Devron, and Dr. T. A. Maxwell for their hospitality and courtesy during the meeting. The motion was seconded and unanimously carried.

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## SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

### Wednesday, May 11—Afternoon

The meeting was called to order at 2:15 by the chairman, Dr. J. E. Gordon, Detroit.

On motion of Dr. Henry F. Vaughan, Detroit, it was voted to nominate the following for Associate Fellowship: Raymond V. Brokaw, M.D., 25 West Forty-Third Street, New York; Max Joseph Exner, M.D., 110 Morningside Drive, New York; George S. Luckett, M.D., Stanford University, Calif., and John F. Norton, Ph.D., Department of Health, Detroit.

Drs. R. E. Dyer, L. F. Badger and E. T. Ceder, Washington, D. C., presented a paper on "Endemic Typhus of the United

States: History, Recent Developments, and Present Status of Our Knowledge." Discussed by Drs. Bedford Shelmire, Dallas, Texas, and H. A. Kemp, Dallas, Texas.

Drs. E. L. Bishop, Nashville, Tenn., and H. C. Stewart, Franklin, Tenn., presented a paper on "Tuberculosis in Tennessee." Discussed by Drs. Horton B. Casparis, Nashville, Tenn.; J. N. Baker, Montgomery, Ala.; Henry F. Vaughan, Detroit, and H. C. Stewart, Franklin, Tenn.

Drs. T. P. Hughes and W. A. Sawyer, New York, presented a paper on "Significance of Immunity Tests in Epidemiology, as Illustrated in Yellow Fever." Discussed by Drs. Bolivar J. Lloyd, Washington, D. C.; Claus W. Jungeblut, New York; Charles A. Mohr, Mobile, Ala., and W. A. Sawyer, New York.

Drs. Mark F. Boyd, Tallahassee, Fla., and Warren K. Stratman-Thomas, Jacksonville, Fla., presented a paper on "Acquired Immunity in Benign Tertian Malaria." Discussed by Drs. C. C. Bass, New Orleans, and Mark F. Boyd, Tallahassee, Fla.

Dr. Ralph McBurney, Tuscaloosa, Ala., read a paper on "A Study of Conditions Bearing on Intermittence in Typhoid Carriers." Discussed by Drs. Leon C. Havens, Montgomery, Ala., and Ralph McBurney, Tuscaloosa, Ala.

### Thursday, May 12—Afternoon

A joint meeting was held with the Section on Practice of Medicine. For a report of the proceedings, see the minutes of that section.

### Friday, May 13—Afternoon

The following officers were elected: chairman, Dr. J. N. Baker, Montgomery, Ala; vice chairman, Dr. William Harvey Perkins, New Orleans; secretary, Dr. W. G. Smillie, Boston; delegate, Dr. Stanley H. Osborn, Hartford, Conn.

Dr. Allan J. Hruby, Chicago, read a paper on "Collapse Therapy: Its Public Health Aspects and Potentialities." Discussed by Drs. Stanley H. Osborn, Hartford, Conn.; J. N. Baker, Montgomery, Ala., and Allan J. Hruby, Chicago.

Dr. Donald B. Armstrong, New York, read a paper on "A Study of Sickness Cost and Private Medical Practice." Discussed by Drs. George E. Follansbee, Cleveland; Stanley H. Osborn, Hartford, Conn., and Donald B. Armstrong, New York.

Drs. G. A. Wheeler and W. H. Sebrell, Washington, D. C., presented a paper on "The Control of Pellagra." No discussion.

Dr. Willard C. Stoner, Cleveland, read a paper on "The Hospital Health Service for the Student Nurse." Discussed by Dr. Basil C. MacLean, New Orleans.

Dr. Dwight O'Hara, Boston, read a paper on "The Clinical Teaching of Preventive Medicine." Discussed by Drs. William Harvey Perkins, New Orleans, and J. E. Gordon, Detroit.

## SECTION ON UROLOGY

### Wednesday, May 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. J. Dellinger Barney, Boston.

Dr. H. L. Morris, Detroit, read a paper on "Renal Backache." Discussed by Drs. R. L. Gordon, New Orleans; A. I. Folsom, Dallas, Texas; Gideon Timberlake, St. Petersburg, Fla.; J. Dellinger Barney, Boston; W. J. Wallace, Oklahoma City; M. H. Foster, Alexandria, La.; Paul R. Stalnaker, Houston, Texas; Robert Gutierrez, New York, and H. L. Morris, Detroit.

Dr. William P. Herbst, Jr., Minneapolis, read a paper on "A Pyeloscopic and Urographic Study Before and After Renal Sympathectomy."

Dr. R. E. Cumming, Detroit, read a paper on "Structural and Functional Changes in Urinary Tract Following Transverse Myelitis."

These two papers were discussed by Drs. H. W. E. Walther, New Orleans; Henry K. Sangree, Philadelphia; M. L. Boyd, Atlanta, Ga.; William P. Herbst, Jr., Minneapolis, and R. E. Cumming, Detroit.

Dr. Henry K. Sangree, Philadelphia, read a paper on "Urinary Calculi."

Dr. Hugh H. Young, Baltimore, read a paper on "Surgery in Obstructive and Calculous Disease of the Kidney."

Dr. George H. Ewell, Madison, Wis., read a paper on "Cystine Nephrolithiasis."

These three papers were discussed by Drs. Joseph Hume, New Orleans; Paul R. Stalnaker, Houston, Texas; A. H. Lippincott, Camden, N. J.; J. U. Reaves, Mobile, Ala.; H. K. Sangree, Philadelphia, and George H. Ewell, Madison, Wis.

### Thursday, May 12—Afternoon

Dr. J. Dellinger Barney, Boston, read the chairman's address, entitled "Infarcts of the Kidney."

Dr. Henry G. Bugbee, New York, read a paper on "Operative Relief of Prostatic Obstruction."

Dr. John R. Caulk, St. Louis, read a paper on "Author's Cautery Punch Operation Continues to Reduce the Necessity for Prostatectomy."

Dr. Hermon C. Bumpus, Jr., Rochester, Minn., read a paper on "Results of Prostatic Resection over Seven Year Period."

Dr. Joseph F. McCarthy, New York, read a paper on "The Prophylaxis of Prostatism."

Dr. T. M. Davis, Greenville, S. C., read a paper on "The Present Status of Prostatic Resection."

These five papers were discused by Drs. N. F. Ockerblad, Kansas City, Mo.; A. I. Folsom, Dallas, Texas; William F. Braasch, Rochester, Minn.; Hugh H. Young, Baltimore; N. G. Alcock, Iowa City; Gideon Timberlake, St. Petersburg, Fla.; O. F. Elder, Atlanta, Ga.; R. A. Hennessey, Memphis, Tenn.; B. W. Turner, Houston, Texas; George R. Livermore, Memphis, Tenn.; John R. Caulk, St. Louis; Joseph F. McCarthy, New York, and T. M. Davis, Greenville, S. C.

### Friday, May 13—Afternoon

The following officers were elected: chairman, N. G. Alcock, Iowa City; vice chairman, J. U. Reaves, Mobile, Ala.; secretary, J. H. Morrissey, New York; delegate, Dr. Arthur L. Chute, Boston; alternate, Dr. H. W. E. Walther, New Orleans.

Dr. C. E. Ervin, Danville, Pa., read a paper on "Treatment of Patients with Urinary Tract Infection."

Dr. Edwin Davis, Omaha, read a paper on "Urinary Antisepsis—A Comparison of Methenamine, Caprokol, Pyridium and Acriflavine as to Clinical Efficiency."

These two papers were discussed by Drs. A. I. Folsom, Dallas, Texas; H. W. E. Walther, New Orleans; Anson L. Clark, Rochester, Minn.; I. G. Duncan, Memphis, Tenn.; R. L. Gordon, New Orleans; M. L. Boyd, Atlanta, Ga.; J. Dellinger Barney, Boston; C. E. Ervin, Danville, Pa., and Edwin Davis, Omaha.

Dr. M. L. Boyd, Atlanta, Ga., read a paper on "Carcinoma of Bladder: Indications for Nephrostomy and Nephrectomy." Discussed by Drs. Henry K. Sangree, Philadelphia; Hermon C. Bumpus, Jr., Rochester, Minn.; George R. Livermore, Memphis, Tenn., and M. L. Boyd, Atlanta, Ga.

Dr. Robert Gutierrez, New York, read a paper on "Surgical Aspect of Renal Agenesis with Special Reference to Hypoplastic Kidney, Renal Aplasia and Congenital Absence of One Kidney." Discussed by Drs. C. L. Peacock, New Orleans; Thomas D. Moore, Memphis, Tenn.; I. G. Duncan, Memphis, Tenn.; H. W. E. Walther, New Orleans, and Robert Gutierrez, New York.

Dr. George R. Livermore, Memphis, Tenn., moved that a rising vote of thanks be extended to the urologists of New Orleans for their courtesy and splendid hospitality during the meeting. The motion was seconded and unanimously carried.

## SECTION ON ORTHOPEDIC SURGERY

### Wednesday, May 11—Afternoon

The meeting was called to order at 2:05 by the chairman, Dr. James Warren Sever, Boston.

Dr. Reginald Burbank, New York, read a paper on "Studies on the Etiology and Treatment of Chronic Arthritis." Discussed by Drs. Robert B. Osgood, Boston; Henry W. Meyerding, Rochester, Minn., and Reginald Burbank, New York.

Dr. Wallace S. Duncan, Cleveland, read a paper on "The Relationship of Thyroid Disease to Chronic Nonspecific Arthritis." Discussed by Drs. Henry W. Meyerding, Rochester, Minn.; Ralph Pemberton, Philadelphia; Reginald Burbank, New York, and Wallace S. Duncan, Cleveland.

Dr. James A. Dickson, Cleveland, read a paper on "An Analysis of Two Hundred Cases of Periarthritis of the Shoulder." Discussed by Drs. Myron O. Henry, Minneapolis; W. B. Carrell, Dallas, Texas; Joseph E. Wheeler, Jefferson Barracks, Mo.; Willis C. Campbell, Memphis, Tenn., and James A. Dickson, Cleveland.

Dr. Paul C. Williams, Ann Arbor, Mich., read a paper on "Reduced Lumbosacral Joint Space and Its Relationship to Sciatic Irritation." Discussed by Drs. Fremont A. Chandler, Chicago; Archer O'Reilly, St. Louis; Albert H. Brewster, Boston; James Warren Sever, Boston; Henry W. Meyerding, Rochester, Minn., and Paul C. Williams, Ann Arbor, Mich.

Dr. Philip Lewin, Chicago, read a paper on "The Galeazzi Treatment of Scoliosis." Discussed by Drs. J. H. Kite, Decatur, Ga.; Jacob Kulowski, Iowa City; A. R. Shands, Jr., Dunham, N. C., and Philip Lewin, Chicago.

Dr. Charles LeRoy Lowman, Los Angeles, read a paper on "Postsurgical Use of the Underwater Gymnasium." No discussion.

Thursday, May 12—Afternoon

Dr. J. H. Kite, Decatur, Ga., read a paper on "The Treatment of Congenital Clubfoot." Discussed by Drs. E. S. Hatch, New Orleans, and J. H. Kite, Decatur, Ga.

Dr. Armitage Whitman, New York, read a paper on "An Operative Procedure for the Relief of Congenital Elevation of the Scapula and for Paralysis of the Serratus Magnus Muscle." Discussed by Drs. John Prentiss Lord, Omaha; James A. Dickson, Cleveland; Philip Lewin, Chicago; Francis Carr, Jr., New York, and Armitage Whitman, New York.

Dr. James Warren Sever, Boston, read the chairman's address, entitled "The Crippled Child Versus the Chronic Sick of Massachusetts."

Dr. Chester C. Schneider, Milwaukee, read a paper on "Acromioclavicular Dislocation: Autoplastic Reconstruction." Discussed by Drs. Isidore Cohn, New Orleans; Myron O. Henry, Minneapolis; W. B. Carrell, Dallas, Texas; Philip Lewin, Chicago, and Chester C. Schneider, Milwaukee.

Dr. Rudolph S. Reich, Cleveland, read a paper on "End-Results in Fractures of the Os Calcis." Discussed by Drs. Robert Carothers, Cincinnati; Frank G. Murphy, Chicago; Roland Hammond, Providence, R. I.; J. B. Foster, Houston, Texas, and Rudolph S. Reich, Cleveland.

Friday, May 13—Afternoon

The following officers were elected: chairman, Dr. W. Barnett Owen, Louisville, Ky.; vice chairman, Dr. J. S. Speed, Memphis, Tenn.; secretary, Dr. Fremont A. Chandler, Chicago.

Dr. Albert H. Brewster, Boston, read a paper on "Countersinking the Astragalus in Paralytic Feet." Discussed by Drs. P. A. McIlhenny, New Orleans; W. B. Carrell, Dallas, Texas; J. S. Speed, Memphis, Tenn.; S. L. Hass, San Francisco, and Albert H. Brewster, Boston.

Dr. C. B. Francisco, Kansas City, Mo., read a paper on "Tumors of the Pelvis." Discussed by Drs. Henry W. Meyerding, Rochester, Minn.; J. S. Speed, Memphis, Tenn.; Rudolph S. Reich, Cleveland, and C. B. Francisco, Kansas City, Mo.

Dr. Henry W. Meyerding, Rochester, Minn., moved that the section heartily approve of the plan as submitted by the National Board of Medical Examiners (covering the proposed national examining board) and that it give its hearty cooperation to the committee appointed by the American Orthopedic Society for the furtherance of this movement. The motion was seconded and carried, and the chairman appointed Dr. Philip Lewin, Chicago, Dr. Archer O'Reilly, St. Louis, and Dr. Henry W. Meyerding, Rochester, Minn., as members of a special committee to consider the proposed plan.

Dr. W. Eugene Wolcott, Des Moines, Iowa, read a paper on "Circulation of the Head and Neck of the Femur in Its Relation to Nonunion." Discussed by Drs. Myron O. Henry, Minneapolis; F. J. Gaenslen, Milwaukee; Chester C. Schneider, Milwaukee; P. H. McIlhenny, New Orleans; Robert Carothers, Cincinnati, and W. Eugene Wolcott, Des Moines, Iowa.

Drs. Eugene M. Regen and H. T. Hillstrom, Nashville, Tenn., presented a paper on "An Experimental Study of the Effect of the Roentgen Ray on Bone Growth and on Bone Regeneration." Discussed by Drs. S. L. Haas, San Francisco, and H. T. Hillstrom, Nashville, Tenn.

Dr. John Prentiss Lord, Omaha, read a paper on "Closur of Osteomyelitic Cavities by Plastic Methods." Discussed by Drs. F. J. Gaenslen, Milwaukee, and John Prentiss Lord, Omaha.

Dr. Frank G. Murphy, Chicago, read a paper on "Injuries to the Internal and External Lateral Ligaments of the Knee." Discussed by Drs. C. B. Francisco, Kansas City, Mo.; L. D. Smith, Milwaukee; Paul A. Quaintance, Los Angeles, and Frank G. Murphy, Chicago.

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## SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

Wednesday, May 11—Morning

The meeting was called to order at 9:15 by the vice chairman, Dr. Curtice Rosser, Dallas, Texas.

Dr. E. G. Martin, Detroit, read a paper on "Prolapse o the Rectum: Its Reclassification and Surgical Treatment." Discussed by Drs. Jerome M. Lynch, New York; Mauri Lescale, New Orleans; Louis J. Hirschman, Detroit; C. C. Meckling, Pittsburgh; Louis A. Buie, Rochester, Minn., and E. G. Martin, Detroit.

Drs. Curtice Rosser and Stuart A. Wallace, Dallas, Texas, presented a paper on "The Pathology of Tumor Formation Consequent to the Injection of Oils under the Rectal Mucosa." Discussed by Drs. Fred D. Weidman, Philadelphia; C. J. de Bere, Chicago; C. C. Tucker, Wichita, Kan.; Louis A. Buie, Rochester, Minn.; Jerome M. Lynch, New York; E. G. Martin, Detroit; Louis J. Hirschman, Detroit; Walter A. Fansler, Minneapolis, and Curtice Rosser, Dallas, Texas.

Dr. George E. Binkley, New York, read a paper on "Colostomy, Radiation Therapy and Perineal Resection for Carcinoma of the Rectum." Discussed by Drs. Curtice Rosser, Dallas, Texas; Dudley A. Smith, San Francisco, and George E. Binkley, New York.

Dr. Dudley A. Smith, San Francisco, read a paper on "The Status of Colostomy." Discussed by Drs. Fred W. Rankin, Rochester, Minn.; Louis J. Hirschman, Detroit; Alton Ochsner New Orleans; C. C. Meckling, Pittsburgh, and Dudley A. Smith, San Francisco.

Dr. Sara M. Jordan, Boston, read a paper on "The Unstable Colon and Neurasthenia." Discussed by Drs. John G. Mateer, Detroit; Julius Friedenwald, Baltimore; Henry A. Rafsky, New York; Sidney K. Simon, New Orleans; Seale Harris, Birmingham, Ala.; Sidney A. Portis, Chicago, and Sara M. Jordan, Boston.

Thursday, May 12—Morning

Dr. George B. Eusterman, Rochester, Minn., read the chairman's address, entitled "Notes on Problems and Progress in Gastro-Enterology."

The following papers were read as a symposium on "Experimental Work in Peptic Ulcer":

Drs. F. C. Mann and J. L. Bollman, Rochester, Minn.: "Observations on the Development and Treatment of Experimentally Produced Peptic Ulcers." Discussed by Dr. I. S. Ravdin, Philadelphia.

Drs. A. C. Ivy and S. J. Fogelson, Chicago: "Experimental and Clinical Observations on Gastric Mucin in 'Peptic Ulcer.'" Discussed by Drs. George B. Eusterman, Rochester, Minn., and Martin G. Vorhaus, New York.

Dr. Lewis Gergory Cole, New York: "Process of Repair of Gastric Ulcer." Discussed by Drs. Charles W. Duval, New Orleans, and Owen H. Wangensteen, Minneapolis.

Dr. Frank Smithies, Chicago: "A Clinical Consideration of the Therapeutic Worth of Mucin in the Treatment of Peptic Ulcer."

Dr. Henry A. Rafsky, New York: "The Relation of Alkalosis to Peptic Ulcer." Discussed by Drs. L. J. Hardt, Chicago, and James B. Eyerly, Chicago.

The symposium as a whole was discussed by Drs. Sidney A. Portis, Chicago; Robert Kapsinow, Lafayette, La.; J. L. Bollman, Rochester, Minn.; A. C. Ivy, Chicago; A. F. R. Andresen, Brooklyn; S. J. Fogelson, Chicago; Frank Smithies, Chicago; Lewis Gregory Cole, New York; Julius Friedenwald, Baltimore, and Harry A. Rafsky, New York.

Drs. George W. Holmes and Aubrey O. Hampton, Boston, presented a paper on "The Instances of Carcinoma in Chronic

Ulcerating Lesions of the Stomach." Discussed by Drs. John D. Camp, Rochester, Minn.; Frank Smithies, Chicago; Martin E. Rehfuss, Philadelphia; Lewis Gregory Cole, New York, and George W. Holmes, Boston.

Friday, May 13—Morning

The following officers were elected: chairman, Dr. Curtice Rosser, Dallas, Texas; vice chairman, Dr. A. F. R. Andresen, Brooklyn; secretary, Dr. H. L. Bockus, Philadelphia; delegate, Dr. Descum C. McKenney, Buffalo; alternate, Dr. Sara M. Jordan, Boston.

Dr. Burrill B. Crohn, New York, presented a resolution on the death of Dr. Percy B. Davidson, which on motion of Dr. Martin E. Rehfuss, Philadelphia, duly seconded, was unanimously adopted.

Dr. Martin E. Rehfuss, Philadelphia, read a paper on "Demonstration of a Hormone-Like Element Capable of Affecting the Small Intestinal Contractions." Discussed by Drs. A. C. Ivy, Chicago; Daniel N. Silverman, New Orleans; Seizaburo Okada, Nagoya, Japan, and Martin E. Rehfuss, Philadelphia.

Dr. Burrill B. Crohn, New York, read a paper on "Terminal Ileitis: Its Clinical Manifestations." Discussed by Drs. J. A. Bargen, Rochester, Minn.; Julius Friedenwald, Baltimore; Louis J. Hirschman, Detroit; Sidney A. Portis, Chicago, and Burrill B. Crohn, New York.

Drs. Wallace M. Yater and Laurence S. Otell, Washington, D. C., presented a paper on "The Differential Diagnosis of Diseases of the Liver and Spleen with the Aid of Roentgenography After the Intravenous Injection of Thorium Dioxide." Discussed by Drs. William H. Harris, New Orleans; C. J. Tripoli, New Orleans; Oscar Hite, Richmond, Va., and Wallace M. Yater, Washington, D. C.

Drs. William E. Robertson, William A. Swalm and Frank W. Konzelmann, Philadelphia, presented a paper on "Comparative Merits of the Five Most Popular Tests for Determining the Functional Capacity of the Liver." Discussed by Drs. John A. Killian, New York; Donovan C. Browne, New Orleans; Sidney A. Portis, Chicago; J. E. Hirsh, Birmingham, Ala.; L. A. Crandall, Chicago; George B. Eusterman, Rochester, Minn., and William E. Robertson, Philadelphia.

Drs. Julius Friedenwald and Samuel Morrison, Baltimore, presented a paper on "Clinical Observation on the Relation of Gastric and Renal Disorders." Discussed by Drs. Sidney K. Simon, New Orleans; Seale Harris, Birmingham, Ala.; A. L. Levin, New Orleans, and Julius Friedenwald, Baltimore.

The following Committee on Scientific Exhibit was appointed: Dr. A. H. Aaron, Buffalo, chairman; Dr. W. A. Fansler, Minneapolis, and Dr. A. F. R. Andresen, Brooklyn.

## SECTION ON RADIOLOGY

Wednesday, May 11—Morning

The meeting was called to order at 9:05 by the chairman, Dr. Henry K. Pancoast, Philadelphia.

Dr. John W. Pierson, Baltimore, and Dr. Charles L. Martin, Dallas, Texas, were appointed to serve on the Executive Committee as substitutes for Dr. Fred M. Hodges, Richmond, Va., and Dr. Arthur W. Erskine, Cedar Rapids, Iowa.

Dr. Henry K. Pancoast, Philadelphia, read the chairman's address, entitled "The Superior Pulmonary Sulcus Tumor."

Dr. Maurice Lenz, New York, read a paper on "Roentgenotherapy of Malignant Neoplasms of the Upper Respiratory Tract." Discussed by Drs. Francis Carter Wood, New York, and Maurice Lenz, New York.

Dr. A. U. Desjardins, Rochester, Minn., read a paper on "Radiotherapy for Hodgkin's Disease and Lymphosarcoma." Discussed by Drs. John H. Musser, New Orleans; Dr. Walter L. Mattick, Buffalo, and A. U. Desjardins, Rochester, Minn.

Dr. Charles L. Martin, Dallas, Texas, read a paper on "Small Radium Needle Technic." Discussed by Drs. Maurice Lenz, New York; W. E. Costolow, Los Angeles; A. James Larkin, Chicago, and Charles L. Martin, Dallas.

Dr. Edwin C. Ernst, St. Louis, read a paper on "Radiologic Research: Its Significance in Medicine." Discussed by Dr. Albert Soiland, Los Angeles.

Dr. Walter L. Mattick, Buffalo, read a paper on "Protracted Treatment with Heavily Filtered High Voltage Roentgen Irradiation in Its Application to Cancer Therapy." Discussed by Drs. A. U. Desjardins, Rochester, Minn.; John T. Murphy, Toledo, Ohio, and Walter L. Mattick, Buffalo.

Thursday, May 12—Morning

Dr. Arthur C. Christie, Washington, D. C., was appointed to serve on the Executive Committee in place of Dr. Charles L. Martin, Dallas, Texas, who was called home.

Dr. C. H. Heacock, Memphis, Tenn., read a paper on "Calcification in Intestinal Tuberculosis." Discussed by Drs. P. F. Butler, Boston, and C. H. Heacock, Memphis, Tenn.

Drs. P. F. Butler and Max Ritvo, Boston, presented a paper on "Physostigmine, a Peristaltic Stimulant." Discussed by Drs. Ernest C. Samuel, New Orleans; L. R. Sante, St. Louis, and P. F. Butler, Boston.

Dr. John W. Pierson, Baltimore, read a paper on "Pneumonia Due to the Aspiration of Lipoids." Discussed by Drs. W. Walter Wasson, Denver; John F. Herrick, Ottumwa, Iowa; J. L. Dubrow, Memphis, Tenn., and John W. Pierson, Baltimore.

Dr. Barnet P. Stivelman, New York, read a paper on "Atelectasis in Pulmonary Tuberculosis." Discussed by Drs. L. R. Sante, St. Louis; Henry K. Pancoast, Philadelphia; Lawrence Reynolds, Detroit; J. L. Dubrow, Memphis, Tenn.; John W. Pierson, Baltimore, and Barnet P. Stivelman, New York.

Dr. Arthur C. Christie, Washington, D. C., read a paper on "The Education and Certification of Radiologists." Discussed by Drs. Henry K. Pancoast, Philadelphia; P. F. Butler, Boston; George W. Grier, Pittsburgh, and Leon J. Menville, New Orleans.

Drs. Ira H. Lockwood and Wendell Stewart, Kansas City, Mo., presented a paper on "A Roentgen Study of the Physiologic and Pathologic Changes in the Mammary Gland." Discussed by Drs. Leon J. Menville, New Orleans; Eugene P. Pendergrass, Philadelphia, and Ira H. Lockwood, Kansas City, Mo.

Friday, May 13—Morning

The following officers were elected: chairman, Dr. George W. Grier, Pittsburgh; vice chairman, Dr. W. Walter Wasson, Denver; secretary, Dr. John T. Murphy, Toledo, Ohio; delegate, Dr. Albert Soiland, Los Angeles; alternate, Dr. A. U. Desjardins, Rochester, Minn.

Dr. Arthur C. Christie, Washington, D. C., moved the adoption of the following resolution:

> Whereas, It is considered desirable to establish some method for control of the practice of radiology; and
>
> Whereas, Certain medical specialties have established boards for certification of specialists in their respective fields; and
>
> Whereas, The boards above mentioned have operated successfully over varying periods of years to the great advantage of the specialties which they represent; be it therefore
>
> *Resolved*, That the Section on Radiology of the American Medical Association request the Board of Trustees to appoint a committee of two to confer with the American Roentgen Ray Society, the Radiological Society of North America, the American College of Radiology, and the American Radium Society, with the object of forming an American Board for Radiologic Examinations; and be it further
>
> *Resolved*, That any plan presented by the above named committee shall take effect and be put into operation only after approval by the Board of Trustees and by at least two of the above mentional national radiologic organizations.

The motion was regularly seconded, was put to a vote and carried.

Dr. John D. Camp, Rochester, Minn., read a paper on "A Roentgenologic Study of the Osseous Changes in Hyperparathyroidism." Discussed by Drs. Lawrence Reynolds, Detroit; Plinn F. Morse, Detroit; C. S. Gorsline, Battle Creek; Nathaniel Gates, Detroit; Henry K. Pancoast, Philadelphia; Philip Lewin, Chicago, and John D. Camp, Rochester, Minn.

Dr. A. Jerome Thomas, Shreveport, La., read a paper on "Radiographic Researches of Pregnancy Featuring the Early Diagnosis." Discussed by Drs. Amédée Granger, New Orleans; J. T. Murphy, Toledo, Ohio; Henry K. Pancoast, Philadelphia, and A. Jerome Thomas, Shreveport, La.

Dr. Bundy Allen, Tampa, Fla., read a paper on "Roentgenographic and Clinical Observations of the Nasal Accessory Sinuses."

Dr. W. Walter Wasson, Denver, read a paper on "The Changes Taking Place in the Nasal Accessory Sinuses After Birth."

These two papers were discussed by Drs. Amédée Granger, New Orleans; Edwin C. Ernst, St. Louis; Eugene P. Pendergrass, Philadelphia; Bundy Allen, Tampa, Fla., and W. Walter Wasson, Denver.

Dr. Roy G. Giles, Temple, Texas, read a paper on "Fractures of the Spine: Report of One Hundred and Seventy-Three Cases." No discussion.

# THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the New Orleans session was of especial interest because of the diversified character of the exhibits. Twelve sections of the Scientific Assembly sponsored group exhibits, with forty-two individuals reading papers before the sections who also had exhibits on the same subjects in the Scientific Exhibit.

Three special exhibits authorized by the Board of Trustees were shown for the first time this year. The exhibit on poliomyelitis was a cooperative undertaking by the Committee on Scientific Exhibit, the United States Public Health Service, and six sections of the Scientific Assembly. The exhibit occupied seven booths, at which demonstrations were given at stated intervals, and was accompanied by a pamphlet written for the occasion for distribution to visitors. The committee in charge of the exhibit was composed of John E. Gordon, Detroit; Arthur T. Legg, Boston, and Ralph C. Williams, chairman, Washington, D. C. The active committee was assisted by an advisory committee composed of William H. Park, New York, representing the Section on Pathology and Physiology; J. C. McKinley, Minneapolis, representing the Section on Nervous and Mental Diseases; Kenneth D. Blackfan, Boston, representing the Section on Pediatrics; Walter Truslow, Brooklyn, representing the Section on Orthopedic Surgery; Franklin E. Murphy, Kansas City, Mo., representing the Section on Practice of Medicine, and S. D. Kramer, Boston, representing the Section on Preventive and Industrial Medicine and Public Health. Demonstrations on different phases of poliomyelitis were given by W. Lloyd Aycock, Boston; S. D. Kramer, Boston; John E. Gordon, Detroit; E. B. Shaw, San Francisco; James L. Wilson, Boston; J. P. Leake, Washington; Arthur T. Legg, Boston, and Janet B. Merrill, Boston.

The exhibit on cancer was in charge of a committee composed of Max Cutler, Chicago, R. S. Ferguson, New York, and Frank W. Hartman, chairman, Detroit, assisted by the following demonstrators: A. C. Broders, Rochester, Minn.; H. P. Doub, Detroit; Charles F. Geschickter, Baltimore; John G. Mateer, Detroit; J. P. Pratt, Detroit, and Shields Warren, Boston. A continuous program of illustrated lectures and motion pictures was carried on in connection with the exhibit as a joint endeavor with the American Society for the Control of Cancer.

The exhibit on physical therapy occupied four booths with continuous demonstrations. The committee was as follows: K. G. Hansson, New York; C. L. Lowman, Los Angeles, and John S. Coulter, chairman, Chicago.

The Section on Diseases of Children included in its group fourteen exhibits on a variety of subjects, two of which received a certificate of merit. The committee in charge was composed of A. Graeme Mitchell, Cincinnati; Robert A. Strong, New Orleans, and F. Thomas Mitchell, chairman, Memphis, Tenn.

The Section on Practice of Medicine showed twelve exhibits, to which were awarded one gold medal and one silver medal. James H. Austin, Philadelphia, Eugene S. Kilgore, San Francisco, and L. G. Rowntree, chairman, Rochester, Minn., formed the committee in charge.

The Section on Dermatology and Syphilology, under the direction of a committee composed of John A. Devron, New Orleans, Clark W. Finnerud, Chicago, Robert L. Gilman, Philadelphia, and Fred D. Weidman, chairman, Philadelphia, continued its work on the relation of dermatology to systemic conditions. In addition to the group exhibit there were several other exhibits, one of which was awarded a silver medal and one a certificate of merit.

The Section on Preventive and Industrial Medicine and Public Health sponsored eight exhibits, to one of which was given a certificate of merit. The committee in charge was as follows: Alice Hamilton, Boston; E. R. Hayhurst, Columbus, Ohio, and Paul A. Davis, chairman, Akron, Ohio.

The Section on Nervous and Mental Diseases sponsored a motion picture program shown in a space adjoining its exhibits. The committee in charge was composed of Earl D. Bond, Philadelphia; Groves B. Smith, Godfrey, Ill., and Thomas J. Heldt, chairman, Detroit.

The Section on Obstetrics, Gynecology and Abdominal Surgery, with a committee composed of Norman F. Miller, Ann Arbor, Mich.; T. B. Sellers, New Orleans, and E. D. Plass, chairman, Iowa City, placed special emphasis on its motion picture program shown in conjunction with the exhibits.

The Section on Ophthalmology, in addition to the exhibits, showed motion pictures in an adjoining space. The committee in charge was composed of C. A. Bahn, New Orleans; G. L. Hardin, New Orleans, and Parker Heath, chairman, Detroit.

The Section on Laryngology, Otology and Rhinology, under the auspices of a committee composed of F. E. Lejeune, New Orleans; William A. Wagner, New Orleans, and Austin A. Hayden, chairman, Chicago, besides its exhibit, carried on a motion picture program at which seventeen films were shown on a continuous schedule.

The Section on Orthopedic Surgery had two exhibits in conjunction with a motion picture program. The committee in charge was composed of Paul N. Jepson, Philadelphia; J. T. O'Ferrall, New Orleans, and E. B. Mumford, chairman, Indianapolis.

The Section on Gastro-Enterology and Proctology, with a committee made up of Curtice Rosser, Dallas, Texas; F. D. Gorham, St. Louis, and A. H. Aaron, chairman, Buffalo, showed six exhibits.

The Section on Radiology sponsored seven exhibits besides the large amount of radiologic material found in the exhibits of other sections. The committee was as follows: Amédée Granger, New Orleans; Ernest C. Samuel, New Orleans, and Charles L. Martin, chairman, Dallas, Texas.

The Section on Urology took part in the Scientific Exhibit under the auspices of a committee of which George Gilbert Smith was chairman.

Besides three special exhibits and seventy exhibits under the auspices of different sections, there were thirteen pathologic and laboratory exhibits, eight surgical and anatomic and twenty-two in the educational classification, making 116 in all.

# REPORT OF THE COMMITTEE ON AWARDS

The Committee on Awards reports:

### CLASS I

[Awards in Class I are made for exhibits of individual investigations, which are judged on the basis of originality and excellence of presentation.]

The gold medal to Frank A. Hartman, C. W. Greene, J. J. Maisel and G. W. Thorn, University of Buffalo, Buffalo, for original investigative work on the development and use of a hormone from the suprarenal cortex and excellence of presentation.

The silver medal to C. W. Emmons, College of Physicians and Surgeons, Columbia University, New York, for original work on the variations in ringworm fungi and excellence of presentation.

The bronze medal to J. A. Bargen, P. W. Brown and H. M. Weber, Mayo Clinic and Mayo Foundation, Rochester, Minn., for original investigation of diseases of the colon and excellence of presentation.

Certificates of Merit, Class I, were awarded to the following (alphabetically arranged):

To Abraham Levinson, Chicago, for exhibit illustrating continuation of investigations on the cerebrospinal fluid.

To Alton Ochsner, Earl Garside and Ambrose Storck, Department of Surgery, Tulane University Medical School, New

Orleans, for exhibit illustrating the use of digestive ferments in prevention of adhesions.

To Sidney J. Wilson and Simeon H. Hulsey, Fort Worth, Texas, and Fred D. Weidman, Philadelphia, for exhibit illustrating excellent studies on chromoblastomycosis in Texas.

In addition, the following exhibit is deemed worthy of Honorable Mention:

That of John W. Towey, Powers, Mich., Willis H. Huron, Iron Mountain, Mich., and Henry C. Sweany, Chicago, for exhibit on occupational sensitization to fungus spores found in maple bark.

### CLASS II

[Awards in Class II are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of excellence of correlating facts and excellence of presentation.]

The gold medal to Max Ballin and Plinn F. Morse, Harper Hospital, Detroit, for excellence of presentation of exhibit on parathyroidism.

The silver medal to L. G. Rowntree and C. H. Greene, Mayo Clinic and Mayo Foundation, Rochester, Minn., for excellence of presentation of exhibit of comprehensive study on Addison's Disease.

The bronze medal to Ernest Carroll Faust, Department of Tropical Medicine, Tulane University Medical School, New Orleans, for excellence of presentation of exhibit on human helminth infections.

Certificates of Merit, Class II, were awarded to the following (alphabetically arranged):

To Chevalier Jackson and Chevalier L. Jackson, Temple University School of Medicine, Philadelphia, for excellence of presentation of exhibit illustrating tumors of the lungs and tracheobronchial tree.

To Frank C. Neff, D. N. Medearis and Margaret Anderson, Department of Pediatrics, University of Kansas School of Medicine, Kansas City, Kan., for excellence of presentation of exhibit illustrating a study of the newly born.

To Henry F. Vaughan, Detroit Department of Health, Detroit, for excellence of presentation of exhibit illustrating plan of medical participation of the general practitioner in a public health program.

In addition, the following exhibits are deemed worthy of Honorable Mention:

That of Francis Clark Grant, University Hospital, Philadelphia, for excellence of demonstration of exhibit on ventriculography.

That of O. E. Denney, National Leprosarium, Carville, La., for exhibit on leprosy. (This work has been recognized by awards at previous Scientific Exhibits of the American Medical Association.)

The Committee on Awards commends especially the group exhibit of the Mayo Clinic and Mayo Foundation as a model of presentation.

### EDUCATIONAL CLASSIFICATION

A special Certificate of Merit is awarded to the American Society for the Control of Cancer for a cooperative exhibit on cancer as the best exhibit in the educational (national organizations) classification.

The Committee on Awards commends the excellent demonstrations given in the special exhibits; namely, the exhibit on poliomyelitis, that on cancer and that on physical therapy.

The Committee on Awards extends to the Committee on Scientific Exhibit, to the Advisory Committee and to Dr. Thomas G. Hull, executive in charge, and to the active participants in the Scientific Exhibit, its appreciation. The committee feels that the Scientific Exhibit continues to be an extremely important and distinctive feature of the annual session.

The committee also wishes to state that the cooperation of the twelve sections in arranging special exhibits has been of great value.

Henry E. Helmholz, Chairman, Rochester, Minn.
Frank W. Hartman, Detroit.
Roger I. Lee, Boston.
Thomas G. Orr, Kansas City, Mo.
Eugene P. Pendergrass, Philadelphia.

## REGISTRATION AT NEW ORLEANS

The total registration at the New Orleans session was 2,778. Below are given two summaries—one by sections and one by states:

*Registration by Sections*

| | |
|---|---|
| Practice of Medicine | 725 |
| Surgery, General and Abdominal | 526 |
| Obstetrics, Gynecology and Abdominal Surgery | 204 |
| Ophthalmology | 172 |
| Laryngology, Otology and Rhinology | 168 |
| Diseases of Children | 198 |
| Pharmacology and Therapeutics | 24 |
| Pathology and Physiology | 90 |
| Nervous and Mental Diseases | 99 |
| Dermatology and Syphilology | 84 |
| Preventive and Industrial Medicine and Public Health | 112 |
| Urology | 107 |
| Orthopedic Surgery | 67 |
| Gastro-Enterology and Proctology | 67 |
| Radiology | 98 |
| Miscellaneous (two or more sections or no section marked) | 37 |
| Total | 2,778 |

*Registration by States*

| | | | |
|---|---|---|---|
| Alabama | 104 | New Hampshire | 1 |
| Arizona | 3 | New Jersey | 22 |
| Arkansas | 49 | New Mexico | 4 |
| California | 71 | New York | 156 |
| Colorado | 38 | North Carolina | 17 |
| Connecticut | 11 | North Dakota | 3 |
| District of Columbia | 35 | Ohio | 97 |
| Florida | 62 | Oklahoma | 49 |
| Georgia | 57 | Oregon | 7 |
| Idaho | 2 | Pennsylvania | 107 |
| Illinois | 156 | Rhode Island | 3 |
| Indiana | 46 | South Carolina | 24 |
| Iowa | 31 | South Dakota | 3 |
| Kansas | 39 | Tennessee | 71 |
| Kentucky | 32 | Texas | 304 |
| Louisiana | 642 | Vermont | 3 |
| Maine | 4 | Virginia | 39 |
| Maryland | 21 | Washington | 9 |
| Massachusetts | 49 | West Virginia | 10 |
| Michigan | 71 | Wisconsin | 30 |
| Minnesota | 52 | Wyoming | 7 |
| Mississippi | 119 | Foreign | 16 |
| Missouri | 88 | | |
| Montana | 1 | Total | 2,778 |
| Nebraska | 13 | | |

# *Association News*

## ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD
## MAY 7-12, 1932

Meetings of the Board of Trustees were held at the Roosevelt Hotel, New Orleans, on Sunday, May 7, and on ensuing days during the annual session of the Association.

### REPRESENTATIVE ON SECTION N OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Dr. William H. Park was appointed to represent the American Medical Association on section N of the American Association for the Advancement of Science.

### DISCHARGE OF COMMITTEES TO STUDY ANESTHESIA ACCIDENTS

It was deemed advisable to dissolve the two special committees on anesthesia of the Council on Pharmacy and Chemistry, to ask the Council on Scientific Assembly to discharge its Committee on Anesthesia, to ask the secretary of the Council on Pharmacy and Chemistry to receive reports of accidents and to transmit them to the respective referees for advice, and to request the chairman of the Council to appoint special investigating committees if need arises.

### POSTPONEMENT OF PUBLICATION OF THE THIRTEENTH EDITION OF THE AMERICAN MEDICAL DIRECTORY

Since it appears reasonably certain that because of the financial depression it will not be possible to issue a new edition of the American Medical Directory in 1933 without serious loss, it was decided to postpone the publication of the thirteenth edition until 1934.

### REPRESENTATIVES TO MEETING OF BRITISH MEDICAL ASSOCIATION

Dr. George H. Simmons, Dr. Edmund Horgan and Dr. Henry O. Reik were appointed to represent the American Medical Association at the meeting of the British Medical Association to be held in July.

### ELIMINATION OF ADVERTISEMENTS OF DIATHERMY APPARATUS MANUFACTURED BY FIRMS THAT PROVIDE CLINICAL INSTRUCTIONS IN PHYSICAL THERAPY PROCEDURES

The Board of Trustees voted to instruct the Advertising Committee of the Association not to accept advertisements of diathermy apparatus manufactured by firms that employ persons to give clinical instruction in physical therapy procedures.

### SERIES OF ARTICLES ON ELECTROCARDIOGRAPHY

The Board approved the publication in The Journal, and later in book form, of a series of articles on electrocardiography, which, it is hoped, will provide light on the subject for the general practitioner.

### RESOLUTIONS FROM THE HOUSE OF DELEGATES

Resolutions referred to the Board of Trustees by the House of Delegates were given careful consideration and reports on these were made to the House.

### JOINT MEETING OF BOARD OF TRUSTEES AND SPECIAL JOURNAL EDITORS

Provisions were made for a joint meeting of the Board of Trustees with the editors of the special journals published by the American Medical Association during the week of the meeting in Milwaukee in 1933.

### APPRECIATION OF SERVICE RENDERED BY MEMBERS OF COUNCILS

The editor of The Journal was instructed to prepare for publication an editorial pointing out the service rendered by members of the various councils and the amount of time required to perform that service, so that the medical profession may have a clearer idea of what the members of these councils are doing for the Association without remuneration.

### REORGANIZATION OF BOARD OF TRUSTEES

At its last meeting, on Thursday, the Board of Trustees reorganized and the following officers and committees were appointed: Dr. A. R. Mitchell, Chairman; Dr. J. H. J. Upham, Vice Chairman; Dr. J. H. Walsh, Secretary. Executive Committee and Finance Committee: Drs. J. H. J. Upham, Rock Sleyster and J. H. Walsh. Committee on Scientific Exhibit: Drs. D. Chester Brown (Chairman), A. W. Booth and Allen Bunce.

The date of the September meeting of the Board was fixed as September 22 and 23.

Other matters also were given careful consideration.

## MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 1:30 to 1:35 p. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia Chain Program has been discontinued for the present.

The program for the week is as follows:

May 30. Holiday (no broadcast).
June 1. Granny Magic.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM.

The program for the week is as follows:

June 4. How is Your Blood Pressure?

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

## CALIFORNIA

**Society News.**—Dr. James Vernon Luck, among others addressed the Los Angeles County Medical Association, May 19, on "The Schilling Differential in Appendicitis."——Included among the speakers before the Los Angeles Clinical and Pathological Society, May 26, was Dr. Clifford B. Walker on "Traumatic Bitemporal Hemianopsia with Analysis of Mechanism."——The Society for Neurology and Psychiatry was addressed, May 25, among others, by Dr. E. Huntington Williams on "Experiences with Sodium Rhodanate in Narcolepsy and Allied Conditions."

**Urge Change in Laws Relating to Commitment of Insane.**—A campaign for the improvement of California laws relating to the commitment of the insane was started at a meeting of county and state officials, welfare leaders and hospital executives at the University of California. Dr. Herman M. Adler, professor of psychiatry, University of California Medical School, Berkeley, presided, and the discussion was led by Dr. Glenn E. Myers, Los Angeles. It was pointed out that the commitment laws are antiquated, cumbersome and make humane examination and treatment of those suffering from mental disease almost impossible. The consensus of the group was that "it should be made as easy as possible for a person deserving treatment of a mental disorder to get into a California state hospital through the provision of the voluntary admission rule. Such voluntary admission should be encouraged, not discouraged."

## DISTRICT OF COLUMBIA

**District Bill in Congress.**—S. 4704, by Senator Blaine, Wisconsin, to amend the healing arts practice act of the District of Columbia to provide that the act shall not be construed so as to deny a license by reciprocity "to physicians who were licensed prior to 1905."

**District Medical Election.**—Dr. Harry A. Fowler was elected president of the Medical Society of the District of Columbia at its annual meeting, May 4. Other officers of the society are Drs. Henry R. Schreiber and Helen Gladys Kain, vice presidents, and Coursen B. Conklin, secretary. The next annual meeting will be held, May 3, 1933.

**Appointments at George Washington University.**—The following new appointments to the teaching staff of the George Washington University School of Medicine, Washington, D. C., for the coming academic year have been announced, among others:

Dr. Errett Cyril Albritton, professor of physiology and executive officer of the department.
Vincent du Vigneaud, Ph.D., professor of biochemistry and executive officer of the department.
Leland W. Parr, Ph.D., associate professor of bacteriology.
Dr. Roscoe Roy Spencer, associate professor of hygiene and preventive medicine.
Chester E. Leese, Ph.D., assistant professor of physiology.
John H. Hanks, Ph.D., assistant professor of bacteriology.
Elizabeth Verder, Ph.D., assistant professor of bacteriology.
Dr. William H. Jenkins, clinical professor of otorhinolaryngology.
Dr. Loren B. T. Johnson, associate in pediatrics.
Dr. Edgar M. McPeak, associate in radiology.
Dr. Isidore Lattman, associate in radiology.
Dr. Montgomery Blair, Jr., clinical instructor in pediatrics.
Dr. Jeter C. Bradley, clinical instructor in otorhinolaryngology.
Dr. Paul F. Dickens, clinical instructor in medicine.
Dr. Addison M. Duvall, clinical instructor in psychiatry.
Dr. Bernard L. Hardin, Jr., clinical instructor in medicine.
Dr. George A. Holm, clinical instructor in medicine.
Dr. Spencer V. Meade, clinical instructor in medicine.
Dr. William G. Young, clinical instructor in urology.
Dr. Samuel A. Silk, clinical instructor in psychiatry.

## FLORIDA

**Radiologic Meeting.**—Dr. Orion O. Feaster, St. Petersburg, was elected president of the Florida Radiological Society at its meeting in Sarasota, May 2; Dr. Frederick K. Herpel, West Palm Beach, was made vice president, and Dr. W. McL. Shaw, Jacksonville, secretary. Informal presentation of case reports and demonstrations of roentgenograms were features of a morning and an afternoon session. The society was organized, Nov. 14, 1931.

**State Medical Election and Program.**—Dr. Gerry R. Holden, Jacksonville, was elected president of the Florida

Medical Association at its fifty-ninth annual convention in Sarasota recently, succeeding Dr. Gaston H. Edwards, Orlando. The vice presidents are Drs. Jack Halton, Sarasota, Eugene G. Peek, Ocala, and William C. Thomas, Gainesville. Dr. Shaler A. Richardson, Jacksonville, was reelected secretary. The next annual meeting of the association will be held in Hollywood. Dr. Walter L. Bierring, Des Moines, Iowa, guest of honor at this meeting, spoke on "Present Status of Heart Lesions." Drs. Simon E. Driskell, Jacksonville, spoke on "A Proposed Compensation Act and Its Relation to the Physician"; Spencer A. Folsom, Orlando, "Modern Treatment of Thyrotoxicosis"; Frank C. Metzger, Sarasota, "Hay Fever in Florida"; Roscoe H. Knowlton, St. Petersburg, "Diabetes in the Home"; Robert G. Nelson, Tampa, "Amelioration of Labor Pains"; Gideon Timberlake, St. Petersburg, "Urinary Obstruction: Recognition of Cause and Its Relief," and Mozart A. Lischkoff, Pensacola, "Recent Progress in Juvenile Sinusitis."

## ILLINOIS

**Society News.**—The Lincoln County Medical Society was addressed, April 22, at Lincoln, by Dr. Jonas Curtis Lyter, St. Louis, on diseases of the coronary arteries.——Dr. William T. Coughlin, St. Louis, discussed "Brain Tumors That Are Overlooked" before the St. Clair County Medical Society in East St. Louis, May 5.——A symposium on nephritis constituted the program of the Adams County Medical Society, Quincy, May 9; the speakers were Drs. Richard A. Harris, Walter M. Whitaker and Seldon R. Hoover, Jr., all of Quincy. ——Dr. Ben Z. Rappaport, Chicago, addressed the Peoria City Medical Society, May 3, on "Diagnosis and Treatment of the Common Allergic Conditions."

### Chicago

**Rush Medical College Holds Alumni Reunion.**—Alumni of Rush Medical College will hold their annual reunion, beginning June 9 and continuing through June 15. Clinics will be held on June 13 at Rush Medical College and on June 14 at Billings Hospital. On June 13 the classes of 1882 and 1912 will meet at special banquets.

**Society News.**—Dr. Sidney J. Silbar, Milwaukee, addressed the Chicago Urological Society, May 25, on "Pain as a Diagnostic and Prognostic Symptom in Gonorrhea."——The Chicago Council of Medical Women will be addressed, June 3, by Drs. Katharine M. Howell on "Vaccine Therapy in Arthritis," and Ernestine V. Kandel, "Blood Findings and Therapy in the Anemias."

**Licenses Revoked.**—The state department of registration and education at Springfield revoked the licenses of Drs. Thomas J. Ney and Wilhelm Loeser, April 13. Dr. Ney's license, which was issued in 1922, was revoked on the ground of his conviction of manslaughter. The license of Dr. Loeser, which was issued in 1905, was revoked because he was found guilty of violation of the Harrison Narcotic Act. Dr. Clifford Judson Spruce's license was revoked, May 2, on the ground of his connection with unlicensed persons. The license of Dr. Maurice J. Rabbins was suspended for one year, April 13, because of his conviction of violation of the Harrison Narcotic Act.

**Gilmore Memorial Foundation.**—The Eugene S. Gilmore Memorial Foundation was recently established in honor of the late Mr. Gilmore, superintendent of Wesley Memorial Hospital for twenty-five years. He was also a past president of the American Hospital Association and its senior trustee. The purpose of the foundation is to create a fund, the income of which will be used in establishing scholarships for the graduates of Wesley Memorial Hospital School of Nursing. The fund will also provide for a tablet or medallion, which will be placed in the new Wesley Memorial Hospital when it is completed. Subscriptions are being received by Dr. Mark T. Goldstine, treasurer of the foundation.

**Gibbs Medal Awarded.**—Edward Curtis Franklin, Ph.D., professor emeritus of organic chemistry, Stanford University, California, was presented with the Willard Gibbs Medal of the Chicago section of the American Chemical Society, May 20. Dr. Franklin is the twenty-first Gibbs medalist to receive the award for "eminent work in and contribution to pure or applied chemistry," the particular field in this case being researches wherein liquid ammonia would be substituted for many important reactions involving water. Dr. Franklin received the degree of doctor of philosophy from Johns Hopkins University in 1894. He was professor of chemistry and chief of the division of chemistry, U. S. Public Health Service, 1911-1913. In 1903 he joined the faculty of Stanford University as associate professor of organic chemistry.

## IOWA

**Society News.**—Dr. Archibald F. O'Donoghue, Sioux City, among others, addressed the Crawford County Medical Society, April 12, in Denison, on "Traction and Extension in Fractures."——The Dallas-Guthrie Counties Medical Society was addressed in Panora, April 21, by Drs. Charles A. Nicoll, Linden, and William R. Van Duzer, Casey, on "Management of Infants Under One Year" and "Diseases of Old Age," respectively.——Dr. Ralph A. Reis, Chicago, addressed the Scott County Medical Society, April 5, on "Appendicitis in Pregnancy."——At the April 22 meeting of the Tama County Medical Society in Dysart, Dr. Frank R. Peterson, Iowa City, talked on recent methods of diagnosis and treatment of carcinoma of the breast.

## MARYLAND

**Twins in Maryland.**—In every fifty live births in Maryland last year, the state department of health reports, there was an average of one set of twins. The total number of live births recorded in the state in 1931 was 28,765. This number includes 298 sets of twins, 596 children, or 2 per cent of the total. In the total of 2,233,149 births in the birth registration area of the United States, it was stated, there were 23,863 sets of twins, 47,726 children, or 2 per cent of the total. These figures, like those for Maryland, do not include the plural births in which one or both children died. The figures for Maryland last year indicate that one set of living twins was born to each 100 mothers.

**Survey of School Children.**—About 75 per cent of the school children in Anne Arundel County have one or more physical defects, according to a report of a survey just completed for the state health department by the director of the county health department. In this survey, which required repeated visits to the seventy-three grammar schools in the county, 5,200 children were examined and 9,000 inspections for communicable diseases were made. Seventy-one per cent of the white children examined and 81 per cent of the Negroes were defective. In both classes dental defects predominated. Local health workers will follow up these examinations by visiting the children's homes. The Anne Arundel unit was established as a "model" organization in August, 1931. It is maintained by the Rockefeller Foundation, Johns Hopkins School of Hygiene and Public Health, the Anne Arundel County commissioners and the state department of health.

**Review Course for General Practitioners.**—The division of medical extension of the University of Maryland announces its ninth annual review course for physicians, beginning June 6 and extending to June 24. This is a general course, designed to give to the physician in general practice the opportunity to study methods of diagnosis and treatment in current use in the university clinics. Preference will be given to physicians registered in Maryland. A matriculation fee of $25 will be charged to these registrants, while a charge of $50 will be made to those coming from other states. Morning lectures will deal with modern advances in diagnosis and treatment, the subjects to be chiefly in the field of general medicine and surgery, with a few lectures devoted to specialties. There will be a daily clinic. The class, which has been limited to twenty, will be assigned in groups in rotation to the dispensary clinics for pediatrics, genito-urinary diseases, syphilis and gastro-intestinal diseases. In the afternoon periods, instruction will be given in the laboratory methods of diagnosis. Electrocardiography and the interpretation of electrocardiograms will be briefly presented. Complete information may be obtained from the dean of the medical school, University of Maryland, Baltimore.

## MICHIGAN

**Society News.**—Dr. Gordon E. Richards, Toronto, addressed a joint meeting of the Wayne County Medical Society with the Detroit Roentgen-Ray and Radium Society, May 3, on "Value of Roentgenology in the Diagnosis and Control of Treatment of Pulmonary Tuberculosis."——Chalmer J. Lyons, D.D.S., Ann Arbor, addressed the Washtenaw County Medical Society, May 10, on "Relation of the Mouth to Disease."——Dr. Egil T. Olsen, Detroit, was elected president of the Michigan Hospital Association, April 27.——Dr. Grover C. Penberthy, Detroit, was elected president of the Michigan Association of Industrial Physicians and Surgeons, April 29, and Dr. Howell L. Begle, Detroit, secretary.——Dr. Floyd H. Lashmet, Ann Arbor, addressed the Oakland County Medical Society, Pontiac, May 19, on "Water Balance Treatment of Edema."

**New X-Ray Unit.**—The new x-ray department of the University of Michigan Hospital was recently opened. T unit, which is said to be unexcelled in the country, has a novel plan of rooms and apparatus. From waiting rooms the patients are directed to private dressing rooms from which they pass to the proper department. The rapid development of films is made possible by a dark room, provided with dry air from which all moisture has been chilled out by refrigerating machinery. From the drying rack they may be taken directly to the physicians' offices, each of which has its own viewing apparatus, so that a report may be given in a fraction of the usual time needed. Memorializing Dr. Preston M. Hickey, for many years head of the department, *Science* states, is a staff library which will contain publications on roentgenology, given by Dr. Hickey's friends. The memorial bas-relief of Dr. Hickey, presented recently by the American Roentgen Ray Society, has been hung in the special conference room set aside for the members of the hospital staff who wish to review the examination of the patients with members of the roentgenology staff.

## MISSOURI

**Personal.**—Winterton C. Curtis, Ph.D., professor of zoology, University of Missouri, Columbia, will spend a year as visiting professor at Keio Gijiku University of Tokyo, Japan, under a grant from the Rockefeller Foundation. *Science* states that Dr. Curtis will maintain an office in the Keio School of Medicine, in a building erected by the Rockefeller Foundation. He will give instruction in the school and carry on research. ——Dr. Walter S. Hull, Faucett, was reappointed health officer of Buchanan County recently.

**Society News.**—Dr. George B. Arnold, Kansas City, was elected president of the Kansas City Urological Society recently.——Dr. Albert N. B. Lemoine was recently elected president of the Kansas City Society of Ophthalmology and Otolaryngology.——A joint meeting of the St. Louis dental and medical societies, May 10, was addressed, among others, by Arthur C. Engel, D.D.S., on "Oral Surgery from a Dental Standpoint"; Dr. Ralph A. Kinsella, "Dental Manifestations in Systemic Diseases," and O. W. Brandhorst, D.D.S., "Facial Development and the Care of the Teeth."——The St. Louis Medical Society was addressed, April 26, by Drs. James R. Nakada on "Tularemia—Three Cases with Remarkable Recovery in Two," and William K. McIntyre, "Precancerous Changes in the Rectum."——Speakers before the Nodaway County Medical Society in Maryville, May 13, were Drs. Benjamin Landis Elliott and Ralph E. Duncan, Kansas City, on "Encephalitis Lethargica" and "Modern Use of Oxygen as a Therapeutic Agent," respectively.——Dr. Percival Bailey, Chicago, addressed the Kansas City Academy of Medicine, May 20, on "Histological Structure and Prognosis of Gliomas of the Brain."

## NEW JERSEY

**Research Laboratory.**—Ground was recently broken for the erection of a research laboratory at the plant of Merck and Company, Inc., Rahway. A south wing will be devoted to carrying on pure or fundamental research, for which three laboratories will be provided. Another laboratory will be fitted for biochemical research with an adjoining incubator room containing a sterilizer, incubator and other necessary equipment. In a pharmacologic laboratory the physiologic action of various chemicals will be investigated. There will also be a laboratory for micro-analysis, a microbalance room, an ordinary balance room and an ice room. The north wing will contain a large chemical laboratory suitable for twelve chemists carrying on applied research and development work. The central section will contain, among other things, a library.

## NEW YORK

**Society News.**—The annual tumor clinic of the Memorial Hospital, Albany, was held, May 4, in collaboration with the New York state departments of health and education. Addresses were made by Drs. Lloyd F. Craver, New York, on "Leukemia, Hodgkin's Disease and Other Tumors of the Lymphatic System," and George T. Pack, New York, "Cancer—Its Cure and Prevention."

**Unlicensed Practitioner Sentenced.**—The state education department of the University of the State of New York reports the conviction of James Bockman in the Court of Special Sessions recently on a charge of practicing medicine without a license. He was sentenced to serve four months in the workhouse and in addition to pay a fine of $250 or in default of payment to spend sixty days additional in the workhouse. Bockman claimed to be a graduate of the Kansas City College of Medicine and Surgery and admitted that he had been licensed in Connecticut but that this license has been revoked because his schools were unqualified. He holds a license issued to him, May 10, 1922, on examination by the Arkansas Eclectic Board of Medical Examiners. Bockman appealed from his first conviction on this charge, but it was upheld by the supreme court and the case was remanded to the trial court for resentence, March 16, when a heavier sentence was imposed.

### New York City

**Dr. Ewing Appointed Director of Memorial Hospital.**—Dr. James Ewing, who recently resigned after thirty years as professor of pathology at Cornell University Medical College, has been appointed director of Memorial Hospital for the Treatment of Cancer and Allied Diseases in full charge of all its departments and activities, effective July 1. Dr. Ewing, a native of Pittsburgh, received his medical degree from Columbia University College of Physicians and Surgeons in 1891 and was instructor in clinical pathology at his alma mater for several years before becoming affiliated with Cornell. He has been director of cancer research at Memorial Hospital for a number of years and is the author of a book on cancer as well as many articles on pathology.

**Noise Abatement Commission.**—Announcement has been made of the dissolution of the Noise Abatement Commission, bringing to an end its three-year study of noise in New York. However, at the request of the city health commissioner and the police commissioner, the members of the commission have agreed to continue, as a body of private citizens, to assist the police and health departments in their work of helping to quiet the city. The final report of the commission will be published in the fall. It will outline the methods by which the commission believes a municipality may achieve reasonable quiet and will discuss experiments carried on by the commission since the publication of its first report in 1930. The Noise Abatement Commission was appointed in 1929 to define New York's noise problem, to ascertain its effect on the inhabitants, and to evolve methods for relief. The commission's preliminary report, published in 1930, dealt with the first two of these problems, while the final report will deal with the third. When the commission was organized, it was said to be the first official noise abatement commission (The Journal, Oct. 26, 1929, p. 1317).

**Society News.**—Drs. Russell S. Fowler and Emanuel D. Friedman addressed the Medical Society of the County of Kings, May 17, on "Gallbladder Disease—End-Results in a Study of One Thousand Cases" and "Experiences with Encephalography and Its Evaluation in Clinical Neurology," respectively.——Dr. John H. Garlock, Jr., addressed the New York Surgical Society, May 11, on "Free Full Thickness Graft."——Drs. Lewellys F. Barker, Baltimore, and Benjamin H. Archer addressed the Bronx County Medical Society, May 18, on private group clinics and evolution of group practice, respectively.——Dr. Henry L. Jaffe, among others, addressed the New York Pathological Society, May 26, on 'Factors Influencing Types of Bone Resorption."——Dr. George Baehr delivered an afternoon lecture before the Medical Society of the County of Queens, May 20, on treatment of diabetes.——A symposium on middle age was presented at the meeting of the Medical Society of the County of New York, May 27, with the following participants: Drs. Nellis B. Foster, Russell L. Cecil, Arthur M. Fishberg, Foster Kennedy and Robert T. Frank.

## OHIO

**Academy Adopts Industrial Code.**—A plan of procedure to be used by members of the Academy of Medicine of Cleveland desirous of making contact with industrial firms was approved, April 12, by the board of directors and the council. According to the plan, members of the academy before offering their services to an employer shall ascertain in writing through the executive office of the academy whether the firm desires the services of an industrial physician.

**Illegal Practitioners Prosecuted.**—The following is a list of illegal practitioners recently prosecuted, among others, by the state medical board:

C. M. Dyhre, unlicensed practitioner of medicine; found guilty of conducting an office without a certificate; fined $25 and costs.
Grant C. Pruner, charged with advertising; pleaded guilty; fined $200 and costs; suspended on promise to quit.
Glen Arnold, unlicensed chiropractor; found guilty of advertising and announcing himself as a practitioner without a certificate; fined $50 and costs.
Paul A. Hemple, charged with illegal practice of medicine; found guilty and fined $250 and costs.
D. A. Row, found guilty of practicing medicine illegally.

**Society News.**—The Mahoning County Medical Society was addressed, May 19, by Dr. Temple S. Fay, Philadelphia, on "Intracranial Pressure Problems Encountered in General Medicine."——The Academy of Medicine of Cincinnati was addressed, May 16, by Drs. Hiram B. Weiss and Harry L.

Claassen on "Hereditary Factors in Vascular Disease" and "A Newer Method in the Treatment of Chancroid," respectively.——Dr. Jonathan Forman, Columbus, addressed the Summit County Medical Society, May 10, on "Atopy in General Practice."——Dr. Irving S. Cutter, Chicago, will address the Montgomery County Medical Society, Dayton, June 3, on "The Story of Childbed Fever."

## OREGON

**Joyce Lecture.**—Dr. William Darrach, dean emeritus and professor of clinical surgery, Columbia University College of Physicians and Surgeons, New York, delivered the annual Joyce Lecture of the Portland Academy of Medicine, April 21, on "Colles' Fracture." The Portland City and County Medical Society attended the lecture in lieu of holding its regular meeting for April.

**Dr. Cannon Gives Jones Lectures.**—The eighth Noble Wiley Jones lectures at the University of Oregon Medical School were recently given by Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, Boston. The titles of his addresses were "The Fluid Matrix as a Means of Stabilizing the Organism" and "The Function of the Autonomic Nervous System in Controlling the Fluid Matrix."

## PENNSYLVANIA

**Hospital News.**—The unveiling of a portrait of Dr. William T. Sharpless, first physician at the Chester County Hospital, West Chester, was a feature of the institution's fortieth anniversary and founders' day celebration, May 12. Dr. U. Grant Gifford, Kennett Square, president of the medical staff, presented the portrait, which was a gift of the board of managers, the staff, the women's auxiliary and the nurses' alumnae association.

**Society News.**—Drs. Willis F. Manges, Philadelphia, and William W. G. Maclachlan, Pittsburgh, addressed the annual meeting of the eleventh councilor district of the Medical Society of the State of Pennsylvania, May 19, at the Nemacolin Country Club, near Washington.——At a meeting of the Allegheny County Medical Society, Pittsburgh, May 17, addresses were presented by Drs. Charles H. Henninger, on "Mental Hygiene and Industry"; Paul Titus, "Value of Clinical Research in a General Hospital"; Theodore O. Elterich, "Preventive Treatment of Measles—A Public Health Problem," and C. Leonard O'Connell, Ph.G., "Reciprocal Aspects of Medicine and Pharmacy."

## RHODE ISLAND

**Bill Enacted.**—H. 820, to require all hospitals, except state institutions, maternity hospitals or convalescent homes, to be licensed by the state public health commission, has become a law.

**License Revoked.**—The medical certificate of Dr. George Roy, Central Falls, was revoked by the Rhode Island State Public Health Commission, April 14, because of his having performed an illegal operation. Dr. Roy, who was convicted and sentenced in Worcester, Mass., served a prison term.

**Hospital Council Organized.**—A Council of Hospital Superintendents for Rhode Island was organized, March 18. According to *Modern Hospital*, the objects of the organization are cooperation among the administrators of hospitals in Rhode Island, promotion and coordination of their work, promotion of economy and efficiency in hospital management, and development of participating relationships with the organized medical profession, state and city authorities and unofficial agencies.

**Society News.**—The Providence Medical Association was addressed, May 2, by Drs. Eske H. Windsberg and Samuel Morein on "Thoracoplasty in the Treatment of Chronic Pulmonary Tuberculosis" and "Diaphragmatic Hernia: Symptomatology and Diagnosis," respectively.——A motion picture showing the results of gastro-enterostomy was shown at the meeting of the Newport County Medical Society, Newport, May 10.——A series of informal medical conferences was inaugurated by the division of university health at Brown University recently for Providence physicians. Dr. John S. Hodgson, Boston, was the guest in March, speaking on neurosurgical problems, and Dr. Charles S. Kubik, Boston, spoke at the April meeting on brain tumors and abscesses.

## SOUTH CAROLINA

**Bill Enacted.**—H. 1351, to create a board of chiropractic examiners and to regulate the practice of chiropractic, has become a law.

## TEXAS

**State Medical Election.**—Dr. A. A. Ross, Lockhart, was designated president-elect of the State Medical Association of Texas at its meeting in Waco, May 4-7. Dr. John H. Foster, Houston, assumed the presidency, and other officers elected were Drs. Andrew D. Nelson, San Saba; Herschel F. Connally, Waco, and Robert Y. Lacy, Pittsburg, all vice presidents; Holman Taylor and Khleber H. Beall, both of Fort Worth, secretary and treasurer, respectively, reelected. The 1933 meeting of the association will be in Fort Worth.

**Special Societies Elect.**—Officers of three special societies which met in conjunction with the State Medical Association of Texas in Waco, May 4-7, were elected at the closing sessions. Dr. John A. McIntosh, San Antonio, was elected president of the Texas Neurological Society, and Dr. Wilmer L. Allison, Fort Worth, secretary. Dr. Clark A. Wilcox, Wichita Falls, was named president-elect of the Texas Radiological Society, and Dr. Eugene V. Powell, Temple, secretary. Dr. Irwin E. Colgin, Waco, was elected president of the Texas Railway Surgeons' Association, and Dr. Ross B. Trigg, Fort Worth, secretary.

## WISCONSIN

**Society News.**—Dr. Vilray P. Blair, St. Louis, and George W. Wilson, D.D.S., addressed a joint meeting of the Medical Society of Milwaukee County and the Milwaukee County Dental Society, May 20, on "Surface Repairs for Both Function and Appearance" and "Medical-Dental Relations," respectively.——Dr. Leonard G. Rowntree, Rochester, Minn., made an address on "Water in Health and Disease" before the Milwaukee Academy of Medicine, May 17.——The radiologic section of the State Medical Society of Wisconsin held its spring meeting in Madison, May 27-28. Among speakers were Drs. Maximilian J. Hubeny, Chicago, on "The Radiologist and the Medical Profession"; Silvanus A. Morton, Milwaukee, "Radiological Diagnosis of Congenital Dislocation of the Hip," and Hans W. Hefke, Milwaukee, "Limitations of Intravenous Urography." A symposium on "Roentgen Diagnosis and Management of Bone Lesions" was presented by Madison radiologists.

## GENERAL

**American Urological Association.**—The twenty-ninth annual meeting of the American Urological Association will be held in Toronto, Ont., Canada, May 31-June 2, under the presidency of Dr. Alexander Randall, Philadelphia. Dr. Randall will give his presidential address at a meeting, June 1. At this session also the Ramon Guiteras Lecture will be delivered by Mr. Henry Wade, Edinburgh, Scotland, on "The Balanced Urinary Tract." Dry clinics will be held the first two days from 8 to 10 a. m., under the direction of the urologists of Toronto.

**Medical Bills in Congress.**—*Changes in Status:* H. R. 4743 has passed the House, providing federal subsidies to the several states to aid in rehabilitating persons disabled in industry or otherwise. The House Ways and Means Committee held hearings, May 19, on H. R. 11082, a bill to remove certain restrictions now imposed by law on the dissemination of articles and information for the prevention of conception. A similar bill in the Senate, S. 4436, was considered by a subcommittee of the Judiciary Committee, May 19 and 20. H. R. 10236, referred to as the tax bill, has been favorably reported to the Senate, with amendments. As passed by the House, it carried language which was interpreted as imposing a 10 per cent tax on eyeglasses and spectacles. The Senate Finance Committee, however, eliminated this language.

**Bulletin of the Health Organizations of League of Nations.**—In order to make the material developed through the Health Organizations of the League of Nations more widely known and more easily available, a quarterly bulletin has been established for general circulation. The first issue provides the resolutions of the Conference on Immunization Against Diphtheria, held in London in June, 1931; a discussion of medical education in England by Sir George Newman; a report on the milk supply of North American cities; another on tropical pneumonia; another on antirabies treatment, and one on floods in China. The material is authentic, well presented and in good English. The subscription price is to be $2 a year, single copies 50 cents. It may be obtained from the Publications Department of the League of Nations in Geneva, or through authorized agents, such as the World Peace Foundation, 40 Mount Vernon Street, Boston 9, Mass.

**Society News.**—At the recent annual meeting of the American Society for Experimental Pathology, Dr. Francis

Peyton Rous, New York, was elected president; Dr. Carl V. Weller, Ann Arbor, vice president, and Dr. C. Phillip Miller, Jr., Chicago, reelected secretary.——Among speakers at the annual meeting of the American Drug Manufacturers' Association, White Sulphur Springs, W. Va., in April, was Paul N. Leech, Ph.D., director, Chemical Laboratory, American Medical Association, Chicago, on "How Manufacturers Can Cooperate with the Council on Pharmacy and Chemistry of the American Medical Association."——Dr. Mary O'Malley, Washington, D. C., was made president-elect of the Medical Women's National Association at the annual meeting in New Orleans, May 9.——Dr. Curtice Rosser, Dallas, Texas, was elected president of the American Proctologic Society in Memphis, Tenn., May 7.——Dr. Arthur Dean Bevan, Chicago, was elected president of the American Surgical Association at its recent annual meeting in New Haven, Conn. The vice presidents are Drs. Frederick N. G. Starr, Toronto, and William F. Verdi, New Haven, and the secretary is Dr. Vernon C. David, Chicago, reelected.

**Pacific Northwest Medical Association.**—The tenth annual session of the Pacific Northwest Medical Association will be held in Spokane, Wash., June 27-29. The tentative program lists among the speakers Drs. Henry C. Bazett, Philadelphia, physiology; Samuel R. Cunningham, Oklahoma City, orthopedics and fractures; Harry Gideon Wells, Chicago, pathology; William J. Kerr, San Francisco, medicine; Philip H. Kreuscher, Chicago, orthopedics; Charles B. Wright, Minneapolis, medicine; Temple S. Fay, Philadelphia, neurosurgery; Henry E. Michelson, Minneapolis, skin and syphilis; Edgar L. Gilcreest, San Francisco, surgery; Fred W. Rankin, Rochester, Minn., surgery, and Richard T. Atkins, New York, otolaryngology. The subjects to be discussed will include circulation, methods of measurement and their clinical value; elbow injuries; adipose tissue; frequent mistakes in diagnosis of peripheral vascular disease; internal derangement of the knee joint; cerebral symptoms and manifestations throughout the field of medicine; diagnosis of cutaneous cancer; the common syndrome of rupture, dislocation and elongation of the tendon of the long head of the biceps; diagnosis and treatment of a typical hyperthyroidism, and intracranial complications of otitic origin, with special reference to the pathways of infection.

**Resolution on Standard Ventilating Code.**—The executive committee of the American Institute of Architects recently adopted a resolution setting forth the institute's opposition to any standard ventilating code until such time as an agreement between recognized authorities in the medical and engineering professions has been reached regarding minimum requirements for ventilation. It also opposes the promulgation or adoption of further codes, requirements, regulations or standards of ventilation until such agreement has been reached. In the resolution, attention is called to the tremendous annual expenditure for ventilating equipment, involving the health, welfare and comfort of the general public. The prevailing standards of practice in the ventilation of buildings are not supported by proved scientific facts, the resolution points out. It calls attention to the disagreement of competent hygienists and medical authorities with heating and ventilating engineers, on the basis of authentic physiologic data from reliable sources. The institute recommends the revision or repeal of present codes and regulations relating to the ventilation of buildings, wherever they are not supported by rational and authentic physiologic data acceptable to both the hygienist and the engineer. It favors the creation of a national movement to determine the factors to be considered in maintaining the health, comfort and safety of the occupants of buildings as affected by ventilation. These factors, when determined, would be used as the basis for a ventilating code of fundamental minimum standards generally applicable in all communities, the resolution further recommends. The resolution was adopted following the consideration of a similar one submitted by the Ohio State Association of Architects.

## CORRECTION

**State Board Statistics.**—In THE JOURNAL for April 23, page 1470, the statement was made that Georgia, Kansas, Minnesota, New Hampshire, Oklahoma and South Dakota offered the easiest examinations, since they have reported no failures in the last five years. It should have been emphasized that Minnesota has a Basic Science Board and that there have been no failures because the Basic Science Board in most instances sifts out candidates not able to pass. The Minnesota Board of Medical Examiners, therefore, deals with a selected group.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

April 30, 1932.

### Drug Addiction in Egypt

At a meeting of the League of Nations Advisory Committee on Traffic in Opium, Russell Pasha, director of the Egyptian central narcotics intelligence bureau, estimated that 282,000 of the Egyptian male population of 3,137,000 were addicted to hashish, 93,000 to opium and 54,000 to diacetylmorphine. A large reduction in "white drug" addicts had been brought about in three years, partly by the greed of the traffickers, who had increased the adulteration in the retail trade up to an average of 85 per cent and partly by the general economic situation. The fellaheen could no longer produce their daily 25 cents for dope. In spite of her efforts, Egypt had not been able so far to save herself from the narcotic nuisance. Russell Pasha thought it was time that trafficking should be looked on as an international offense. Turkey was still providing the contraband diacetylmorphine. He was much impressed by the determination of high Turkish officials to clear Istanbul of its reputation for being the center of illicit traffic in diacetylmorphine. But this could be done only by closing all the private factories and the establishment of a government factory in the interior of the country. There were also gaps in Greek legislation affecting narcotics, but the authorities had recently drafted complete legislation. He also hoped that the French authorities in Syria would lose no time in closing the breach in their legislation, which fails to make possession an offense. He appealed to the Italian delegate to help put a stop to the long established system of smuggling diacetylmorphine by the personnel of Italian steamships. The antinarcotic police of the affected countries were working in close cooperation, and the coming year would prove uncomfortable for the big contrabrand organizations. They were looking for new markets in which they could pervert the population to narcotic addiction. Their eyes were now on the Far East.

### Anti-Cancer Education League

The British Empire Cancer Campaign has inaugurated a new movement in the form of the "Anti-Cancer Education League." At the opening meeting Dr. Malcolm Donaldson gave a lecture in which he appealed for consultation with the family physician periodically, especially for people over 40. Beyond question, cancer could be treated successfully if detected in an early stage. The main reason for failing to see a physician at this treatable stage was the common belief that if a swelling did not cause pain it could not be cancer. But the fact was that in many cases early cancer was painless and symptomless. It was impossible to teach the people symptoms; the only practicable method was to visit a physician twice a year, even though feeling quite well. Only thus could the alarming yearly incidence of 56,000 deaths be materially reduced. The Ministry of Health reported, in regard to cancer of the female breast, that, if it was attacked while still local, 80 per cent of the patients survived three or more years after treatment; whereas if treatment was delayed till after the formation of secondary growths, only 30 per cent or less survived this period. The records of the ministry showed that only half the patients with cancer sought advice and treatment at a curable stage. It was the policy of the league to have a branch in every town.

### Sir William Watson Cheyne

Sir William Watson Cheyne, well known for the part he played in the introduction of Lister's antiseptic method into England, has died in his eightieth year. Born in the Shetland Islands of seafaring stock, his fair hair suggested the blood of

Scandinavian invaders of those parts, as did his love of the sea. Educated at Edinburgh, he came under the influence of Lister and many years later, in delivering the Lister memorial lecture, he described his first lecture from the great man thus: "I became fascinated with the subject and could not help seeing the wonderful era that was dawning on surgery." Lister was struck with Cheyne's ability and appointed him his dresser. In 1875, Cheyne graduated with honors and proceeded to Vienna and Strasbourg to study. In 1877, when Lister accepted the invitation to join the staff of King's College Hospital, London, he stipulated that he should be allowed to bring from Edinburgh four assistants trained in his methods, which were then new to London. Of these the principal was Cheyne, whom he appointed his house surgeon. Later Cheyne attained the post of assistant surgeon to the hospital and became a leading surgeon and president of the Royal College of Surgeons. He was well known for his works, mainly on the antiseptic system, including "Antiseptic Surgery," "A Manual of Surgical Treatment" in seven volumes (jointly with F. F. Burghard) and "Tuberculous Diseases of Bones and Joints."

### Committee on Maxillofacial Injuries

A standing committee under the director general of the army medical service has been formed to investigate maxillofacial injuries. The committee includes leading dental surgeons and Sir Harold D. Gillies, whose work in the treatment of facial injuries sustained in the great war is so well known. The committee will make recommendations in regard to the provision of special facilities and equipment for these cases, the general method of treatment and the training of dental officers in the principles of preliminary treatment in the field.

### Vitamin D and the Teeth

The seventeenth annual report of the Medical Research Council contains further observations by Mrs. Mellanby to prove that "the health and beauty of the mouth" are directly dependent on an adequate supply of vitamin D in the diet, and that the state of the teeth of children affords a very sensitive test as to the adequacy of the diet. Large groups of children living in institutions under similar conditions received a specific addition to the standard diet and were regularly examined, and the progress of dental decay in the permanent teeth was recorded. A striking difference was found in the rate of increase of decay between groups receiving a ration of vitamin D in the form of cod liver oil or irradiated ergosterol and the controls who received other oils. In the former group the percentage of increase was 10; in the latter group, 46. It is noteworthy that the standard diet which all the children were receiving was believed by the medical and lay authorities concerned to be perfectly adequate for normal health and growth.

### The Medical Research Council and the Manufacture of Therapeutic Substances

The Medical Research Council regards it as its function not only to promote scientific discovery but also to facilitate the availability of the results in the interests of the medical profession and of the public. Much time and labor are often necessary before the yield of a new substance can be brought to the phase of large scale production. Cooperation between investigators and manufacturing firms has been promoted in various ways, of which one is the organization of the Therapeutic Trials Committee, which works in close cooperation with the Chemotherapy Committee, responsible for the experimental work on drugs and preparations submitted. Consultation with the Association of British Manufacturers has resulted in agreed conditions under which new substances may be submitted for clinical study. The council has assisted in the rapid development of the manufacturing of insulin in this country and has given assistance in the production of vitamin D, various organic extracts, and material for inoculation against distemper in dogs. On the other hand, the chief manufacturing firms are always ready to offer the results of their experience, to supply raw materials and to help in other ways.

## PARIS

*(From Our Regular Correspondent)*

April 13, 1932.

### The Dissociate Diet

In previous communications, Mr. J. J. Rouzaud and Mr. G. Soula called attention to a new dietetic method, the results of which to date they discuss in the *Presse médicale*. This method, which they term the "dissociate diet," has today many advocates in France and it has been taken up also in foreign countries. Its essential principle consists in not prescribing nitrogenous foods and carbohydrates at the same meal but at different meals. Physiologically, these two groups of foods must necessarily figure in a normal diet, but each of them sets a different digestive task, and that task is accomplished better, and with less fatigue of the organs, when they have to deal with only one type of food at a time. That, at least, is the explanation proposed by Rouzaud and Soula. According to their experience, a meal consisting solely of nitrogenous foods or solely of carbohydrates causes less congestion of the vascular apparatus of the digestive tract than a complex meal, which is, of course, easily digested and causes no trouble to a normal person. But when the digestive functions are disordered, postprandial congestion appears, thus affecting the liver and the entire nutrition. The most remarkable results have been secured, by means of this diet, in glycosuria, but always proportionately to the degree of the disorder. Rouzaud and Soula have given this treatment in 320 cases. In the first series of 109 cases, characterized by a mild glycosuria of the alimentary type, with a week's glycemia fasting, the dissociate diet dispelled the glycosuria in 87 cases, brought improvement in 18 cases, and was ineffective in 4 cases. But it suffices to give just one meal in which the proteins and the carbohydrates are mixed to cause the glycosuria to reappear. In a second category of patients affected with permanent glycosuria, with a percentage of glycemia fasting ranging from 2 to 3 Gm., the results are still good; but the effects of the diet become less marked, the higher the glycemia is. When confirmed diabetes exists, with denutrition and acidosis, one can no longer count on a cure but only an amelioration in a third of the cases. It appears that then the pancreatic insufficiency becomes the predominant note and that the usual treatment with insulin is necessary. In a general way, the method is not indicated in pancreatic diabetes. But it gives good results in diabetic patients presenting gouty, plethoric and hypertensive manifestations, in diabetes with cirrhosis, and especially in former calculus patients who have alimentary glycosuria. The same diet gives good results in various manifestations other than diabetes; for example, in arthritism associated with hepatism: migraine, asthma, obesity, flatulent dyspepsia. This diet is furthermore readily accepted by patients, as it is simple to follow. It is sufficient to prescribe a liquid or fruit, without bread, for breakfast; a lunch consisting of meat, fish, eggs, green vegetables and fruits, without bread, and with a minimal allowance of fluids, and a vegetarian dinner with bread.

### Treatment of Tabetic Atrophy of the Optic Nerve

Dr. Abadie, French ophthalmologist, came forth recently from his retirement to present to the Academy of Medicine the remarkable results that he has secured for many years from his treatment for atrophy of the optic nerve, which, since Charcot, has been considered a manifestation of tabes. According to Abadie, that atrophy is caused by a continuous and progressive vasoconstriction of the central artery of the retina. This conception led him to devise a treatment that consists in applying, every other day, a subcutaneous injection of 2 mg.

of atropine and an intravenous injection of 0.01 Gm. of mercuric cyanide. All the patients to whom Abadie has applied this treatment found the progressive evolution of their atrophy checked, and all benefited from an increase in their visual acuity, the improvement being much greater if the disorder was not far advanced. He concludes that the hope is justified that, as a result of this medication rigorously applied, tabetic atrophy, heretofore incurable and the cause of much blindness, will no longer be a serious menace. In reporting these results to the academy, Abadie likewise called attention to the fact that the treatment does not begin to act until after a number of injections have been given, and that it is necessary to continue the treatment as long as one observes an improvement in visual acuity.

### The National Dental Congress

The dentists of France held in Paris, from April 6 to 13, an important scientific and professional session. Several foreign stomatologists took part in the meeting: Haber and Brill of Berlin, Watry and Charlier of Brussels, Fritz Schenk of Vienna, and others, under the chairmanship of Dr. Friteau. Professor Carnot delivered an address. Several practical demonstrations and an exhibit of equipment were held in the rooms of the Grand Palais. Army pigeons from Toul carried to the soldiers of the East wise suggestions as to the utility of dental hygiene. Numerous miniature canoes, bearers of message of the same import, were thrown into the Seine from the pont Alexandre III and left to the mercy of the waves in the hope that they might serve to evangelize the Normans. Automobiles circulated along the highways, within a radius of 30 miles from Paris, throwing out leaflets to the people and putting up posters in the villages. During the whole period, termed "dental hygiene week," lessons in dental hygiene were given to all the children in the schools, by their instructors, and all the radio stations broadcast special instructions to the public.

### The American Hospital at Neuilly

The board of managers of the American Hospital at Neuilly met recently to hear the financial report of its chairman, Mr. A. Kingsley Macomber, for the year 1931. Mr. Macomber stated that the year just passed had been for the hospital the most critical year since it was established. But, in spite of the critical situation, it had been possible to extend the activities of the hospital, partly through economy but more particularly as the result of a fund-raising campaign to which the public had responded generously, the gifts amounting to $300,000. The budgetary deficit for the year 1931 was more than $80,000, in spite of many retrenchments. That was due to the decrease in the number of paying patients and to the increase of patients of limited means, who received treatment free or at half rates. The chief problem at present is to increase the hospital's sources of revenue. With that object in view, the board of managers is considering the creation of specialized services, periodic medical consultations, prenatal consultations and consultations on child care, a dental clinic, a dispensary for diabetic patients, another for physical therapy, and the like. Dr. Edmund L. Gros was reelected president of the medical staff of the hospital. Drs. Thierry de Martel and George M. Converse were reelected vice presidents, and Dr. Bove was again chosen secretary.

### Death of Pierre Teissier

The death of Dr. Pierre Teissier is announced. Professor Teissier had been professor of clinical medicine at the Faculté de médecine de Paris since 1911; member of the university council, and member of the Academy of Medicine since 1918. He was a favorite pupil of Potain and carried out many researches on diseases of the blood, the spleen and the heart, on tuberculosis, and particularly on the action of roentgen rays in tuberculosis. In 1927, he had served as the president of the Congress of Medicine. He was Commander of the Legion of Honor.

## BERLIN

*(From Our Regular Correspondent)*

April 11, 1932.

### The German Surgical Congress

The German Surgical Congress was held, March 30 to April 2, at the headquarters of the Deutsche Gesellschaft für Chirurgie, in Berlin. In his address of welcome, Professor Voelcker of Halle protested against the recent tendency to split off from surgery partial fields and to make special branches out of them. While it is true that there are eminent specialists in the fields of lung, brain and stomach surgery, yet such a special field can never be made the basis for training; for surgical instruction presupposes that the whole operative art be taught and practiced. He emphasized that only through universal training were great achievements in surgery possible. The hundredth anniversary of the birth of one of the founders of the Gesellschaft, Franz König, surgeon of Berlin, gave the chairman an opportunity, in his memorial speech, to support this conception by citing a conspicuous case.

The congress managed to present 140 communications and numerous demonstrations during the four days' session. The question of limiting the mental pabulum is always discussed, but no solution is ever found. As a whole, the congress offered a good survey of the present status of surgery. This session dealt more with general medical problems than with questions pertaining to operative technic. Almost all new research seeks, through perfection of diagnostic aids and through the far-reaching use of new knowledge on the constitution, to secure the greatest possible safety to the individual operation. That was seen clearly on the first day in the discussion of liver disorders, which revolved about the problem of liver function and the relation of the liver to the general economy of the organism. The papers of the surgeon and the internist (Professors Henschen of Basel and Brugsch of Halle) supplemented each other. The strong desire of the surgeons that they receive gallbladder cases in an early stage while still easily operable may be essentially furthered, through these researches.

The next topic, "The Importance of the Borderline Problems of Surgery and Internal Medicine," was discussed by Professor Rehn of Freiburg. Rehn illustrated, by a case of suppurative inflammation of the pleura and by gallbladder disorders, how necessary collaboration of the internist and the surgeon is. In such borderline cases, one cannot say that either the internist or the surgeon has jurisdiction; otherwise there would be danger that sometimes an operation would be undertaken too early and another time too late. The one-sided point of view in such conditions, on the part either of a surgeon too eager to operate or of an internist who may believe that he can render aid with medicaments or by physical agents, may be equally harmful. The surgeon and the internist must work hand in hand, on the borderline of surgery and medicine, and apply all means of modern biology to find the most favorable moment for an intervention if needed. Such a situation arises frequently if one studies carefully the delicate acid-base equilibrium. In this way, both surgeon and internist will have a common basis for their mode of treatment. This double treatment of the subject brought out the fact that the surgeon is dependent on the research methods of the internist; for, in connection with anesthesia and the operation, dangers may arise when the damaged condition of the liver is not recognized in time. A damaged liver is not infrequently the cause for the unhappy outcome of operations. Professor Kirschner of Tübingen discussed spinal anesthesia, after the Bier method. Kirschner has applied his method with success in numerous cases. The operator draws off spinal fluid and then injects air with a specially constructed syringe and, following the air, the anesthetic. The anesthetic remains between the air layer and the fluid layer, as Kirschner showed in roentgenograms. By shifting the air and the fluid layers, the position of the anesthetic is so regulated that the portion of the body to be operated on is deprived of sensation.

On the second day, the chief topic was "Gangrene of the Extremities." Widely different causes may be responsible for the disease. By prompt treatment, amputation can be avoided in these cases. Removal of the nerves supplying the blood vessels, recommended by French authors, has not fulfilled expectations. German research has led to the discovery of so-called circulation hormones, to which possibly considerable therapeutic value attaches, although the question of their use is still a matter of debate. Their use sometimes enables one to avoid a threatened amputation. In many cases, however, amputation is the only way out.

The second speaker, the pathologist Ceelen of Bonn, began his address with a reference to Philoctetes, the story of whose gangrene is told in Sophocles tragedy. Ceelen discussed the three most important forms of gangrene: diabetic, senile and angioneurotic.

The spirited discussion that followed the papers showed that this subject is at present in the forefront of surgical interest. Here, too, was manifested a tendency to avoid mutilating operations on the extremities and to employ instead new methods of combating vascular diseases.

In the afternoon there was an inspection of the Latin Quarter and a drive about the city. The assembly hall was packed. Sauerbruch presented a paper on "Surgery of the Esophagus." He spent more time in presenting patients than in discussing the subject. A large number of men, women and children were introduced to demonstrate the surprising results of operative interventions on the esophagus, the bronchi, and the lungs. The young woman whose pericardium was opened last year because of an aneurysm that threatened her life appeared the picture of health. When the pericardium was opened, it was found unexpectedly that the aneurysm was connected with the heart by an opening, which necessitated quick action. To prevent her from bleeding to death, Sauerbruch held a finger in the opening, while his assistants sutured the heart wall.

Astonishing results were secured also in numerous other cases of suppuration, pulmonary gangrene, dilatations of the bronchi, and spasm or ulcers of the esophagus. Sauerbruch described how—frequently in several stages—the defects were repaired.

Nissen, Sauerbruch's physician-in-chief, reported his experiences in injuries of the lungs. Air, which sometimes collects in the mediastinum, is an immediate menace to life. The danger can often be promptly eliminated by puncture (aspiration).

The most impressive thing of this whole demonstration was the fact, as emphasized by Sauerbruch, that such operations on the thorax eliminate not only a local focus of disease but act, at the same time, on the general condition of the patient, and in some cases they are life saving.

Heile of Wiesbaden dealt with "Natural Therapeutic Processes." The tone of the discussion that followed showed plainly that among large groups of surgeons there is a tendency to conservative treatment. An operation is always only one of the factors to be considered, along with other therapeutic measures.

Among numerous other communications were the observations of Simon of Ludwigshafen on cancer-like tumors of the urinary bladder in aniline workers. They constitute a much feared industrial disease. It has been discovered that the irritant that causes the hyperplasia of the bladder wall is taken into the organism through ordinary respiration. By observing proper precautions in connection with respiration, the disease has been suppressed to a considerable extent. Until recently, physicians were powerless to combat these tumors.

On the last day, the congress reached a high level with its surgery of the extremities. This session proved conclusively that surgery still honors the ancient meaning of the term handicraft. Addresses on the surgery of cancer closed the session.

Läwen of Königsberg explained his treatment of chronic effusions of the knee joint, which consists in the formation of a fenestra into the joint capsule. Böhler of Vienna displayed enthusiasm in recommending that, in fractures of the vertebrae, the compressed vertebral bodies be adjusted as early as possible and the solidity of the spinal column be improved by gymnastic exercises. The psychologic factor—the belief of the patients in their recovery—is of the greatest importance. A moving picture and roentgenograms showed the good results effected in a number of persons who had suffered vertebral injuries.

Reschke of Greifswald spoke on suppuration of the bone marrow in the vicinity of the hip joint, operation on which he opposes in principle. Those who participated in the general discussion agreed with him, emphasizing that it requires more courage to resist the suggestion of an operation than it does to operate.

The statement of the chairman that the German surgeons were again taking part in the international surgical congresses was pleasing to the assembly. The hostility toward the surgeons of the Central Powers has been overcome. At the recent International Surgical Congress in Madrid, the representatives of the Deutsche Gesellschaft für Chirurgie were treated with every courtesy. Evidence of the change is the fact that Eiselsberg of Vienna was chosen president of the next International Surgical Congress.

## BELGIUM

*(From Our Regular Correspondent)*

March 21, 1932.

### Fogs in the Valley of the Meuse

In December, 1930, a thick fog spread over the valley of the Meuse between Huy and Liége for several days and caused many fatalities among the inhabitants. More than sixty persons succumbed and several hundred more were seriously discommoded. The symptoms were those of attacks of asthma, followed by a sudden cardiovascular insufficiency. Death often ensued within a few hours after the first attack. The treatment consisted of subcutaneous injections of epinephrine, which brought quick relief to many patients. Those who succumbed presented particles of soot in the alveoli of the lungs, derived from the factory chimneys of the surrounding region. Of the substances in the soot, chemical analysts incriminated only sulphurous anhydride and its products of oxidation, hydrofluoric acid, nitrous vapors, vapors of ammonia, and hydrochloric acid. The hydrofluoric acid does not appear to have been the principal factor of toxicity. Mr. Firket, in his report, expressed the view that nitrous vapors are capable of producing similar accidents to those observed. But nitrous vapors were not produced in sufficient quantity in the neighboring factories; nor were the vapors of ammonia and hydrochloric acid produced in large quantities. Sulphurous anhydride, arising from the combustion of coal, was no doubt the substance that was produced in the largest amount. Sulphurous anhydride, however, combines with water to produce sulphurous acid, and sulphuric acid is produced then by direct oxidation of sulphurous acid by the dissolved oxygen.

This explanation of the toxicity of the fog is the only one that is in complete accord with the medical, toxicologic, meteorological and chemical observations.

### Experiments on Transportation of Mosquitoes in Airplanes

The question has been raised whether mosquitoes may be transported by airplanes. Experiments have been made in the Belgian Congo, along the routes from Leopoldville to Boma, Elisabethville, Coquilhatville and Stanleyville. In only four cases were mosquitoes found on the arrival of the airplane

Mosquitoes were transported in small boxes. They were still living when the airplane had risen to about an altitude of 1,000 meters, and were dead when an altitude of from 1,700 to 2,000 meters had been reached. But these experiments must be repeated with greater precautions. Anopheles are sent regularly to England from Italy, Africa and America, 30 per cent arriving alive if the cages are well protected and proper food provided.

### Unauthorized Practice of Medicine by Nurses

In order to stop the increasing number of abuses, the Belgian medical federation has again called the attention of the public authorities and of the mutual life insurance companies to the practice of medicine by nurses and visiting nurses, urging them to limit strictly the interventions of nurses to their regularly assigned duties. It has likewise sent a request to the professors in the training schools for nurses and visiting nurses that they impress on their pupils that under no circumstances have they the right to perform an act of medical aid without express authorization—applicable only to the particular case in question—of the attending physician. The Belgian medical federation has requested, in an article in the *Bulletin Officiel*, that the professors, surgeons, physicians and the authorized midwives in the hospitals, clinics and maternities seek in their operations the assistance of physicians and refrain from extending the rôle of the attending nurses and the visiting nurses.

### The Brachet Memorial

The executive committee of the Albert Brachet commemoration, under the chairmanship of Professor Crismer, invited the subscribers and a number of dignitaries to convene at the Anatomic Institute to dedicate the medallion of the deceased scientist, which is the work of the sculptor De Vreese. In addition to the erection of the memorial, the funds collected gave a surplus of 100,000 francs, the interest on which will be used to create a biennial international prize in embryology, which will be awarded by the Royal Academy of Medicine of Belgium, under the name of the Brachet prize. Mr. Marcq, vice president of the administrative council of the university, thanked the organization committee for the gift of the memorial. He referred to Albert Brachet's life of sacrificing toil and his great influence over the students, which he attributed to a love of truth, justice and beauty. Albert Brachet was rector of the university for three years, which administration showed his fine qualities as an organizer and the spirit of prompt and just decision that animated him. Following the address, the guests went to the atrium of the institute, where the beautiful medallion, which represented Brachet at work, was unveiled by Mr. Crismer.

### The Belgian Medical Federation

Within the Fédération médicale belge, a Comité d'études de prophylaxie sociale has been created, the purpose of which is: (*a*) to study the practical means of coordinating the various decisions of the legislative, administrative and private organizations having to do with the protection of the public health; (*b*) to present and to defend in this field the suggestions of the medical profession and to transmit them to the public authorities or other competent authorities, and (*c*) to harmonize the practice of medicine and the interests of the physician, while assuring the protection of the public health.

This committee is under the direction of an official body composed of a president, two vice presidents, a general secretary and an associate secretary, appointed by the executive committee of the Fédération médicale belge, with the approval of the members of the Comité d'études de prophylaxie.

At least one of the five members of the body of officers will be a member of the executive committee of the Fédération médicale belge. Honorary members may be appointed at the suggestion of the Comité d'études de prophylaxie sociale. The Comité d'études de prophylaxie sociale will be composed of regular members and of associate members. Only the former have the voting privilege. All the members of the comité are approved by the executive committee of the Fédération médicales belge at the suggestion of the officers of the Bureau d'études de prophylaxie sociale. The members are physicians delegated by scientific societies, by official or private organizations engaged in medicosocial activities. The isolated physicians will be represented by the delegates of the Fédération médicale belge. All the members of the comité must belong to the Fédération médicale belge. The body of officers has, however, the right to engage any competent person to act as consultant with reference to the work of the committee. The studies of the Comité d'études de prophylaxie sociale are transmitted by the body of officers to the executive committee of the Fédération médicale belge, which may submit them to the general assembly or which may decide what disposition to make of them and notify the body of officers of the Comité d'études de prophylaxie sociale of its conclusions.

### Gustave Dryepondt, an Example of Civic Courage

The *Scalpel* of Jan. 9, 1932, contains an appreciation of Gustave Dryepondt, a beautiful and noble figure in the field of medicine that has passed from the scene. More than forty years ago, he braved with calmness the dangers of Africa, which then was so inhospitable. Today he has fallen, suddenly stricken in the midst of his activities. Dryepondt was a great patriot, a great colonizer and a man gifted with the noblest heart qualities. In 1890, on leaving the university, the young army physician, responding to an appeal of Leopold II, left his native land for the conquest of the "dark continent"—not sword in hand but as a disciple of Aesculapius, bringing to the unhappy people of central Africa the blessings of science. Dryepondt was a natural pioneer and trail blazer, as is shown by his long colonial career. At a time when life in Africa lacked the security of today, he emigrated with his family, giving thus to his compatriots a fine example of civic courage. He was the founder of the Société belge d'études coloniales, was a member of the Institut international colonial, and after the war was appointed colonial counselor by the king. After emerging from the great conflict, he organized the Journées coloniales, which contributed greatly to the interest in the colonies, in Belgium.

## BUENOS AIRES

*(From Our Regular Correspondent)*

Feb. 28, 1932.

### A New Medical Curriculum Adopted

The Faculty of Medicine of the University of Buenos Aires adopted a new medical curriculum and by-laws, which became effective March 16. The regulations express the advisability to restrict the number of students in the first and second years of medicine, as much and as soon as possible, so that only those well fitted may be selected. At present the first and second years are made up by groups of 600 or 800 students, not all of them well fitted, as proved by the fact that during the entire period of medical studies some students fail even ten or more times in a given subject. Some of them have been attending the school for the past twelve or fifteen years and have not as yet graduated. The examinations for admission to the study of medicine imposed on candidates have consisted heretofore of a written test on biology and zoology, three oral tests (in different days) in botany, physics and chemistry, and a test by which the student should prove his ability to translate from French. About 40 per cent of the candidates pass the examination. According to the new regulations, the examination for admission will consist of the same tests included in the examinations as heretofore, with the exception that there will be two oral tests instead of three, and in the translation test the student should prove his ability to translate from two foreign languages (either English and German or French and Italian). Henceforth, the number of years of medical study, which is now six, will be increased to seven, as it was in 1918. From the records of the school, it has been found that only 30 per cent of the students are able to finish the entire course of medical studies in six years; 15 per cent finish them in seven years and 55 per cent attend the school more than seven years in order to graduate. The new curriculum annuls semestral periods, each of which, heretofore, has had practically three and a half months of study. The periods will consist of the entire year of study. The July promotion examinations also are annulled, only the December and March examinations being continued in effect. The studies for the entire year will represent a complete unit. The program will be as follows: first year, histology, embryology and anatomy; second year, topographic and descriptive anatomy, physiology, biochemistry and biophysics; third year, physiology and biochemistry, pathologic anatomy, microbiology and parasitology; fourth year, symptomatology (classes every morning), surgery, pharmacology and therapeutics, toxicology, roentgenology and physical therapy; fifth year, medical and surgical pathology, otorhinolaryngology, ophthalmology and dermatosyphilography; sixth year, clinical work on gynecologic, urologic, psychiatric, neurologic, infectious, surgical and clinical cases; seventh year, clinical work on pediatric, obstetric, surgical, and clinical cases, orthopedics, legal medicine and hygiene. During the first three years the work of the student should cover attendance and work done in the amphitheater and laboratories; in the fourth year he must attend the clinics and the courses of symptomatology, and during the last three years he must devote regularly a certain number of hours to practical work in the hospital, either as an extern or as an intern.

### The Problem of Care of the Insane

Dr. G. Bosch, director of the Hospicio de las Mercedes of Buenos Aires, recently published an article embodying projects for the care of the insane. The census of 1869 showed that there were 4.3 mental defectives per thousand of population. The census of 1895 showed that in the entire group of mental defectives the rate among foreigners was twice that among Argentine persons. At present there are about 14,000 insane patients in the asylums of Argentina; that is, 1.26 per thousand of the population. These figures do not include, of course, psychiatric patients who receive attendance in their own homes, and they number perhaps still more than those in the asylums. There are no reliable statistics on the subject, but it may be estimated, on a reasonable basis, that the number of insane patients in Argentina varies between 24,000 and 43,000, which should be distributed among the seven large hospitals and ten sanatoriums that constitute the entire number of psychiatric centers in Argentina. The members of the Comisión de Asilos y Hospitales Regionales of Argentina are acting to provide the several regions of the country with the necessary psychiatric institutions. A large neuropsychiatric colony with an asylum, in which psychiatric patients of the northern region of Argentina will be taken care of, is under construction on the ranch of Linares, Lerma, province of Salta, where the board of directors of the commission recently acquired a large tract for that purpose. Plans are being made to open psychiatric consultation centers as well as to increase the number of hospitals and dispensaries for the care of patients with mental disease in every province of Argentina.

### Personal Items

Drs. M. Susini and R. Vaccarezza have been appointed president and secretary, respectively, of the National Department of Hygiene of Buenos Aires.

Dr. A. Pirovano has been appointed director of Public Health of Argentina.

### Deaths

Dr. A. Gandolfo, professor emeritus and honorary academician and former regular professor of surgical clinics at the Faculty of Medicine of the University of Buenos Aires, has died.

## Marriages

Tilden Iver Moe, Assistant Surgeon, Lieutenant (j. g.), U. S. Navy, to Miss Dorothy Mae White of Springfield, Ill., in Washington, D. C., May 11.

John Frampton Wyman, Aiken, S. C., to Miss Bonnie Anne Atkinson of Chicago, May 18.

Arthur Nelson Berry, Boston, to Miss Dorothea Marie Keough, recently.

Robert H. Rathbone to Miss Rowena Thom, both of Los Angeles, April 6.

## Deaths

**James Walter Heustis,** Dubuque, Iowa; Harvard University Medical School, Boston, 1884; past president of the Dubuque County Medical Society; served during the World War; formerly on the staffs of the Episcopal Eye and Ear Hospital and the Freedmen's Hospital, Washington, D. C., the Los Angeles County Hospital and the White Memorial Hospital, Los Angeles; aged 69; died, April 9, of coronary thrombosis.

**Bert Leander Eiker** ⊕ Leon, Iowa; Rush Medical College, Chicago, 1896; member of the House of Delegates of the American Medical Association, 1922, 1924 and 1928; fellow of the American College of Surgeons; president of the Iowa State Medical Society; formerly member of the state board of health and state legislature; aged 60; died, May 6, in a hospital at Sioux City, of pneumonia.

**Percy Bernard Davidson** ⊕ Boston; Johns Hopkins University School of Medicine, Baltimore, 1921; member of the New England Roentgen Ray Society; formerly instructor of pathology, University of Wisconsin Medical School, Madison; on the staff of the Beth Israel Hospital; aged 36; died, April 29, in the Boston City Hospital, following an operation.

**George W. McCoy** ⊕ Los Angeles; Miami Medical College, Cincinnati, 1904; member of the Pacific Coast Oto-Ophthalmological Society and fellow of the American College of Surgeons; senior ophthalmic surgeon to the Los Angeles County Hospital and on the senior surgical staff of the California Hospital; aged 61; died, April 21.

**Stephen Olin Watkins,** Minneapolis; University of the City of New York Medical Department, 1880; formerly superintendent of the Wyoming Tuberculosis Sanatorium, Basin; aged 81; died, April 11, at the Minnesota Masonic Home, of arteriosclerosis, cerebral hemorrhage and chronic myocarditis.

**S. Anson Hill,** San Francisco; Hahnemann Medical College and Hospital of Philadelphia, 1910; formerly clinical professor of applied homeopathic therapy, University of California Medical School; on the staff of the Southern Pacific Hospital; aged 44; died, April 10, of chronic interstitial nephritis.

**Frank Joseph Powers** ⊕ Baltimore; Baltimore University School of Medicine, 1898; served during the World War; medical superintendent of the Baltimore City Jail; aged 59; died, April 29, in the Mount Alto Hospital, Washington, D. C., of brain tumor.

**Joseph Harry Oppenheim,** New York; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1930; aged 30; intern, Beth Israel Hospital, where he died, March 7, of coronary thrombosis and diabetes mellitus.

**Ashley W. Ogle,** Sevierville, Tenn.; University of the South Medical Department, Sewanee, 1903; member of the Tennessee State Medical Association; past president of the Sevier County Medical Society; aged 51; died, March 31, of pneumonia.

**Jacob Long Sowers** ⊕ Lexington, N. C.; University of Maryland School of Medicine, Baltimore, 1921; past president of the Davidson County Medical Society; for two years county coroner; aged 38; was instantly killed, May 1, in an automobile collision.

**Edward Birtrum Cooper,** Sunbury, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1893; served during the World War; for many years on the staff of the Mary M. Packer Hospital; aged 61; died, March 17.

**J. N. Blume** ⊕ Arcadia, La.; Memphis (Tenn.) Hospital Medical College, 1903; aged 58; died, April 27, in a hospital at Shreveport, of injuries received when the automobile in which he was driving was struck by a train.

**Clarence Ray Essex,** Galesburg, Ill.; St. Louis College of Physicians and Surgeons, 1905; member of the Illinois State Medical Society; aged 50; on the staff of St. Mary's Hospital, where he died, April 22, of heart disease.

**Frank Pattison Werner** ⊕ Reading, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1916; served during the World War; on the staff of the Reading Hospital; aged 41; died, April 4, of appendicitis.

**W. J. Houston, Jr.,** Decatur, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; aged 67; died, April 15, of acute infectious cholangeitis with subhepatic abscess and complete common duct obstruction.

**Harry Judge Craycroft** ⊕ Fresno, Calif.; Cooper Medical College, San Francisco, 1904; fellow of the American College of Surgeons; on the staff of the Fresno County Hospital; aged 54; died, March 18, of influenza.

**Menno H. Hostetler,** Wichita, Kan.; Starling-Ohio Medical College, Columbus, 1911; member of the Kansas Medical Society; county health officer; aged 50; died, April 10, in a hotel at Topeka, of angina pectoris.

**John Vincent O'Connor,** St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1895; aged 64; died, April 5, in St. Joseph's Hospital, of encephalomalacia and arteriosclerosis.

**Omar Joseph Massey,** Wheeling, W. Va.; Ohio State University College of Medicine, Columbus, 1931; intern, Wheeling Hospital; aged 38; died, April 20, of injuries received in an automobile accident.

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**John Walter Lambert,** Tangipahoa, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1887; for many years mayor of Tangipahoa; aged 70; died, March 28, of uremia and nephritis.

**Abraham Blumenfeld,** Boston; Tufts College Medical School, Boston, 1929; member of the Massachusetts Medical Society; aged 26; died, January 27, in the Beth Israel Hospital, of renal calculus.

**James Ralph Higgins** ⊕ Gillespie, Ill.; St. Louis University School of Medicine, 1913; served during the World War; aged 45; died, April 18, at the St. Francis Hospital, Litchfield, of heart disease.

**James McIlwain,** Okawville, Ill.; University of the City of New York Medical Department, 1868; member of the Illinois State Medical Society; aged 88; died, April 20, of influenza and arteriosclerosis.

**James W. Beck,** Des Moines, Iowa; State University of Iowa College of Medicine, Iowa City, 1881; formerly coroner of Polk County; aged 74; died, April 24, of coronary thrombosis and arteriosclerosis.

**Edward Ralph Cotham** ⊕ Monticello, Ark.; Jefferson Medical College of Philadelphia, 1903; served during the World War; aged 51; died, April 30, of arteriosclerosis and coronary occlusion.

**Peter Thomas Burns** ⊕ Chicago; Northwestern University Medical School, Chicago, 1891; for many years assistant professor of anatomy at his alma mater; aged 67; died, May 10, of myocarditis.

**William Oscar Spencer,** Multnomah, Ore.; Cooper Medical College, San Francisco, 1897; member of the Oregon State Medical Society; aged 65; died, February 25, of progressive muscular atrophy.

**Herbert Lee McKown,** Tunkhannock, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 61; died, February 4.

**Albert H. Hattan,** Peru, Ill.; American Medical College, St. Louis, 1877; Chicago Homeopathic Medical College, 1893; aged 74; died, April 26, in Cadiz, Ohio, of heart disease and arteriosclerosis.

**Albert Leonard Miller** ⊕ Marysville, Calif.; Rush Medical College, Chicago, 1896; aged 60; on the staff of the Rideout Memorial Hospital, where he died, March 22, of coronary thrombosis.

**William J. J. Paris,** Rosiclare, Ill.; University of Tennessee Medical Department, Nashville, 1882; member of the Illinois State Medical Society; aged 78; died, March 21, of pneumonia.

**Allen Lowery,** Blackwell, Okla.; University of Louisv (Ky.) School of Medicine, 1891; aged 71; died, April 24, cerebral hemorrhage, following an operation for intesti obstruction.

**Clarence Eugene Applegate,** Long Beach, Calif.; Ru Medical College, Chicago, 1927; aged 33; died in April at local hospital of a skull fracture received in an automob accident.

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**Edward Newby Wheeler,** Decatur, Ill.; Rush Medical College, Chicago, 1878; Civil War veteran; aged 86; died, March 10, in St. Mary's Hospital, of pneumonia.

**George Henry Sherman** ⊕ Detroit; Chicago Medical College, 1883; aged 74; died, April 19, in a hospital at Melbourne, Fla., following an operation for appendicitis.

**Domenico Saladino** ⊕ Brooklyn; Eclectic Medical College of the City of New York, 1887; aged 69; died, April 23, of lobar pneumonia and chronic myocarditis.

**Mary D. Gibbons,** Oak Park, Ill.; Hahnemann Medical College and Hospital, Chicago, 1888; aged 81; died, April 21, of coronary sclerosis and nephrolithiasis.

**Michael Lewis Landman** ⊕ New York; Miami Medical College, Cincinnati, 1905; aged 48; died, April 15, of chronic interstitial nephritis and arteriosclerosis.

**Maurice W. Deming,** Newark, Ohio; Medico-Chirurgical College of Philadelphia, 1899; aged 69; died, April 21, of cerebral hemorrhage and influenza.

**Wesley Wilson Duncan,** Sorento, Ill.; American Medical College, St. Louis, 1878; Civil War veteran; aged 91; died, April 12, of acute bronchitis.

**Augustus Alison Gerlach** ⊕ Oakland, Calif.; University of California Medical School, San Francisco, 1929; aged 33; died, March 15, of influenza.

**Charles Travis Drennen** ⊕ Hot Springs National Park, Ark.; Rush Medical College, Chicago, 1885; aged 68; died, April 26, of heart disease.

**Charles Bolton Brock,** Richmond, Va.; Medical College of Virginia, Richmond, 1894; aged 61; died, April 11, of a self-inflicted bullet wound.

**Oscar William Stark,** Cincinnati; College of Physicians and Surgeons in the City of New York, 1887; aged 67; died, April 19, of heart disease.

**Marion Hendrickson,** Johnston City, Ill.; St. Louis College of Physicians and Surgeons, 1897; aged 61; died suddenly, April 25, of heart disease.

**La Rose Rancour** ⊕ New York; Albany (N. Y.) Medical College, 1892; aged 63; died suddenly, February 12, of a self inflicted bullet wound.

**David S. Ramseur,** Blacksburg, S. C.; Medical College of South Carolina, Charleston, 1879; aged 80; died, April 14, of cerebral hemorrhage.

**Frithjof A. Nordbye,** Camrose, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1908; aged 51; died in March.

**Joseph E. Huffman,** Santa Rosa, Calif.; Dunham Medical College, Chicago, 1897; aged 79; died, March 23, of hemiplegia and pneumonia.

**Norman A. Thomas,** Oil City, Pa.; Jefferson Medical College of Philadelphia, 1896; aged 63; died, April 11, of pneumonia.

# Bureau of Investigation

## AN APHRODISIAC FRAUD

### Robert L. Teycer Mail-Order Fake Debarred from the Mails

On April 2, 1932, the Postmaster General, acting on the recommendation of Judge Horace J. Donnelly, Solicitor for the Post Office Department, issued a fraud order against Dr. Teycer, Dr. B. L. Teycer, Progressive Chemical Association, Teycer Mail Order Company, all of Chicago, and their officers and agents as such. Judge Donnelly in his memorandum to the Postmaster General reported, in effect, that the facts were as follows:

Robert L. Teycer, who is not a physician, had advertised in the matrimonial magazine, *King Cupid*, as follows:

> EXTRA DOUBLE STRENGTH VIGORENE
>
> Amazing Vim, Vigor, Staying power, Endurance. Master Medicine. Stimulates spinal genital center, recharges system at same time. No disappointments. $1.50. 2 boxes $2.50. Dr. Teycer, Box 1275KC. Chicago. Circular free

Those that answered the advertisement received circular matter from Teycer, in which it was stated that "after years of research work, chemical and physical tests, Dr. B. L. Teycer, Ph.C., one of the world's greatest chemists, has discovered one of the main causes of lost nature, lost manhood, poor endurance and staying power, and low sexual power." There was much more of the same sort. The alleged aphrodisiac which Robert L. Teycer sold had, according to the federal report, the following formula:

| | |
|---|---|
| Reduced Iron | ½ grain (or ¼ grain) |
| Quinine Sulphate | ¼ grain |
| Pulv. Capsicum | 1/20 grain |
| Strychnine Sulphate | 1/30 grain |
| Arsenic Trioxide | 1/60 grain |
| Formin | 1 grain |
| Buchu | 1 grain |
| *Zinc Phosphide* | 1/10 grain |
| Aloin | ¼ grain |
| Ergotin (Bonjean) | ¼ grain |
| Metagen ABC VITAMINS (Parke, Davis & Co.) | 3 grains |

The government brought out at the hearing that the claims made for Vigorene were false and fraudulent and that the stuff would not restore "lost manhood" to impotent old men, as represented. It was brought out, too, that the preparation did not contain significant quantities of the vitamins A, B or C, while some of the various drugs included in the preparation might easily have a deleterious effect on certain persons by causing or aggravating digestive disorders.

Teycer, according to the report, formerly operated a small drug store in Chicago, which was recently taken over by creditors. Instead of having "spent thousand of dollars making physical and chemical tests," as claimed, it was brought out at the hearing that Teycer simply selected some drugs which he found listed in a manual and incorporated them in the formula. As a result, Judge Donnelly declared that the scheme was one for obtaining money through the mails by means of false and fraudulent pretenses and recommended the issuance of a fraud order.

## MISBRANDED "PATENT MEDICINES"

### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[*Editorial Note.*—The Food and Drug Administration of the U. S. Department of Agriculture publishes, in bulletins issued at frequent intervals, reports on "patent medicines" whose sale has been found to violate the national Food and Drugs Act. Unfortunately, this information is buried, so far as the general public is concerned. For that reason, THE JOURNAL has, ever since the Food and Drugs Act has been in existence, published abstracts of these notices and, later, reprinted the material in book and pamphlet form, for the information of the profession and the public. In the past, these abstracts have been sufficiently detailed to occupy an amount of space in THE JOURNAL that is out of proportion to their importance. Commencing with the present group, we are presenting such abstracts in the briefest possible form. First is given the name of the product with the name of the manufacturer, shipper, or consigner. Following this is the composition, as shown by the analyses made by the federal chemists; then comes a brief statement of the type of "patent medicine," unless the name of the product is self-explanatory; *finally, there is given the reason for the charge* of misbranding: Fraudulent therapeutic claims or false claims for composition or origin. It is to be borne in mind that the dates of issuance of the Notices of Judgment here abstracted may be several months later than the date of seizure of the product.]

**Pyo-Rem.**—Pyo-Rem Chemical Company, Inc., Los Angeles, Cal. Composition: Zinc chloride, potassium chlorate, with traces of boric acid, chloroform, and formaldehyde, colored red. For pyorrhea, etc. Fraudulent therapeutic claims.—[*N. J. 17602; April, 1931.*]

**Ware's Black Powder.**—W. S. Kirby Company, Dallas, Texas. Composition: Charcoal, bismuth subsalicylate and an iron compound. For stomach and bowel trouble. Fraudulent therapeutic claims.—[*N. J. 17608; April, 1931.*]

**Fansler's Kidney, Bladder and Rheumatism Medicine.**—Fansler Manufacturing Company, Marion, Ind. Composition: Copaiba and cubeb oleoresins, sandalwood oil, potassium chloride, potassium acetate, extracts of plant drugs, sugar, and 11.5 per cent alcohol. Alcohol content wrongly declared; fraudulent therapeutic claims.—[*N. J. 17612; April, 1931.*]

**Merle's Epsom Salt Tablets.**—Devore Manufacturing Company, Columbus, Ohio. Composition: Phenolphthalein, podophyllum, aloes, and epsom salt. False claims for composition.—[*N. J. 17623; April, 1931.*]

**Bronchuline.**—International Laboratories, Rochester, N. Y. Composition: An emulsion containing mineral oil, sodium and calcium glycerophosphates, and creosote flavored with wintergreen. A "cough cure." Fraudulent therapeutic claims.—[*N. J. 17624; April, 1931.*]

**Tonic Force.**—Zarpas Laboratories, Monessen, Pa. Composition: Sulphur, ground plant material, including aloes, iron oxide, cinchona alkaloids, a trace of arsenic, ginger, and malt syrup. Alleged blood purifier. Fraudulent therapeutic claims. —[*N. J. 17626; April, 1931.*]

**Mal-A-Tol.**—First Texas Chemical Manufacturing Company, Dallas, Texas. Composition: Quinine sulphate, drug extracts including a laxative, sodium benzoate, and arsenic and iron compounds. For chills, fever and malaria. Fraudulent therapeutic claims.—[*N. J. 17628; April, 1931.*]

**Alertox.**—Alertox, Inc., Atlanta, Ga. Composition: Epsom salt, sodium phosphate, and water. General cure-all. Fraudulent therapeutic claims.—[*N. J. 17629; April, 1931.*]

**Vapo Ply.**—Hoyt Bros., Inc., Newark, N. J. Composition: An ointment with a petrolatum base, containing oils of camphor, menthol, eucalyptol, thymol and wintergreen. An "asthma cure." Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Hoyt's Cold Tablets.**—Hoyt Bros., Inc., Newark, N. J. Composition: Acetanilid, quinine sulphate, aloin, red pepper and camphor. Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Hoyt's Catarrhal Jelly.**—Hoyt Bros., Inc., Newark, N. J. Composition: Petrolatum, camphor, menthol and eucalyptus oil. Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Fenner's St. Vitus Dance Medicine.**—S. C. Wells and Company, LeRoy, N. Y. Composition: Compounds of arsenic and potassium, with extracts of plant drugs, volatile oils, and alcohol. Fraudulent therapeutic claims.—[*N. J. 17631; April, 1931.*]

**Potaska.**—F. M. Pease and Son, Lee, Mass. Composition: An ammonium compound, guaiac resin, potassium chlorate, lemon and lavender oils, sugar, alcohol, and water. For sore throat, bronchitis, etc. Fraudulent therapeutic claims.—[*N. J. 17632; April, 1931.*]

**Clarence Ray Essex,** Galesburg, Ill.; St. Louis College of Physicians and Surgeons, 1905; member of the Illinois State Medical Society; aged 50; on the staff of St. Mary's Hospital, where he died, April 22, of heart disease.

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The government brought out at the hearing that the claims made for Vigorene were false and fraudulent and that the stuff would not restore "lost manhood" to impotent old men, as represented. It was brought out, too, that the preparation did not contain significant quantities of the vitamins A, B or C, while some of the various drugs included in the preparation might easily have a deleterious effect on certain persons by causing or aggravating digestive disorders.

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## MISBRANDED "PATENT MEDICINES"

### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[*Editorial Note.*—The Food and Drug Administration of the U. S. Department of Agriculture publishes, in bulletins issued at frequent intervals, reports on "patent medicines" whose sale has been found to violate the national Food and Drugs Act. Unfortunately, this information is buried, so far as the general public is concerned. For that reason, The Journal has, ever since the Food and Drugs Act has been in existence, published abstracts of these notices and, later, reprinted the material in book and pamphlet form, for the information of the profession and the public. In the past, these abstracts have been sufficiently detailed to occupy an amount of space in The Journal that is out of proportion to their importance. Commencing with the present group, we are presenting such abstracts in the briefest possible form. First is given the name of the product with the name of the manufacturer, shipper, or consigner. Following this is the composition, as shown by the analyses made by the federal chemists; then comes a brief statement of the type of "patent medicine," unless the name of the product is self-explanatory; finally, there is given the reason for the charge of misbranding: Fraudulent therapeutic claims or false claims for composition or origin. It is to be borne in mind that the dates of issuance of the Notices of Judgment here abstracted may be several months later than the date of seizure of the product.]

**Pyo-Rem.**—Pyo-Rem Chemical Company, Inc., Los Angeles, Cal. Composition: Zinc chloride, potassium chlorate, with traces of boric acid, chloroform, and formaldehyde, colored red. For pyorrhea, etc. Fraudulent therapeutic claims.—[*N. J. 17602; April, 1931.*]

**Ware's Black Powder.**—W. S. Kirby Company, Dallas, Texas. Composition: Charcoal, bismuth subsalicylate and an iron compound. For stomach and bowel trouble. Fraudulent therapeutic claims.—[*N. J. 17608; April, 1931.*]

**Fansler's Kidney, Bladder and Rheumatism Medicine.**—Fansler Manufacturing Company, Marion, Ind. Composition: Copaiba and cubeb oleoresins, sandalwood oil, potassium chloride, potassium acetate, extracts of plant drugs, sugar, and 11.5 per cent alcohol. Alcohol content wrongly declared; fraudulent therapeutic claims.—[*N. J. 17612; April, 1931.*]

**Merle's Epsom Salt Tablets.**—Devore Manufacturing Company, Columbus, Ohio. Composition: Phenolphthalein, podophyllum, aloes, and epsom salt. False claims for composition.—[*N. J. 17623; April, 1931.*]

**Bronchuline.**—International Laboratories, Rochester, N. Y. Composition: An emulsion containing mineral oil, sodium and calcium glycerophosphates, and creosote flavored with wintergreen. A "cough cure." Fraudulent therapeutic claims.—[*N. J. 17624; April, 1931.*]

**Tonic Force.**—Zarpas Laboratories, Monessen, Pa. Composition: Sulphur, ground plant material, including aloes, iron oxide, cinchona alkaloids, a trace of arsenic, ginger, and malt syrup. Alleged blood purifier. Fraudulent therapeutic claims.—[*N. J. 17626; April, 1931.*]

**Mal-A-Tol.**—First Texas Chemical Manufacturing Company, Dallas, Texas. Composition: Quinine sulphate, drug extracts including a laxative, sodium benzoate, and arsenic and iron compounds. For chills, fever and malaria. Fraudulent therapeutic claims.—[*N. J. 17628; April, 1931.*]

**Alertox.**—Alertox, Inc., Atlanta, Ga. Composition: Epsom salt, sodium phosphate, and water. General cure-all. Fraudulent therapeutic claims.—[*N. J. 17629; April, 1931.*]

**Vapo Ply.**—Hoyt Bros., Inc., Newark, N. J. Composition: An ointment with a petrolatum base, containing oils of camphor, menthol, eucalyptol, thymol and wintergreen. An "asthma cure." Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Hoyt's Cold Tablets.**—Hoyt Bros., Inc., Newark, N. J. Composition: Acetanilid, quinine sulphate, aloin, red pepper and camphor. Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Hoyt's Catarrhal Jelly.**—Hoyt Bros., Inc., Newark, N. J. Composition: Petrolatum, camphor, menthol and eucalyptus oil. Fraudulent therapeutic claims.—[*N. J. 17630; April, 1931.*]

**Fenner's St. Vitus Dance Medicine.**—S. C. Wells and Company, LeRoy, N. Y. Composition: Compounds of arsenic and potassium, with extracts of plant drugs, volatile oils, and alcohol. Fraudulent therapeutic claims.—[*N. J. 17631; April, 1931.*]

**Potaska.**—F. M. Pease and Son, Lee, Mass. Composition: An ammonium compound, guaiac resin, potassium chlorate, lemon and lavender oils, sugar, alcohol, and water. For sore throat, bronchitis, etc. Fraudulent therapeutic claims.—[*N. J. 17632; April, 1931.*]

**Inhalex.**—Li Roth Research Laboratories, Inc., Philadelphia. Composition: Formaldehyde, menthol, alcohol and water. For throat affections, etc. Fraudulent therapeutic claims.—[*N. J. 17633; April, 1931.*]

**Lung Saver.**—Lung Saver Company, Philadelphia. Composition: Extracts of plant drugs, including licorice, with chloroform, sugar and water. Fraudulent therapeutic claims.—[*N. J. 17634; April, 1931.*]

**Ointrex.**—Rex Company, Kansas City, Mo. Composition: A petrolatum ointment containing origanum oil, camphor, menthol and wintergreen. For influenza, etc. Fraudulent therapeutic claims.—[*N. J. 17635; April, 1931.*]

**No Fal.**—Western Barber Supply Company, Tulsa, Okla. Composition: Phenolic compounds, rosin, alkali and water. For growing hair and healing eczema. Fraudulent therapeutic claims.—[*N. J. 17637; April, 1931.*]

**Cold and La Grippe Tablets.**—Hance Bros. and White, Inc., Philadelphia. Composition: Cinchona alkaloids and aloin. Fraudulent therapeutic claims.—[*N. J. 17641; April, 1931.*]

**Thorson's Soap Lake Salts.**—Thorson's Soap Lake Products Company, Soap Lake, Wash. Composition: Common salt, washing soda and glauber's salt. Cure-all. Fraudulent therapeutic claims.—[*N. J. 17643; April, 1931.*]

**S-T-S Little Wonder Suppositories.**—Esbencott Laboratories, East Portland, Oregon. Composition: Boric acid, tannin, zinc phenolsulphonate and a trace of wintergreen. For leucorrhea and vaginal infections. Fraudulent therapeutic claims.—[*N. J. 17646; April, 1931.*]

**Vaginal Antiseptic Capsules.**—Grape Capsule Company, Inc., Allentown, Pa. Composition: Eucalyptol and guaiacol dissolved in castor oil. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 17647; April, 1931.*]

**Vogue Antiseptic Powder.**—Muir Company, Grand Rapids, Mich. Composition: Potassium alum, sodium borate, zinc sulphate, salicylic acid, and small amounts of carbolic acid, thymol and eucalyptol. Not antiseptic in the dilutions recommended. Fraudulent therapeutic claims.—[*N. J. 17648; April, 1931.*]

## *Correspondence*

### "PHYSIOLOGIC DEATH AND ARTIFICIAL RESPIRATION"

*To the Editor:*—The editorial comment on this subject (The Journal, April 23) suggests a question and a note of information:

Is it possible for a patient to be resuscitated (after the heart has definitely stopped) by means of artificial respiration?

In the absence of specific cardiac therapy, such as intracardiac epinephrine, has any evidence ever been adduced to indicate that a heart which has actually stopped will once more take up its physiologic function? Was it not meant, in this reference, when the heart *apparently* ceases to function? I gather that this must be so, because farther along you refer to physiologic death having occurred thirty minutes before the heart stopped beating.

The point I wish to make is that in so-called physiologic death we may consider that the heart does continue to beat, even though this action is not audible or palpable; and that when the heart does cease to beat, actual death takes place, at once.

So much for the question. The second part of the editorial comment deals with the expert administration of artificial respiration by laymen. It is well known that the technic available to such personnel is altogether limited to the application of the Schäfer prone pressure method with or without the use of an inhalator, making available oxygen and carbon dioxide by inhalation. The editorial comment continues to elaborate on the efficiency of this technic, failing, first of all, to designate the degree of asphyxia in which such methods may prove useful, these cases being practically limited to the semiconscious, partially asphyxiated patient. No mention whatever is made of the rational and accepted methods whereby the physician may complement and in many cases entirely supplant the efforts of such lay personnel. I refer directly to technic which I have repeatedly described and which is gaining in popularity, as it becomes known and available to the physician. This consists of exposure of the airway by a pocket flashlight laryngoscope, removal of foreign matter, such as blood, vomitus and sea water, from the oropharyngotracheobronchial airway, and the introduction of oxygen and carbon dioxide directly into the trachea, under direct vision and under a measured pressure. This technic is the only possible method of resuscitating the asphyxiated, relaxed, apneic patient whose circulation has failed or is no longer perceptible. It is the only technic by which immediate oxygenation, central carbon dioxide stimulation, and stimulation by the Herring-Breuer reflex may be accomplished.

The condition of the patient to be treated presents a field which is so free from resistance through the absence of muscle tone and reflexes that the necessary instrumentation is entirely nontraumatic. I believe, therefore, that emphasis should be placed on the duties incumbent on the physician in the treatment of those dying from asphyxia, instead of turning over this vital field of medicine to the care of any lay group that may be sufficiently interested to deal with it.

P. J. Flagg, M.D., New York.

## *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### OBESITY OF GLANDULAR ORIGIN

*To the Editor.*—I have under my care a woman, aged 22, suffering from amenorrhea. She appeared normal in every way, puberty occurring at 14, until she was about 16 years of age, when she began to develop rapidly, was 5 feet 10 inches (178 cm.) tall and weighed 200 pounds (90 Kg.). In the past two years she has not gained in height but weighs 260 pounds (118 Kg.). Her menses were normal until one year ago, when the amount gradually became less but the periods regular. Six months ago there was no flow, and menstruation has occurred only once since, and then it was scanty. She has a ravenous appetite and a craving for food. An adenoma of the thyroid developed following the taking of "Marmola" tablets two years ago. I have had her on mixed gland treatment now for two and one-half months without results. Please suggest treatment. Please omit name.

M.D., Canada.

Answer.—The amenorrhea and obesity in this case are undoubtedly due to a disturbance in one or more glands of internal secretion. The gland most likely responsible here is the pituitary and the patient has the condition known as the adipogenital dystrophy of Fröhlich. This disease is due to hypopituitarism, and the chief clinical signs are adiposity and hypoplasia of the genitalia. The latter is the cause of the amenorrhea characteristic of these cases. It was formerly held by some authorities that obesity produced amenorrhea, whereas others maintained that the reverse was true. It is now known that both the obesity and the amenorrhea are due to diminished function of the hypophyseal gland. This has been proved experimentally in animals by partial removal of the hypophysis.

Not infrequently the thyroid gland is responsible for amenorrhea, and this may occur either with hyperthyroidism or with hypothyroidism. On the other hand, in both of these abnormal conditions the menstrual flow may be normal in amount or even increased. Generally speaking, amenorrhea is more frequently associated with hyperthyroidism than with hypothyroidism.

The patient should have a complete physical examination, including at least one basal metabolism test. Because of the adenoma of the thyroid which developed after the taking of thyroid extract (each Marmola tablet contains one-half grain of thyroid), great caution should be used in the administration of more thyroid, Compound Solution of Iodine U. S. P. (Lugol's solution) or other specific thyroid therapy. Because of the most likely hypofunction of the pituitary gland, large doses of extract of the anterior lobe of the pituitary may be tried hypodermically. N. N. R., 1931, page 309, states that oral administration has not been found of value.

## ACQUIRED PROGRESSIVE KINKING OF THE HAIR

*To the Editor:*—A robust unmarried man, aged 34, until ten years ago had a fine, thick head of brown hair. He had severe dandruff, however, and it formed in plaques, probably psoriasis, so that on one occasion while combing he tore off a plaque with the result that he drew blood. A scab formed, this in turn was torn off, and the process was repeated until a patch as big as a 25 cent piece became denuded of hair. He consulted advice with the result that the abrasion healed and the bald area, which was smooth and depressed, shortly grew new hair, which was coarse, black and brittle. He now has at the site of this sore a bump in his scalp over which the scalp is freely movable. The process nevertheless has extended to the entire scalp, so that the hair is black and stiff and wirelike, especially in the parietal areas. The individual hair is no longer a cylinder but is flattened in one diameter and is somewhat like a blade of grass. The hair is kinky, although there are no nodules, as in monilethrix or trichorrhexis nodosa. The hair appears as though it came through its follicle in a special tortuous manner. The hair pulls out easily and painlessly, and the erupted end instead of having the usual normal small round firm whitish nodule has a black glistening sticky soft bead, which can be readily detached from the shaft. At present the scalp is extremely clean and there is no seborrhea or scaly dermatitis. However, many strands of hair are showing fine tapering of their extremities so that I fear alopecia may ensue, as it undoubtedly will unless the process may be recognized and treated. There is no grayness of the hair. The rest of the body hair is normal. The bump on the head is apparently deep to the scalp and beneath the fronto-occipital fascia. Kindly omit name.

M.D., Michigan.

Answer.—This case seems to belong to a group recently described for the first time by Wise and Sulzberger as acquired progressive kinking of the scalp hair" (*Arch. Dermat. & Syph.* **25:**99 [Jan.] 1932). The patches of dermatitis and consequent abrasions may have been part of the disease, though the authors mentioned had no such history in their cases, or they may have been coincident. The extent of the involvement of the scalp is greater than in their cases, and there are no nodes on the hair shaft. The soft sticky root ends are also different than they found. There was no lasting alopecia in their cases. They consider the condition a form of late developing nevus. Naturally they thought of no treatment. A description of this unusual case may be sent to Dr. Fred Wise, 200 West Fifty-Ninth Street, New York. If the patient insists on treatment, the ordinary stimulating measures will surely do him no harm and may be beneficial. Massage, vigorous brushing and an ointment of 3 per cent salicylic acid and 5 per cent sulphur in ointment of rose water may be used.

## HAY FEVER IN CENTRAL ILLINOIS

*To the Editor:*—A woman, aged 44, has had a valvular heart lesion, since the age of 5, which has always compensated but has restricted physical exertion all her life. Her general health has always been excellent except for an intense hay fever reaction each year. She has always lived in central Illinois. She is 15 pounds (6.8 Kg.) overweight. All food protein skin tests are negative and so also are the miscellaneous protein tests, such as cat hair, chicken feathers and cattle dander. The ragweed pollens rubbed into a skin abrasion cause a tremendous wheal, an unusually severe reaction most marked with false ragweed but unusually large also to the western and common variety. The following reactions were barely positive: cocklebur, marsh elder, sage brush, mountain cedar, sweet vernal grass, mugwort and wormwood. The patient has been treated three different seasons with hay fever serum; after each hypodermic injection she reports an intense local reaction involving the arm and from the shoulder to the mid forearm, with a great deal of discomfort. She has received no benefit from her serum treatments; rather an exaggeration of her symptoms has resulted, as the onset was earlier and the duration greater in the years when she had the serum than when she had no treatment. Please omit name. M.D., Illinois.

Answer.—The valvular heart lesion is compensated and can therefore be left out of consideration, except that its presence calls for the best possible treatment in order to avoid the severe hay fever reaction which comes each year and which may strain the heart's action. The query does not state just when the hay fever comes on. In central Illinois there are two main seasons: 1. The grass season, due to June grass, timothy, orchard grass and redtop, and beginning about the middle of May and going through June and July. The patient should be tested for these four and, if positive, and if she has symptoms during this period, she should be given injections of a mixture of these four pollen extracts. 2. The weed season, due to the ragweeds, usually short and giant, beginning about August 10 or 15 and going through September usually to the first frost. Assuming that this patient has symptoms in this period, she should be given injections of a mixture of extracts of the short and giant ragweeds (equal parts).

The patient is evidently one of these extremely sensitive persons who must be started with a dilute solution early, and the dosage must be increased slowly. The treatment might begin with 0.02 cc. of a 1:100,000 dilution of the pollen extract (dilutions can be made with sterile physiologic solution of sodium chloride and will keep fairly well if kept on ice). Then each injection may be increased about 50 per cent; in this way one can work up the dosage through 1:10,000; 1:1,100 and finally to 1:100 dilutions. If there is a general reaction, which occurs not infrequently, epinephrine hydrochloride solution, 1:1,000 (from 0.5 to 1 cc.) should be given and the next dose reduced gradually working up again. The procedure demands painstaking care and patience in these sensitive individuals but almost all of them can be raised to a high amount with probable partial or complete relief. With such a patient, injections should be begun at once and given twice weekly.

## DEXTROSE IN OXALATED BLOOD

*To the Editor:*—Will you please give me actual figures (if such are known) on the rate of disappearance of dextrose (*d*-glucose) from oxalated blood standing at room temperature and/or in the ice box. I know that dextrose must be determined at once, but it happens that the oxalated blood will stand around four or five hours before testing at times. I should like to know the rate of deterioration.

Isaac Apperman, M.D., New York.

Answer.—The rate of disappearance of dextrose (*d*-glucose) from blood in vitro varies considerably with the source of the blood, and it may also vary greatly in different samples taken from the same source at different times. The sugar that disappears may in part give rise to lactic acid, another portion may be completely oxidized, while some is probably accounted for by bacterial decomposition.

The rate of disappearance of dextrose does not bear any direct relationship to the level of the blood sugar, so that in general it may be said that blood with a high sugar content loses relatively less dextrose in a given time than blood with a low sugar content. Glycolysis occurs most rapidly at its optimum temperature of 37 C. At icebox temperatures the rate of glycolysis is considerably decreased, as are also, of course, the effects of bacterial action. Citrates and oxalates, when used as anticoagulants, retard glycolysis to only a minor extent.

A recent report shows that defibrinated blood taken and kept with aseptic precautions at 37 C. may lose all its sugar content in from four to six hours. Other workers report that oxalated blood, kept at icebox temperatures (from 9 to 11 C.) may lose from 0 to 90 per cent of the initial dextrose content in twenty-four hours. The loss of sugar in four or five hours from oxalated blood, standing at room temperature, may therefore be considerable. The variability of the rate of this phenomenon in different specimens of blood makes it impossible to give a set figure or to supply a standard correction for such loss.

From a practical point of view it is possible to solve these difficulties by the use of fluorides, which have been shown to arrest glycolysis. A mixture of 1 part of potassium oxalate and 2 parts of sodium fluoride, finely ground and well mixed, may be used for this purpose, in place of the usual powdered oxalate. It is necessary, of course, to use proportionately more of this mixture than of the straight oxalate to prevent coagulation in a given amount of blood.

## ANOMALIES OF BONES OF WRIST

*To the Editor:*—In a case of injury to the wrist of a woman, aged 27, roentgenograms were taken of both wrists. About 1 mm. distal to the styloid process of both ulnas there is a well defined shadow as of bone, regular in outline, about half the size of a buckshot. I am at loss to know what these particles might be. They are referred to as fragments of bone by the roentgenologist. They appear to me as sesamoid formations but I am unable to find any reference in Morris's Anatomy to sesamoids in this location. There is no history of injury to the opposite wrist.

Hubert C. Miller, M.D., Racine, Wis.

Answer.—Small bones may appear distal to the end of the styloid process of the ulna, but they are rather rare. Pfitzner described an antibrachial row of carpal bones just distal to the radius and the ulna. Dwight has observed that it may occasionally be seen located beyond the tip of the styloid process. Thilenius reported that this embryonic bony tissue was common in the early embryo and that in the second month it occurred in 65 per cent of specimens. The persistence of this tissue as bone is rarely seen in the adult. It is possible that, in the development, the tip of the styloid may be separated from the main part of the ulna. It is perfectly possible for sesamoids to occur in this region. They may occur in any location on the hand or fingers and may be multiple. A fracture of the tip of the styloid may fail to heal, and in the absence of evidence of injury to the radius it is difficult to differentiate from a congenital anomaly. A fracture, however, usually shows some irregularity on the side nearer to the ulna and is somewhat concave or flattened. A similar flattening of the base of the styloid process from which it was broken is usually present. On examination, a sesamoid or separate anomalous carpal bone, as the triangulare, should be completely surrounded by a smooth capsule or cartilage, while in a nonunited fracture of the styloid a scar with fibrous tissue should be found on microscopic examination. In the presence of this bony fragment on both sides and in the absence of evidence of injury, the presence of a congenital bony anomaly should be accepted.

## PATHOLOGY OF ELECTRICAL SHOCK

*To the Editor:*—A young man came in contact with a live wire carrying 250 volts, direct current. Points of contact were the back of his neck and his feet. He fell clear. Artificial respiration was applied and he regained consciousness. Thirty minutes later he again became unconscious and again responded to artificial respiration. He remained in the hospital five days at rest. He says he had a headache during that time. Eight days later he apparently became confused mentally and was returned to the hospital for a period of five days. During this time his actions were perfectly normal and he was discharged. This accident occurred two months ago. The patient still complains of a severe headache and of tachycardia. Would you be kind enough to furnish me with any information you have on cases of this kind.

George W. Gay, M.D., Ironton, Mo.

Answer.—A path of electrical conduction that includes the head, neck and thorax is far more likely to be disastrous than one extending only from the abdominal region to the feet. The path that extends through the head is in turn of greater significance than that through the neck or thorax. This is recognized in most legal electrical executions, as one electrode is commonly placed on the head. Although neuroses subsequent to electrical shock are prolific and may possibly fully account for the manifestations in the case cited, genuine organic lesions may be produced apart from burns and at times in the absence of local burns. Capillary hemorrhage in the brain or spinal cord may be followed by chronic states in which increased intracranial pressure may play a part. Cellular changes, including edema, may be demonstrated in any portion of the central nervous system.

Electrical paths embracing the neck may lead to damage to the vagus nerves, which in the present case may account for the persistent tachycardia. The ventricular fibrillation, long associated with electrical shock, involving the heart, may not spontaneously clear up, and extensive permanent or prolonged harm may be produced. Cases similar to the one described are well known and might be cited, but information is likely to be found in experimental studies such as the following:

Factors in the Production of Nervous Lesions Following Electric Shock, *J. Indust. Hyg.*, March, 1932, p. 87.

Experimental Electric Shock, *J. Indust. Hyg.*, April, 1927, p. 140.

Histopathology of Different Types of Electric Shock on Mammalian Brains, *J. Indust. Hyg.*, November, 1930, p. 324.

## SATIN WOOD DERMATITIS

*To the Editor:*—Can you give me any information as to symptoms and treatment of dermatitis due to contact or handling of satin wood, which is used as trimming in the manufacture of furniture?

J. E. Bolender, M.D., Grand Rapids, Mich.

Answer.—Satinwood is one of the most irritating of woods, and dermatitis from it is common among woodworkers. This is a form of simple dermatitis, dermatitis venenata, occurring as a macular, maculopapular, papular or vesicular eruption in groups, the general lesions close together or fused, the peripheral lesions farther and farther apart as they are farther from the center, wherefore the patch is ill defined. Exposed parts are first involved, but the eruption may spread to other parts or become even general. It itches intensely in the acute stage. If it is vesicular, cool wet dressings of 6 per cent solution of aluminum acetate in distilled water should be used, or saturated solution of boric acid, changed as often as they become warm, not thickly applied or closely covered for fear of preventing radiation of heat. This treatment may be alternated with calamine lotion, pulverized calamine and zinc oxide, 8 Gm. of each, in solution of calcium hydroxide, 120 cc. For the macular or papular eruptions, and for the moist ones after they have been dried by the lotion treatment, plain zinc paste, zinc oxide and starch, 25 per cent of each, in petrolatum or ointment of rose water to 100 per cent. This should be applied thinly several times a day and removed, when necessary, with oil or ointment of rose water. Internally, injections of the patient's own blood may hasten recovery, or intravenous or intramuscular injections of calcium gluconate or calcium lactate by mouth, 4 Gm., dissolved in hot water after each meal. After the attack has subsided the patient must obtain work where no satinwood is used, or an attempt may be made to desensitize; but this is difficult.

## *ETHER AS ANESTHETIC FOR TONSILLECTOMY*

*To the Editor:*—Please advise me concerning these points about the after-effects of ether as an anesthetic given by the drop method: Could pains in the chest of a girl, aged 18 years, have any connection with the fact that she took ether three weeks previously, during a tonsil operation? She had no trouble after the operation until the onset of the pain and nothing could be made out on physical examination of the chest to account for the pain. Could the fact that a boy, aged 6 years, who took ether for a tonsillectomy, account for his getting dizzy and having violent headaches every time he remains in sunshine for any length of time, or if he gets hot in a warm room? I had nothing to do with giving the ether or with either tonsillectomy. It is my contention that ether quickly leaves the body and, barring ether pneumonia and rapid bronchial irritation, does not cause trouble to the taker. Please omit name.

M.D., Texas.

Answer.—The local action of a concentrated ether vapor occasionally causes a lung complication; such complications, however, occur within the first day or two after the anesthesia. Occasionally lung abscess develops after tonsillectomies and is due to the inhalation of solid food vomited during the operation or, more frequently, to infected material from the tonsils or to tonsillar tissue having been aspirated and lodged in the lung. The latter condition would be late in developing and during the early stages may be difficult to diagnose. A roentgenogram is usually of considerable value in clearing up the situation.

As ether is soon eliminated from the body, it is improbable that there is any connection between it and the boy's headache. Doubtless the pain is a coincidence and not the result of the ether anesthesia.

## SYPHILIS IN PREGNANCY

*To the Editor:*—A woman, two and one-half months pregnant, has a chancre on the left labium minus and an inguinal adenitis on the corresponding side. The Kahn test of the blood is three plus positive. The chancre is of three weeks' duration, according to the history. I should like your opinion as to the probability of a nonsyphilitic child at term if treatment is carried out energetically during pregnancy. Also advise as to how close to term the treatment should be carried and how soon after delivery it could be resumed if delivery is not complicated. If, for any reason, the patient could not or would not continue treatment, is termination of the pregnancy justified? She has been deserted by her husband and is of limited means and must be self supporting. Please omit name.

M.D., Oklahoma.

Answer.—If energetic antisyphilitic treatment is given throughout the entire pregnancy, the outlook for a healthy baby is good. The treatment should be carried out continuously right up to the time of delivery and then begun again about two weeks after labor, unless there is some contraindication, such as puerperal fever. The baby should be carefully examined for evidences of syphilis. This means not only a thorough physical examination but also roentgenograms of the large bones. Wassermann and Kahn tests should be made on the child's blood at frequent intervals.

Syphilis is not an indication for the interruption of pregnancy even if the patient refuses treatment and even if there are social reasons why it is better for the patient not to be burdened with a child. In every large city there are a number of dispensaries or clinics where antisyphilitic therapy is given at low rates or free of charge. Furthermore, in the presence of active syphilis there is great danger of infection if the uterus is tampered with to produce an abortion.

## INFLAMMATION OF PENIS

*To the Editor:*—I have a patient, aged 50, who is suffering (and suffering is right) from a chronic inflammation of the erectile tissue of the penis. The Wassermann reaction is negative. Right back of the head, the penis is circled with a band of hard fibrous tissue. Erection is complete up to this band but beyond it the penis remains soft and flabby. Will you kindly advise as to treatment and prognosis? Kindly omit name.

M.D., Montana.

Answer.—The symptoms described fit the picture of induratio penis plastica. The condition, which affects individuals between the ages of 45 and 60, is inflammatory in nature and involves the corpora cavernosa only. It is characterized pathologically by the presence of single or multiple fibrous plaques which begin at one point along the shaft and form circumscribed masses with sharply defined margins. The entire penis may be involved. The induration never becomes malignant nor does it ulcerate. The prognosis, in view of the pathology, is poor. Treatment is of little, if any, avail. The condition is not amenable to drugs. Direct treatment with diathermy, x-rays or radium offers questionable results. Extirpation may have to be resorted to.

### RECTAL ETHER AND LUNG IRRITATION

*To the Editor:*—Will you kindly give me your opinion as to whether or not rectal ether anesthesia (Gwathmey method) is contraindicated in infections of the respiratory tract because of the danger of ether pneumonia during the period of elimination of the ether from the body through the respiratory system, and if this danger really exists.

C. B. Caldwell, M.D., San Francisco.

Answer.—Experimental proof and observation of large numbers of patients who have respiratory trouble following ether anesthesia brings out one fact more prominently than any other, and that is the danger of administrating concentrated ether vapor. Offergeld (*Arch. f. klin. Chir.* **47**:175, 1898) found that closed methods of administration with high ether concentrations were followed by desquamation of bronchial epithelium, patches of lung consolidation and hemorrhage into the alveoli. The only complication following open administration with weak vapors was slight destruction of the epithelium, which became regenerated within a few days. Such observations indicate quite clearly that when ether affects the lungs it does so by its direct local action during its administration.

While it is true that ether is eliminated principally by the lungs, regardless of the method of its administration, there is doubt whether it is sufficiently concentrated in rectal anesthesia to affect the lungs.

### ALCOHOL AND STRYCHNINE

*To the Editor:*—In case a man had been drinking alcohol and had been drinking previous to taking poison and then was to take a dose of strychnine dissolved in alcohol, might the effect of his drinking alcohol act on him so that he would not present the typical symptoms of strychnine poisoning, and might the fact of his drinking alcohol act as an antidote so that it might not kill him as quickly as it would otherwise? I have been unable to find any material on this question. Kindly omit name.

M.D., Iowa.

Answer.—A sufficient dose of alcohol in the system would no doubt profoundly influence the clinical picture of strychnine poisoning. Indeed, if the individual should be in that stage of alcohol narcosis in which the spinal reflexes are paralyzed, the strychnine convulsions even might be lacking. In this manner, alcohol might act as an antagonist to strychnine.

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*To the Editor:*—What is the value of active immunization against scarlet fever? The prophylactic treatment with serum in scarlet fever? The treatment of scarlet fever by specific antitoxins and serums?

Oscar E. Fox, M.D., Reading, Pa.

Answer.—Active immunization against scarlet fever properly carried out to the point of negative skin test protects against the disease. Prophylactic treatment with scarlet fever antitoxin affords only temporary protection. It should be followed by active immunization with the toxin. Scarlet fever antitoxin is a valuable remedy. Administered early in the disease, it gives striking results in reducing the incidence and severity of complications, in addition to relieving the toxemia.

### PHLYCTENULAR CONJUNCTIVITIS

*To the Editor:*—Kindly give me the latest treatment for phlyctenular conjunctivitis.

William F. Tyler, M.D., Beaumont, Texas.

Answer.—1. Local: Silver nitrate, 1 per cent, instilled once daily or every other day, until the secretion is stopped. A mild cleansing wash, such as 1 : 5,000 mercuric oxycyanide or 1 : 2,500 metaphen, to be used in an eye cup two or three times daily. Yellow mercuric oxide ointment instilled at bedtime.

2. General: Free catharsis. Treatment and eradication of nasal or tonsillar disorders. Such general hygienic measures as are necessary to bring the general physical condition to normal.

### ARTHRITIS AND POLYCYSTIC KIDNEY

*To the Editor:*—I have just completed a case of severe arthritis deformans in a man, aged 68. The condition began about twelve years ago. He had always been a healthy vigorous man before. At the postmortem, both kidneys and the liver were polycystic. In your opinion is there any relation between the postmortem observations and the arthritis?

Merrill S. Davis, M.D., Marion, Ind.

Answer.—So far as known at the present time there is no reason to believe that there was any relation between the arthritis and the polycystic condition of the kidneys and liver.

# Council on Medical Education and Hospitals

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differentiate from a congenital anomaly. A fracture, however, usually shows some irregularity on the side nearer to the ulna and is somewhat concave or flattened. A similar flattening of the base of the styloid process from which it was broken is usually present. On examination, a sesamoid or separate anomalous carpal bone, as the triangulare, should be completely surrounded by a smooth capsule or cartilage, while in a nonunited fracture of the styloid a scar with fibrous tissue should be found on microscopic examination. In the presence of this bony fragment on both sides and in the absence of evidence of injury, the presence of a congenital bony anomaly should be accepted.

### PATHOLOGY OF ELECTRICAL SHOCK

*To the Editor:*—A young man came in contact with a live wire carrying 250 volts, direct current. Points of contact were the back of his neck and his feet. He fell clear. Artificial respiration was applied and he regained consciousness. Thirty minutes later he again became unconscious and again responded to artificial respiration He remained in the hospital five days at rest. He says he had a headache during that time. Eight days later he apparently became confused mentally and was returned to the hospital for a period of five days. During this time his actions were perfectly normal and he was discharged. This accident occurred two months ago. The patient still complains of a severe headache and of tachycardia. Would you be kind enough to furnish me with any information you have on cases of this kind.

George W. Gay, M.D., Ironton, Mo.

Answer.—A path of electrical conduction that includes the head, neck and thorax is far more likely to be disastrous than one extending only from the abdominal region to the feet. The path that extends through the head is in turn of greater significance than that through the neck or thorax. This is recognized in most legal electrical executions, as one electrode is commonly placed on the head. Although neuroses subsequent to electrical shock are prolific and may possibly fully account for the manifestations in the case cited, genuine organic lesions may be produced apart from burns and at times in the absence of local burns. Capillary hemorrhage in the brain or spinal cord may be followed by chronic states in which increased intracranial pressure may play a part. Cellular changes, including edema, may be demonstrated in any portion of the central nervous system.

Electrical paths embracing the neck may lead to damage to the vagus nerves, which in the present case may account for the persistent tachycardia. The ventricular fibrillation, long associated with electrical shock, involving the heart, may not spontaneously clear up, and extensive permanent or prolonged harm may be produced. Cases similar to the one described are well known and might be cited, but information is likely to be found in experimental studies such as the following:

Factors in the Production of Nervous Lesions Following Electric Shock, *J. Indust. Hyg.*, March, 1932, p. 87.
Experimental Electric Shock, *J. Indust. Hyg.*, April, 1927, p. 140.
Histopathology of Different Types of Electric Shock on Mammalian Brains, *J. Indust. Hyg.*, November, 1930, p. 324.

### SATIN WOOD DERMATITIS

*To the Editor:*—Can you give me any information as to symptoms and treatment of dermatitis due to contact or handling of satin wood, which is used as trimming in the manufacture of furniture?

J. E. Bolender, M.D., Grand Rapids, Mich.

Answer.—Satinwood is one of the most irritating of woods, and dermatitis from it is common among woodworkers. This is a form of simple dermatitis, dermatitis venenata, occurring as a macular, maculopapular, papular or vesicular eruption in groups, the general lesions close together or fused, the peripheral lesions farther and farther apart as they are farther from the center, wherefore the patch is ill defined. Exposed parts are first involved, but the eruption may spread to other parts or become even general. It itches intensely in the acute stage. If it is vesicular, cool wet dressings of 6 per cent solution of aluminum acetate in distilled water should be used, or saturated solution of boric acid, changed as often as they become warm, not thickly applied or closely covered for fear of preventing radiation of heat. This treatment may be alternated with calamine lotion, pulverized calamine and zinc oxide, 8 Gm. of each, in solution of calcium hydroxide, 120 cc. For the macular or papular eruptions, and for the moist ones after they have been dried by the lotion treatment, plain zinc paste, zinc oxide and starch, 25 per cent of each, in petrolatum or ointment of rose water to 100 per cent. This should be applied thinly several times a day and removed, when necessary, with oil or ointment of rose water. Internally, injections of the patient's own blood may hasten recovery, or intravenous or intramuscular injections of calcium gluconate or calcium lactate by mouth, 4 Gm., dissolved in hot water after each meal. After the attack has subsided the patient must obtain work where no satinwood is used, or an attempt may be made to desensitize; but this is difficult.

### ETHER AS ANESTHETIC FOR TONSILLECTOMY

*To the Editor:*—Please advise me concerning these points about the after-effects of ether as an anesthetic given by the drop method: Could pains in the chest of a girl, aged 18 years, have any connection with the fact that she took ether three weeks previously, during a tonsil operation? She had no trouble after the operation until the onset of the pain and nothing could be made out on physical examination of the chest to account for the pain. Could the fact that a boy, aged 6 years, who took ether for a tonsillectomy, account for his getting dizzy and having violent headaches every time he remains in sunshine for any length of time, or if he gets hot in a warm room? I had nothing to do with giving the ether or with either tonsillectomy. It is my contention that ether quickly leaves the body and, barring ether pneumonia and rapid bronchial irritation, does not cause trouble to the taker. Please omit name.

M.D., Texas.

Answer.—The local action of a concentrated ether vapor occasionally causes a lung complication; such complications, however, occur within the first day or two after the anesthesia. Occasionally lung abscess develops after tonsillectomies and is due to the inhalation of solid food vomited during the operation or, more frequently, to infected material from the tonsils or to tonsillar tissue having been aspirated and lodged in the lung. The latter condition would be late in developing and during the early stages may be difficult to diagnose. A roentgenogram is usually of considerable value in clearing up the situation.

As ether is soon eliminated from the body, it is improbable that there is any connection between it and the boy's headache. Doubtless the pain is a coincidence and not the result of the ether anesthesia.

### SYPHILIS IN PREGNANCY

*To the Editor:*—A woman, two and one-half months pregnant, has a chancre on the left labium minus and an inguinal adenitis on the corresponding side. The Kahn test of the blood is three plus positive. The chancre is of three weeks' duration, according to the history. I should like your opinion as to the probability of a nonsyphilitic child at term if treatment is carried out energetically during pregnancy. Also advise as to how close to term the treatment should be carried and how soon after delivery it could be resumed if delivery is not complicated. If, for any reason, the patient could not or would not continue treatment, is termination of the pregnancy justified? She has been deserted by her husband and is of limited means and must be self supporting. Please omit name.

M.D., Oklahoma.

Answer.—If energetic antisyphilitic treatment is given throughout the entire pregnancy, the outlook for a healthy baby is good. The treatment should be carried out continuously right up to the time of delivery and then begun again about two weeks after labor, unless there is some contraindication, such as puerperal fever. The baby should be carefully examined for evidences of syphilis. This means not only a thorough physical examination but also roentgenograms of the large bones. Wassermann and Kahn tests should be made on the child's blood at frequent intervals.

Syphilis is not an indication for the interruption of pregnancy even if the patient refuses treatment and even if there are social reasons why it is better for the patient not to be burdened with a child. In every large city there are a number of dispensaries or clinics where antisyphilitic therapy is given at low rates or free of charge. Furthermore, in the presence of active syphilis there is great danger of infection if the uterus is tampered with to produce an abortion.

### INFLAMMATION OF PENIS

*To the Editor:*—I have a patient, aged 50, who is suffering (and suffering is right) from a chronic inflammation of the erectile tissue of the penis. The Wassermann reaction is negative. Right back of the head, the penis is circled with a band of hard fibrous tissue. Erection is complete up to this band but beyond it the penis remains soft and flabby. Will you kindly advise as to treatment and prognosis? Kindly omit name.

M.D., Montana.

Answer.—The symptoms described fit the picture of induratio penis plastica. The condition, which affects individuals between the ages of 45 and 60, is inflammatory in nature and involves the corpora cavernosa only. It is characterized pathologically by the presence of single or multiple fibrous plaques which begin at one point along the shaft and form circumscribed masses with sharply defined margins. The entire penis may be involved. The induration never becomes malignant nor does it ulcerate. The prognosis, in view of the pathology, is poor. Treatment is of little, if any, avail. The condition is not amenable to drugs. Direct treatment with diathermy, x-rays or radium offers questionable results. Extirpation may have to be resorted to.

### RECTAL ETHER AND LUNG IRRITATION

*To the Editor:*—Will you kindly give me your opinion as to whether or not rectal ether anesthesia (Gwathmey method) is contraindicated in infections of the respiratory tract because of the danger of ether pneumonia during the period of elimination of the ether from the body through the respiratory system, and if this danger really exists.

C. B. Caldwell, M.D., San Francisco.

Answer.—Experimental proof and observation of large numbers of patients who have respiratory trouble following ether anesthesia brings out one fact more prominently than any other, and that is the danger of administrating concentrated ether vapor. Offergeld (*Arch. f. klin. Chir.* **47**:175, 1898) found that closed methods of administration with high ether concentrations were followed by desquamation of bronchial epithelium, patches of lung consolidation and hemorrhage into the alveoli. The only complication following open administration with weak vapors was slight destruction of the epithelium, which became regenerated within a few days. Such observations indicate quite clearly that when ether affects the lungs it does so by its direct local action during its administration.

While it is true that ether is eliminated principally by the lungs, regardless of the method of its administration, there is doubt whether it is sufficiently concentrated in rectal anesthesia to affect the lungs.

### ALCOHOL AND STRYCHNINE

*To the Editor:*—In case a man had been drinking alcohol and had been drinking previous to taking poison and then was to take a dose of strychnine dissolved in alcohol, might the effect of his drinking alcohol act on him so that he would not present the typical symptoms of strychnine poisoning, and might the fact of his drinking alcohol act as an antidote so that it might not kill him as quickly as it would otherwise? I have been unable to find any material on this question. Kindly omit name.

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Answer.—A sufficient dose of alcohol in the system would no doubt profoundly influence the clinical picture of strychnine poisoning. Indeed, if the individual should be in that stage of alcohol narcosis in which the spinal reflexes are paralyzed, the strychnine convulsions even might be lacking. In this manner, alcohol might act as an antagonist to strychnine.

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Answer.—1. Local: Silver nitrate, 1 per cent, instilled once daily or every other day, until the secretion is stopped. A mild cleansing wash, such as 1:5,000 mercuric oxycyanide or 1:2,500 metaphen, to be used in an eye cup two or three times daily. Yellow mercuric oxide ointment instilled at bedtime.

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*To the Editor:*—I have just completed a case of severe arthritis deformans in a man, aged 68. The condition began about twelve years ago. He had always been a healthy vigorous man before. At the postmortem, both kidneys and the liver were polycystic. In your opinion is there any relation between the postmortem observations and the arthritis?

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## Minnesota January Report

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Jan. 19-21, 1932. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Forty-three candidates were examined, all of whom passed. Four physicians were licensed by reciprocity with other states and 1 physician was licensed by endorsement. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent |
|---|---|---|
| College of Medical Evangelists | (1931) | 89.6, 90 |
| Stanford University School of Medicine | (1930) | 91.3 |
| University of Colorado School of Medicine | (1929) | 88.2 |
| University of Georgia Medical Department | (1930) | 94.2 |
| Loyola University School of Medicine | (1931) | 90.2 |
| Rush Medical College | (1931) | 93.2, 95 |
| Harvard University Medical School | (1929) | 91 5 |
| University of Michigan Medical School | (1931) | 87 6 |
| University of Minnesota Medical School | (1928) | 92, (1931) 88, 89.1,* 89.4,* 89.5, 90.1,* 90.1,* 90.2, 90.3,* 90.6,* 91.3,* 91.6, 92.6,* 92.6, 93.4, 95.1,* (1932) 87.1, 88.4, 91.1, 92.4 |
| Creighton University School of Medicine | (1930) | 85 4 |
| Columbia University College of Phys. and Surgs | (1929) | 91 5 |
| University of Buffalo School of Medicine | (1928) | 90.6 |
| University of Oregon Medical School | (1929) | 92.6 |
| Jefferson Medical College of Philadelphia | (1928) | 92 3 |
| University of Pennsylvania School of Medicine | (1928) | 90.4, (1930) 92.1 |
| University of Pittsburgh School of Medicine | (1929) | 88 3 |
| University of Wisconsin Medical School | (1930) | 91, 91.1 |
| University of Manitoba Faculty of Medicine | (1930) | 89 1 |
| Queen's University Faculty of Medicine | (1926) | 92 2 |
| Royal Univ. of Florence Faculty of Med. and Surg. | (1925) | 86 4 |

| LICENSED BY RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University Medical School | (1930) | Illinois |
| Rush Medical College | (1924), (1929) | Illinois |
| University of Wisconsin Medical School | (1928) | Wisconsin |

| LICENSED BY ENDORSEMENT<br>College | Year Grad. | Endorsement of |
|---|---|---|
| Woman's Medical College of Pennsylvania | (1929) | N. B. M Ex. |

* These applicants have received their M.B. degree and will receive their M.D. degree on completion of an internship.

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## Pennsylvania January Report

Mr. Charles D. Koch, secretary, Pennsylvania State Board of Medical Education and Licensure of the Department of Public Instruction, reports the oral and written examination held at Philadelphia and Pittsburgh, Jan. 5-9, 1932. Thirty-eight candidates were examined, 37 of whom passed and one failed. Six physicians were licensed by reciprocity with other states and three physicians were licensed by endorsement from Jan. 5 to 28, 1932. The following colleges were represented:

| PASSED<br>College | Year Grad. | Number Passed |
|---|---|---|
| University of Colorado School of Medicine | (1929) | 1 |
| Georgetown University School of Medicine | (1930) | 1 |
| Rush Medical College | (1931, 2) | 2 |
| University of Kansas School of Medicine | (1927) | 1 |
| University of Louisville School of Medicine | (1930) | 1 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1916) | 1 |
| University of Minnesota Medical School | (1931) | 1 |
| St. Louis University School of Medicine | (1929) | 1 |
| Columbia University Medical Department | (1892) | 1 |
| Hahnemann Medical College and Hospital of Philadelphia | (1928), (1930, 2) | 3 |
| Jefferson Medical College of Philadelphia | (1929, 3), (1930, 2) | 5 |
| Temple University School of Medicine | (1930, 3) | 3 |
| Univ. of Penn. School of Med. | (1929, 3), (1930, 3), (1931) | 7 |
| Woman's Medical College of Pennsylvania | (1930, 2) | 2 |
| University of Texas School of Medicine | (1929) | 1 |
| Medical College of Virginia | (1929) | 1 |
| University of Toronto Faculty of Medicine | (1908), (1930) | 2 |
| McGill University Faculty of Medicine | (1925), (1927) | 2 |
| University of St. Thomas College of Medicine | (1922) | 1 |

| FAILED<br>College | Year Grad. | Number Failed |
|---|---|---|
| Howard University School of Medicine | (1930) | 1 |

| LICENSED BY RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| Loyola University School of Medicine | (1928) | Michigan |
| Detroit College of Medicine and Surgery | (1928) | Michigan |
| University of Michigan Medical School | (1929) | Michigan |
| Hahnemann Med. College and Hosp. of Philadelphia | (1926) | New Jersey |
| University of Pennsylvania School of Med. | (1924), (1925) | Minnesota |

| LICENSED BY ENDORSEMENT<br>College | Year Grad. | Endorsement of |
|---|---|---|
| University of Michigan Medical School | (1929) | N. B. M. Ex. |
| Columbia University College of Phys. and Surgs. | (1929) | N. B. M. Ex. |
| Syracuse University College of Medicine | (1926) | N. B. M. Ex. |

## SCHOOLS OFFERING SUMMER COURSES IN 1932

### Prepared by the Council on Medical Education and Hospitals

#### ARKANSAS

University of Arkansas School of Medicine, 300 West Markham Street, Little Rock.—On May 30 the following courses will be offered to undergraduates: physiologic chemistry, histology, embryology and pathology. Courses in gross anatomy and neuro-anatomy will be offered on July 5. Address Frank Vinsonhaler, M.D., dean.

#### CALIFORNIA

Stanford University School of Medicine, 2398 Sacramento Street, San Francisco.—No routine teaching of undergraduate work, but offers special opportunities for study and research to both graduates and medical students in the clinics, wards and laboratories. Work also offered to graduates and undergraduates as "special workers" in the various departments includes pharmacology, pathology, general medicine, diabetes, chest diseases, pediatrics, neuropsychiatry, skin and syphilis, metabolism laboratory, radiology, physical therapy technic, general surgery, fracture clinic, orthopedic surgery, genito-urinary surgery, ophthalmology, otolaryngology, surgical pathology, surgical anatomy, obstetrics and gynecology, and female urology. Minimum attendance is four weeks. Make application to William Ophuls, M.D., dean.

University of California Medical School, Parnassus and Third avenues, San Francisco.—Courses for graduates in medicine will be given from June 6 to June 18. The morning and all-day courses consist of general medicine, general surgery, otorhinolaryngology, genito-urinary diseases, ophthalmology, general pathology, and general clinical pediatrics. The afternoon courses consist of circulatory diseases, diseases of the blood forming organs, diseases of the endocrine glands including diabetes, diseases of the gastro-intestinal tract, special laboratory diagnosis, and operative technic. Ear, nose, and throat surgery will be offered in the evening course. In addition to the regular courses there will be round table discussions, lectures and clinicopathological conferences open to the medical public without charge. Address Langley Porter, M.D., dean.

#### COLORADO

University of Colorado School of Medicine, 4200 East Ninth Avenue, Denver.—Term extends from June 20 to August 26, offering the following courses to graduates and undergraduates in medicine: anatomy, bacteriology, biochemistry, clinical pathology, pathology, physiology and pharmacology. Address Maurice H. Rees, M.D., dean.

#### CONNECTICUT

New Haven School of Physical Therapy, 303 Whitney Avenue, New Haven.—A course for graduates in medicine will be offered on June 6 and August 8. Address Harry Eaton Stewart, M.D., director.

#### DISTRICT OF COLUMBIA

Howard University School of Medicine, Fifth and W streets, N.W., Washington.—During the coming summer, practical work in obstetrics and a limited number of clinical clerkships in medicine and surgery will be offered to undergraduate students. Address Numa P. G. Adams, M D., dean.

#### ILLINOIS

Rush Medical College, University of Chicago, 1758 West Harrison Street, Chicago.—The courses in the third and fourth years of the medical schools are continued at Rush Medical College during the summer quarter in the departments of pathology, medicine, pediatrics, surgery, obstetrics and gynecology, laryngology and otology, ophthalmology, and dermatology. There will be opportunity for a limited number of qualified special students to take work in these departments. Postgraduate courses in otolaryngology, ophthalmology, dermatology and radiology for a limited number of qualified students who are able to spend one or more years in study are continued during the summer quarter. In radiology, courses for shorter periods may be arranged. For further particulars, consult or address the dean or registrar.

Graduate School of Medicine of the Division of the Biological Sciences, University of Chicago, Fifty-Eighth Street and Ellis Avenue, Chicago.—Term extends from June 20 to August 26, offering to medical students the following courses: anatomy, hygiene and bacteriology, medicine, dermatology, neurology and neurosurgery, roentgenology, obstetrics and gynecology, pathology, pediatrics, pharmacology, physiology, surgery, clinical lectures, and clinical lectures in special fields. Address B. C. H. Harvey, M.D., dean.

Graduate School of Pediatrics, Children's Memorial Hospital, 707 Fullerton Avenue, Chicago.—One course in pediatrics, beginning August 1 and continuing for four weeks, will be offered graduates. The forenoons are taken up with medical pediatrics consisting of ward walks, outpatient and amphitheater clinics and demonstrations of special cardiac, syphilitic, neurologic, nephritis, infant and nutrition clinics, and of lectures on infant feeding, the newer phases of the contagious diseases of the blood, and so on. The afternoons are devoted to practical instructions in clinical pathology with special reference to laboratory methods of diagnosis; to x-ray demonstration; and to the specialties of surgery and orthopedics, and skin, eye, ear, nose and throat diseases. There is a weekly orthopedic ward walk and a weekly operative orthopedic clinic. A special course of one hour a week is given in pediatric technic covering lumbar and ventricular puncture, paracenteses and aspirations, intubation, collection of urine, blood typing, transfusion and the various methods of introducing fluids into the body. Eight didactic lectures are given in this course. Address all inquiries direct to the Graduate School.

#### IOWA

State University of Iowa College of Medicine, Iowa City.—The first term of the summer session will begin on June 13 and the second term on July 25. Courses are offered to graduates and undergraduates in anatomy, bacteriology, physiology, hygiene and preventive medicine. One freshman course in biochemistry will extend through both terms. Address Summer Session Office, Iowa City.

### KANSAS

University of Kansas School of Medicine, Lawrence.—On June 9, courses will be offered to graduates and students in anatomy, bacteriology, biochemistry, medicine and physiology. The course in medicine will be given at Kansas City. Address O. O. Stoland, Ph.D., Secretary of the Medical Faculty.

### LOUISIANA

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue, New Orleans.—During the early part of June, courses for medical students will be given in anatomy, embryology, histology and organology, neuro-anatomy and medicine. Address C. C. Bass, M.D., dean.

### MARYLAND

University of Maryland School of Medicine and College of Physicians and Surgeons, Lombard and Greene streets, Baltimore.—A three weeks' general review course will be offered to physicians in June. Registration is limited and preference will be given to physicians registered in Maryland. The course will consist of lectures, ward rounds, clinics, dispensary clinics, laboratory, therapeutic procedures, roentgen diagnosis, and electrocardiography. Address the Dean of the Medical School.

### MASSACHUSETTS

Boston University School of Medicine, 80 East Concord Street, Boston.—Offers a course in pharmacology from June 14 to July 23 for undergraduates. This course consists of systematic pharmacology, pharmacy, pharmaceutical chemistry, materia medica, toxicology, experimental pharmacology, conferences and reviews. Since the number of students is limited, arrangements should be made immediately. Address all communications to the Registrar.

Harvard University Medical School, 240 Longwood Avenue, Boston.—Offers an intensive five day course in genito-urinary surgery from July 11 to 15. This course is for graduates and consists of lectures, clinical lectures, demonstrations of cases and pathologic material, and operative clinics. On June 20 a graduate course in internal medicine will be offered, which will continue for six weeks. This course offers to properly qualified graduates in medicine an opportunity to receive instruction in the care of the sick, with particular reference to the diagnosis and treatment of common maladies. It is also designed to provide an adequate review of the more common problems that confront the general practitioner and the internist, with special attention to the recent advances in both diagnosis and therapeutics. Courses for graduates and undergraduates are offered throughout the summer in anatomy, physiology, biologic chemistry, bacteriology, pathology, preventive medicine and hygiene, pediatrics, medicine, roentgenology, diseases of the nervous system, surgery, anesthesia, proctology, genito-urinary surgery, orthopedic surgery, physical therapy, obstetrics, gynecology, dermatology and syphilology, ophthalmology, laryngology, and otology. Address Frank R. Ober, M.D., assistant dean.

Harvard University School of Public Health, 55 Van Dyke Street, Boston.—If individual work in some special field is desired, it is possible to arrange a program of study or research work by applying directly to the head of the department in which the work is to be done.

Massachusetts Institute of Technology, Cambridge.—Offers one course in general bacteriology. Address all inquiries direct to the school.

### MICHIGAN

University of Michigan Department of Post-Graduate Medicine, University Hospital, Ann Arbor.—Three courses will be offered from June 6-18 in proctology, gynecologic pathology, and a practitioners' course. Address the Department of Post-Graduate Medicine.

University of Michigan Medical School, Ann Arbor.—The summer session begins June 27 and ends August 19. Courses are open to practitioners of medicine, undergraduate students registered in recognized medical schools, and all persons qualified to pursue them to advantage. The undergraduate work will include: (1) all of the laboratory and some of the lecture courses of the first and second year; (2) some of the demonstration courses of the third year; (3) certain of the clinical courses of the senior year; (4) elective courses advantageous to medical students, technicians and others. Courses cover work in anatomy, bacteriology, dermatology and syphilology, internal medicine, neurology, obstetrics and gynecology, ophthalmology, otolaryngology, pathology, pediatrics, pharmacology, materia medica and therapeutics, physiologic chemistry, physiology, roentgenology and surgery. Address the Dean of the Medical School.

### MINNESOTA

University of Minnesota Medical School, Minneapolis.—The summer quarter is divided into two terms, the first extending from June 15 to July 23; the second, from July 25 to August 27. Students may attend either or both terms. All courses offered are open to physicians and medical students. Courses in anatomy, bacteriology, pathology, pharmacology, physiology, preventive medicine and public health, medicine, obstetrics and gynecology, ophthalmology and otolaryngology, pediatrics, radiology and surgery are given. Address Elias P. Lyon, M.D., dean.

### MISSOURI

St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis.—From June 6 to July 30, courses for undergraduates will be offered in the different divisions of anatomy, bacteriology, biochemistry, pathology and physiology. For information, address the Director of the Summer Session.

### NEBRASKA

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Omaha.—Courses in clinical pathology and physiology will be offered to medical students on June 4. A week's postgraduate course will be offered from June 6 to June 11. This course will be given under the auspices of the departments of obstetrics and pediatrics and will be confined largely to practical work in the wards and clinics. Address all communications to the Dean's office.

### NEW JERSEY

Physiatric Institute, Morristown.—Offers a one month course in July. The course is composed of lectures, laboratory and clinical work, and covers the subjects of diabetes, obesity, cardiorenal-vascular diseases and other metabolic disorders, and will probably include as a new feature the insulin treatment of tuberculosis. Address Frederick M. Allen, M.D., director.

### NEW YORK

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street, New York.—A course in gastro-enterology will be offered from June 6 to July 27. This is a course of lectures designed for graduates in medicine desiring a working knowledge of the principles underlying the modern diagnosis and treatment of gastro-intestinal disorders. Address Willard C. Rappleye, M.D., dean.

University of Buffalo School of Medicine, 24 High Street, Buffalo. — Courses in systemic anatomy, and general pathology and pathologic histology for second year students will be given from July 5 to September 17. Address Edward W. Koch, M.D., dean.

University and Bellevue Hospital Medical College, Twenty-Sixth Street and First Avenue, New York.—Postgraduate courses will be offered in regional anesthesia and pediatrics during the early part of June. A graduate course is offered to qualified physicians who intend to specialize in dermatology. This course includes diagnosis and treatment of skin diseases, radiotherapy in skin diseases and roentgen therapy.

University of Rochester School of Medicine and Dentistry, Crittenden Boulevard, Rochester.—Offers a course for physicians in ophthalmology during the month of August. Address all inquiries direct to the school.

New York Polyclinic Medical School and Hospital, 341-353 West Fiftieth Street, New York.—Postgraduate courses will be offered for the general practitioner only, with the exception of special courses in pathology, roentgenology and refraction. Address F. H. Dillingham, M.D., medical executive officer.

New York Post-Graduate Medical School, Second Avenue at Twentieth Street, New York.—The following postgraduate courses will be offered to physicians during the summer: biochemistry, dermatology and syphilology, gynecology, lectures on refraction, bacteriology, pathology, pediatrics and urology. In addition to these the department of medicine will offer a four weeks' intensive course in cardiology, gastro-intestinal diseases, diseases of metabolism and pulmonary tuberculosis in September. A three weeks' course in applied immunology will be given from June 6 to June 25. Address all inquiries direct to the school.

School of Ophthalmology and Otology of the New York Eye and Ear Infirmary, Second Avenue, corner Thirteenth Street, New York.—One month courses will be offered during the summer months, as during the rest of the year, with the exception of refraction, which is a three months' course. Address the secretary.

Trudeau School of Tuberculosis, Saranac Lake.—The second section of the summer courses will be offered from June 14 to June 18. This section will include complications and differential diagnosis, clinics in laryngeal, aural and surgical tuberculosis, nontuberculous complications, institution organization and management, prophylaxis, surgical and laboratory technics, and the like. Address all inquiries to the secretary.

### OHIO

Ohio State University College of Medicine, Neil and Eleventh avenues, Columbus.—Bacteriology will be the only course offered during the summer. It will be offered by the department in either the Graduate School or the College of Arts and Sciences. Address all inquiries direct to the school.

Western Reserve University School of Medicine, 2109 Adelbert Road, Cleveland.—Offers an abridged course in gross anatomy to be given in June. Address all inquiries direct to the school.

### OKLAHOMA

University of Oklahoma School of Medicine, Third and Stiles streets, Oklahoma City.—Offers the following courses to undergraduates this summer: anatomy, bacteriology, biochemistry and pharmacology, histology and embryology, physiology and pathology. Address Lewis J. Moorman, M.D., dean.

### PENNSYLVANIA

University of Pennsylvania Graduate School of Medicine, Thirty-Sixth Street and Hamilton Walk, Philadelphia.—The following courses will be offered during the summer: clinical and sociological tuberculosis, cardiology, parasitology and tropical medicine, clinical gastro-enterology, allergy, diabetes mellitus, basal metabolism, clinical dermatology, neuro-anatomy, neurophysiology and neuropathology, neuro-otology, gynecology for the general practitioner, cystoscopy, selected office procedures in gynecology, ophthalmic operations, ocular refractions, slit lamp microscopy, otologic operations, rhinolaryngologic operations, correction of defects of speech, and clinical biochemistry. Address George H. Meeker, Ph.D., dean.

### TENNESSEE

University of Tennessee College of Medicine, 879 Madison Avenue, Memphis.—All the courses of the curriculum will be offered during the summer quarter. Address O. W. Hyman, Ph.D., dean.

Vanderbilt University School of Medicine, Twenty-First and Edgehill, Nashville.—Offers short courses for postgraduates in medicine this summer. Address Waller S. Leathers, M.D., dean.

TEXAS

Baylor University College of Medicine, 810 College Avenue, Dallas.—The following courses will be offered from June 13 to August 1: physiologic chemistry, histology, bacteriology and neuro-anatomy. Address W. H. Moursund, M.D., dean.

VIRGINIA

Medical College of Virginia, Twelfth and Clay streets, Richmond. —A two weeks' course has been arranged for the Negro practitioners of the state of Virginia. This course will be held in connection with the St. Philip Hospital, which is under the supervision of the medical school, and will be conducted during the last two weeks in June. Address Lee E. Sutton, Jr., M.D., dean.

University of Virginia Department of Medicine, Charlottesville. —All of the medical science courses will be given during the first term of the summer quarter beginning on June 20 and ending July 30. The following courses are offered primarily for medical students who are deficient in these subjects and desire to make a review: histology, embryology, anatomy, biochemistry, physiology, bacteriology and pharmacology. Address James C. Flippin, M.D., dean.

WISCONSIN

University of Wisconsin Medical School, 412 North Charter Street, Madison.—Summer quarter begins June 27 and ends August 5, offering courses in histology and organology, embryology, three courses in anatomy, two courses in bacteriology, fourth year medicine and surgery open only to Wisconsin students, two courses in pharmacology, physiologic chemistry, and advanced physiology and research. Address all inquiries direct to the school.

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# Book Notices

**The Structure and Composition of Foods.** By Andrew L. Winton, Ph.D., and Kate Barber Winton, Ph.D. Volume I: Cereals, Starch, Oil Seeds, Nuts, Oils, Forage Plants. Cloth. Price, $8.50. Pp. 710, with 274 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd., 1932.

This is the first of the three volumes of a comprehensive work in the English language comparable with, yet differing from, the voluminous works in German and French, giving the results on the composition and macroscopic and microscopic structure of a great variety of products scattered through numerous journals and publications. The products described, chiefly natural or obtained by mechanical separation such as milling or pressing, or operations involving simple chemical changes, cover a broad geographic range—oriental and occidental, temperate and tropical. The products are classified according to economic use. This volume includes a short introduction explanatory of general technical terms, plan of the volumes and information to aid in the interpretation of data; part I treats of the true cereals, starch seeds and weed seeds; part II, of oil seeds, oil nuts and weed seeds free of starch; part III, of plants grown for green forage or hay and grouped under the three headings of grasses, legumes and cacti. The entire work promises to be a descriptive reference compendium of great usefulness to all seeking information on a vast variety of well known and little known foods. The American academic and industrial reference libraries have need for this practical contribution.

**Exercise and Its Physiology.** By Adrian Gordon Gould, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University, and Joseph A. Dye, A.B., Ph.D., Assistant Professor of Physiology in Cornell University. Cloth. Price, $3. Pp. 434, with 56 illustrations. New York: A. S. Barnes & Company, Inc., 1932.

The vast amount of research on the physiology of exercise and rest in recent years has prompted the publication of several books on the subject. The authors here review the accumulated material and present their conclusions "in nontechnical language" so as to make the book especially valuable for students of physical education and for students and teachers of physiology. Where the evidence is still controversial, they present both points of view. The book is divided into twenty-six chapters, which consider the mechanisms of movement, the physiologic properties of muscle, the nature of fatigue and of recovery, and the physiology of the blood and respiration during exercise. Four chapters concern the circulation and its adaptation to activity. The volume concludes with a consideration of the second wind and of the effects of training on exercise and activity.

Although the authors have attempted to make their presentation nontechnical, it certainly could be followed by few except those who have had early college physiology: for example, the following sentence: "There are two possible explanations for the increased glycogenolysis following splanchnic stimulation, first, that the hepatic branches of these nerves when stimulated effect the breakdown of glycogen directly (*nervous* or *direct*), and second, that the suprarenal branches produce an increased output of adrenin which in turn effects the glycogenolysis (*hormonal* or *indirect*)." Notwithstanding this minor criticism, the book is an exceedingly useful summary of current knowledge in its field.

**Die experimentellen und klinischen Grundlagen der Therapie mit Calciumsalzen.** Von Dr. Eugen Baráth, Assistent an der III. med. Klinik der Kgl. Pázmány Péter Universität in Budapest. Hefte des Collegium Hungaricum in Wien. X. Paper. Pp. 117. Budapest: Königl. Ungar. Universitätsdruckerei, 1931.

In an excellent presentation, systematic in arrangement and characterized by conciseness and clarity, the author discusses the rôle of calcium in its direct application to specific problems and its relationship to the general problem of ionic phenomena and physicochemical problems. Throughout the entire discussion he maintains the attitude of a detached observer carefully evaluating the facts and interpretations and at no time losing himself to fall into fanciful speculations. The work is divided into four parts. In the first part the author discusses ionic phenomena and the cell, the effect of calcium on the perfused organ, and calcium metabolism in all its phases. The second portion deals with the pharmacology of calcium salts and an analysis of the experimental and therapeutic use of calcium compounds. The third section deals with the clinical use of calcium in acute hemorrhage, tetany, asthmatic conditions and intoxications. The last chapter presents an interesting survey of the significance of ionic therapy in the light of physical chemistry. The bibliography is concise and carefully selected. This work presents the subject in a short discussion and, despite the large number of papers on the subject, no important fact has been omitted. It will serve a useful purpose for those interested in calcium therapy.

**The Medical Value of Psychoanalysis.** By Franz Alexander, M.D. Cloth. Price, $2.75. Pp. 247, with 5 illustrations. New York: W. W. Norton & Company, 1932.

The Journal published, some months ago, a Harvey lecture on psychoanalysis by Dr. Alexander. The present volume includes this chapter, together with an expansion of its views, in book form. Dr. Alexander is a medical psychoanalyst, primarily a teacher and an investigator, but also a successful practitioner. He writes directly and does not confuse his readers with much of the special jargon that has attached itself to this field. The book includes five chapters, on psychoanalysis and medicine, the present status of psychoanalysis as a theoretical and therapeutic system, critical considerations on the psychoanalytic treatment of psychoses, psychogenic factors in organic diseases, and psychoanalysis in medical education. Dr. Alexander defends the view that separation of the psychologic and somatic approaches to understanding of disease is artificial and obsolete. He recognizes the resentment of Sigmund Freud at the refusal of medicine to appreciate his life work, but he feels that the proper place for psychoanalysis is in the medical curriculum and that it must inevitably become a part of medical study. Indeed, he concludes with an outline of the manner in which the teaching of psychoanalysis should be embodied in the medical curriculum.

**Anleitung und Indikationen für Bestrahlungen mit der Quarzlampe „Künstliche Höhensonne" mit Berücksichtigung der leuchtenden Wärmestrahlen.** Von Geh. Sanitätsrat Dr. Hugo Bach. Unter Mitwirkung von Dr. Ferdinand Rohr, Dirig. Arzt des Kinderkrankenhauses „zum Kind von Brabant," Kassel. Twenty-second-twenty-third edition. Paper. Price, 8.40 marks. Pp. 258, with 41 illustrations. Leipzig: Curt Kabitzsch, 1931.

This is a reasonably complete dissertation on the clinical studies of light therapy, principally in relation to the quartz lamp and aids such as heat lamps. It especially avoids reference to carbon arc and other light sources, which have been found to play a part in treatment of disease, as well as the mercury quartz lamp. It goes into details as to the technic and mode of action, so far as is known, of the light emitted by the quartz lamp. Dosage and meters for measuring are considered. The indications in general medicine, surgery, children's diseases, skin diseases, gynecology, and diseases of the eye, ear, nose, throat and teeth are taken up. The illustrations are appropriate but are mostly repetitions. There are many claims made in the book which would not withhold critical analysis. The author makes practically no mention of light authorities outside of Germany, but ample references are given to German authorities. Particular claims are made for light in certain forms of tuberculosis, such as the larynx and the ears, which do not agree with ideas held on the subject in this country. Special applicators and modes of irradiation are emphasized with only personal clinical impressions to back them up. With this understanding, the book can be considered a valuable addition and one that covers the subject satisfactorily.

**The Social and Ethical Significance of Nursing: A Series of Addresses.** By Annie Warburton Goodrich, Dean, Yale University School of Nursing. Fabrikoid. Price, $3. Pp. 401, with 13 illustrations. New York: Macmillan Company, 1932.

Dean Goodrich has prepared a valuable treatise on the ethical significance of nursing, and added greatly to the cause of the sound education of the nurse. She has shown clearly that "from the standpoint of sustained interest and creative opportunity few activities offer as much as nursing, but such returns demand the insight and resourcefulness which are the rewards of a liberal education." In speaking of the nurse and the hospital she holds up the standard that all nurse educators of today should keep in mind: "No sounder foundation for practice was ever laid for a profession than that for nursing through its provisions for constant and close association with the patients in the wards of the hospital. Whatever the changes in the curriculum through the evolution in the medical sciences, the immeasurable values of the clinical content as expressed in the hospital service must not be lost. The unuttered but insistent emphasis on the value of every life leaves an enduring impress, to the influence of which must be attributed the unceasing effort to create for each the best environment." In "The Nurse and the World" she pictures to the girls who are studying nursing that "its doors are open to all who need its services . . . whose contribution to future generations cannot be measured. . . . The essential thing is that each individual should find satisfaction in the chosen pursuit that ensures the best he has to give, devotion in its fullest sense . . . to insure, with understanding of the project, as a co-laborer not as a machine, the best that can be given."

**The Experimental Study of Reading.** By M. D. Vernon, M.A. Cloth. Price, $3. Pp. 190, with illustrations. New York: The Macmillan Company; London: Cambridge University Press, 1931.

Human beings vary greatly in their ability to read. Some read rapidly and absorb what they read; others read slowly and get little from their reading. This volume gives a concise account of the author's own experiments, particularly from the point of view of the action of the ocular tissues in the reading process. He discusses the movements of the eye and particularly the employment of such movements in reading, following this with a special study of the reading of children and finally of the relationship of typography to reading. In mature adult reading, regular and rhythmic backward and forward movements develop, later alternating with fixation pauses. These movements are habitual. The movements are interfered with by any species of mental struggle or conflict. Thus the ability to read rapidly may be learned and it is important to stress familiarity, interest and associated fact for competent reading.

**The Social Life of Monkeys and Apes.** By S. Zuckerman, Anatomist to the Zoological Society of London. Cloth. Price, $3.75. Pp. 356, with 24 illustrations. New York: Harcourt, Brace & Company, 1932.

Monkey society is based on dominance. The strongest monkey gets the most food, the strongest male gets the most wives. Monkeys apparently can learn, but the vast majority of their behavior is instinctive. The author, through many kinds of observations of apes and of monkeys both in captivity and wild, comes to the conclusion that the difference between the apes and man is the difference between physiology and culture. The work is extraordinarily interesting and reveals a basis for much human behavior that may be apelike but seems reasonable. The volume concludes with an excellent bibliography of more than 100 references, an index of monkey types, and an index of authors and subjects.

**Equinococosis: Quistes hidatídicos.** Por el Dr. D. Ricardo Lozano, catedrático de clinica quirúrgica de la Facultad de medicina de Zaragoza. Con la colaboración del Dr. D. Ricardo Lozano, Hijo, auxiliar de anatomia topográfica y operaciones en la Facultad de medicina de Zaragoza. Paper. Price, 8 pesetas. Pp. 153, with 12 illustrations. Madrid: Casa Editorial Bailly-Bailliere, S. A., 1931.

Echinococcus disease is endemic in Zaragoza as the result of its high incidence (from 20 to 30 per cent) in animals in the slaughter houses. Human infection is relatively frequent. Any organ of the body may be attacked, but hydatid cysts of the liver are the usual result. The authors emphasize a characteristic trembling of such echinococcus cysts, which persists for a short time after percussion. This is helpful in differentiating echinococcus from other diseases of the liver. The hydatid cysts in the liver are large solitary cysts with no compensatory hypertrophy of the uninvolved liver. Secondary infection, unaccompanied by septicemia, is a frequent complication of the cyst. The choice of treatment is marsupialization. Infection of the lungs occurs in about 8 per cent of human echinococcus infection. The right lung is more often affected than the left, and the authors suggest that this may result from direct extension from the liver. With more roentgenologic examinations, small foci clinically latent may be observed in the future. Of the organs more rarely involved, there is a great deal of interest attached to the thyroid gland: younger persons are more often attacked than older persons. This small volume is highly interesting and gives the reader a comprehensive review of echinococcus disease.

**Rational Pharmaceutical Treatment of Common Skin Diseases.** By Herman Goodman, B.S., M.D. Cloth. Price, $10. Pp. 350, with 72 illustrations. New York: Medical Lay Press, 1932.

Eleven groups include nearly three fifths of all the diagnoses made of patients with skin disease. As stated in an editorial in The Journal some years ago, every practitioner should become familiar with eczema, acne, scabies, psoriasis, seborrhea, impetigo, urticaria, dermatitis venenata, tinea, alopecia, pediculosis and pruritus. Dr. Goodman in this volume briefly considers the anatomy of the skin, methods of examination, bathing and diet and then discusses the treatment of the diseases of the skin according to the groups mentioned. The book is simply written and is planned particularly for the general practitioner. In view of the close relationship of allergy to disorders of the skin, the author includes a discussion of elimination diets not only for adults but also for children of various ages. The illustrations are printed on special stock; the text itself with large type and on good paper. There are numerous citations of useful prescriptions, so that the book is probably one of the most practical handbooks for general practitioners thus far made available.

# Medicolegal

## Liability for Roentgen Burn

*(Casenburg v. Lewis (Tenn.), 40 S. W. (2d) 1038)*

In 1918, Mrs. Lewis was operated on for the removal of an abdominal tumor. After the incision had been made, it was deemed inadvisable to remove the growth; according to one physician, because it was malignant, and according to another, because of adhesions to vital organs. The incision was closed, and after it had healed Mrs. Lewis was sent to the physician defendant for roentgen treatment. From the first treatment in 1918 up to some time prior to May 5, 1924, he administered 160 treatments, without injury. On May 5, 1924, the roentgen ray was again applied, in equal dosage to the abdomen and back, and a third degree burn of the abdomen followed, covering a space approximately 7 inches by 9 inches and extending "to the underlying abdominal membrane." Mrs. Lewis sued the physician defendant. She died, however, Jan. 14, 1926, and the cause was prosecuted by her administrator. The immediate cause of her death, it was testified, was appendicitis, superinduced by the roentgen burn. The burn made it impossible to operate, because the incision would have extended through the burned tissue, without possibility of healing.

At the first trial, the court directed a verdict for the physician defendant. On appeal by the plaintiff the court of appeals reversed the cause and remanded it for another trial, and the Supreme Court of Tennessee affirmed that action.[1] The second trial resulted in a judgment for the plaintiff. The court of appeals, however, reversed that judgment and again remanded the case to the trial court, because of the failure of that court to direct a verdict in favor of the physician defendant. The plaintiff a second time appealed to the Supreme Court of Tennessee, which then affirmed the judgment of the trial court in his favor, subject to a reduction in the amount of the judgment.

If the instrumentality that produces an injury, said the Supreme Court, is under the exclusive control of the defendant, and if an injury would not ordinarily result if due care is exercised, the doctrine of res ipsa loquitur applies and raises an inference of negligence on the part of the defendant. That inference becomes conclusive unless rebutted by countervailing evidence. When an effort is made to rebut this inference by opposing evidence, the weight of the inference as well as the weight of the explanatory evidence must be determined by the jury, unless uncontradicted explanatory evidence excludes the inference that the injury resulted from want of ordinary care. The trial court, therefore, rightly allowed this case to go to the jury.

At the trial, an undiscoverable idiosyncrasy on the part of the patient, superinduced by the cumulative effect of past treatments, producing endarteritis, was alleged by way of defense; also the negligent use of scarlet red on the itching surface of the abdomen. The physician defendant and other witnesses testified that the roentgen apparatus used was such as was in common use by other physicians, that it was properly used, and that the roentgen ray was applied properly in respect to both time and intensity in the course of the treatment of May 5, 1924, and of all other treatments. In the opinion of the physician defendant, the injury to the decedent was unavoidable.

A medical witness testified that third degree burns are unusual and attributed them to the following causes: (1) excessive dosage, caused by failure of the roentgenologist to use proper filterage, or by excessive exposure, or by increased intensity of the ray; (2) idiosyncrasy on the part of the patient; (3) failure of the operator to observe the patient so as to determine whether the cumulative effects of preceding treatments have approached the danger point. The court of appeals, said the Supreme Court, concluded that the physician defendant was confronted with the necessity of determining whether he should let his patient die of the malignant growth for which he had been treating her or continue the treatment to arrest the growth, and the court of appeals held that for the consequences of the exercise of his judgment in continuing the treatment after 160 antecedent treatments he was not liable. But, said the Supreme Court, while it is the physician's privilege to decide between one of two or more courses in the treatment of his patients, and while he cannot be held responsible for an erroneous exercise of his judgment, the rule is subject to the limitation that before exercising his judgment the physician must learn by proper examination the facts and circumstances on which a reasonable exercise of judgment may rest.

The defendant knew that he had administered 160 treatments. The cumulative effect of those treatments was or should have been known to him. He should have known, too, the means of ascertaining when an additional treatment would be hazardous to the patient. All physicians agreed in their testimony that the cumulative effect of the roentgen ray is ordinarily disclosed by dryness and pigmentation of the skin, thus enabling the roentgenologist to discover the danger of an additional treatment by superficial or surface symptoms. They agreed, too, that the cumulative effects of the roentgen ray are not always visible in endarteritis. It was testified that when endarteritis, or the blood change indicative of it, is not visible on the surface, the condition may be discovered by a blood count. It was testified further that without cumulative effects visible or ascertainable on reasonable examination, the roentgen-ray dosage, if properly administered, could not produce a third degree burn.

The physician defendant testified that when he administered the last treatment he examined the skin, both on the back and on the abdomen, and that there was no pigmentation or dryness, but it was in evidence that endarteritis would not be apparent to a roentgenologist through an examination of the skin. Superficial symptoms, it was shown, cannot always be relied on to reveal the danger that all experts agree may result from cumulative treatment. Hence the necessity for resort to additional methods of diagnosis, such as the blood count. The failure of the physician defendant in this case to resort to a blood count to determine whether danger existed was not a mere error of judgment; it was the omission to do what reasonable prudence would suggest, especially where the consequence of previous treatments might lead the roentgenologist reasonably to apprehend the danger of an additional treatment causing a third degree burn. After 160 roentgen treatments without injurious effect, the theory of idiosyncrasy on the part of the patient was incredible.

There was evidence that scarlet red was used on the patient's abdomen at some time after the last roentgen treatment. Physicians agreed that its use within a short time after the treatment would convert a first degree burn into a third degree burn, but they said that two weeks after the treatment the use of scarlet red would be harmless and might be beneficial. There was no evidence to show when or by whom the scarlet red was applied. Thirteen days after the treatment on May 5, a physician examined the burn and no scarlet red had been applied at that time. At his visit twenty-six days after the treatment referred to, he found that scarlet red had been applied. If scarlet red was applied, it must have been done after the danger of its use had passed.

All the explanatory evidence taken together does not destroy the weight of the inference of negligence, arising from the doctrine of res ipsa loquitur. The weight of the inference, as well as the weight of the explanatory evidence, was therefore a matter for determination by the jury.

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[1] Lewis v. Casenburg (Tenn.), 7 S. W. (2d) 808; J. A. M. A. **92**: 1628 (May 11) 1929.

# *Society Proceedings*

## COMING MEETINGS

American Association for the Study of Goiter, Hamilton, Ontario, June 14-16. Dr. J. R. Yung, 670 Cherry St., Terre Haute, Ind., Secretary.

American Gynecological Society, Quebec, May 30-June 1. Dr. Otto H. Schwarz, 630 South Kingshighway, St. Louis, Secretary.

American Neurological Association, Atlantic City, June 6-8. Dr. Henry Alsop Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

American Orthopedic Association, Toronto, Canada, June 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.

American Psychiatric Association, Philadelphia, May 30-June 3. Dr. Clarence O. Cheney, 722 West 168th Street, New York, Secretary.

American Urological Association, Toronto, May 30-June 2. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., June 2-6. Dr. A. J. Chesley, State Board of Health, St. Paul, Minnesota, Secretary.

Maine Medical Association, Rangeley, June 16-18. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Boston, June 8-10. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

National Tuberculosis Association, Colorado Springs, June 6-9. Dr. Charles J. Hatfield, 7th and Lombard Streets, Philadelphia, Secretary.

New Jersey, Medical Society of, Atlantic City, June 15-17. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

North Dakota State Medical Association, Grand Forks, June 1-2. Dr. Albert W. Skelsey, 18 Broadway, Fargo, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

Rhode Island Medical Society, Providence, June 2. Dr. J. W. Leech, 369 Broad Street, Providence, Secretary.

South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Clinical Pathology, Baltimore

**2:** 73-153 (March) 1932

*Rhinosporidium Seeberi in Nasal Polypus: Fourth North American Case. G. S. Graham, Birmingham, Ala.—p. 73.
*Glycosuria and Glycemic Tolerance Curve: Review. E. T. Herrmann, St. Paul.—p. 87.
Morphologic and Cultural Study of Staphylococci with Especial Reference to Source. L. Thompson, Rochester, Minn.—p. 125.
Modifications of Differential Stains with Especial Reference to Trichromic Stain of Cajal. R. Castroviejo, New York.—p. 135.

**Rhinosporidium Seeberi in Nasal Polypus.**—Graham reports a case of rhinosporidial infection in a nasal polypus. The patient was a Negro boy, aged 12 years, born in Georgia and resident since the age of 4 in a small coal-mining village in Alabama. The source of the infection is unknown, no other similar condition having been observed in the community for at least ten years. The case illustrates the remarkable discontinuity of the infection, of which more than forty known cases reported during the past thirty years have been observed in three widely separated localities, India, Argentina and the United States. Preoperative diagnosis should be made without particular difficulty through recognition of the characteristic spores in the nasal secretions.

**Glycosuria and Glycemic Tolerance Curve.**—Herrmann enumerates the more important diagnostic criteria to be considered in using the dextrose tolerance test, thus: The blood sugar should never be determined after fasting or a dextrose tolerance test done on any patient until that patient has been on an ordinary mixed diet, unrestricted as to carbohydrate intake, for some days or weeks. A reliable and accurate arterial method should be used, and within the first hour samples should be taken, preferably at ten, twenty and thirty minutes, since the peak of the rise for the most part occurs at these periods. The normal fasting blood sugar, both venous and arterial, should not exceed 0.11 Gm. per hundred cubic centimeters by any method used, except in people more than 40 years of age or in those having febrile diseases, anemia, cerebral hemorrhage or hyperthyroidism. The tolerance curve should be determined by using 1 Gm. of dextrose per kilogram of body weight after a twelve hour fast, the dextrose being given by mouth in a 10 per cent solution. Under these conditions in arterial blood the normal tolerance curve should not rise higher than 0.2 Gm. per hundred cubic centimeters and the curve should fall to 0.11 Gm. or below at the end of two hours. Threshold determinations should be made in any case in which the curve shows any abnormality in the presence of glycosuria, so that the type of glycosuria may be tentatively classified. A fasting blood sugar of more than 0.11 Gm. on any occasion is almost undoubtedly indicative of diabetes. One should not be satisfied with a single fasting sugar. In a doubtful case, repeated fasting sugar determinations should be done over a period of months. All persons showing a normal fasting sugar with a pronounced hyperglycemic curve of long duration should be suspected of diabetes and put under observation. In abnormal cases of doubtful origin the fermentation or phenylhydrazine test should be used in the determination of type for the excreted sugar. In addition one must (*a*) take a careful family history for possible glycosuria; (*b*) eliminate diseases, other than diabetes, that may cause disturbance of carbohydrate metabolism; (*c*) remember that long periods of observations, even up to forty years, seem to show that there is no transition in the same individual from nondiabetic glycosuria in any of five classes discussed by the author to true diabetes mellitus, and in cases without glycosuria, tolerance curves higher than normal do not necessarily indicate diabetes.

### American J. Medical Sciences, Philadelphia

**183:** 301-444 (March) 1932

Medical Applications of Anticolibacillary Serum. H. Vincent, Paris, France.—p. 301.
*Infective Asthma: Indication of Its Allergic Nature. R. A. Cooke, New York.—p. 309.
Studies in Pulmonary Gas Absorption in Bronchial Obstruction: I. Two New Methods for Direct and Indirect Observation. P. N. Coryllos and G. L. Birnbaum, New York.—p. 317.
Id.: II. Behavior and Absorption Times of Oxygen, Carbon Dioxide, Nitrogen, Hydrogen, Helium, Ethylene, Nitrous Oxide, Ethyl Chloride, and Ether in Lung. P. N. Coryllos and G. L. Birnbaum, New York.—p. 326.
*Id.: III. Theory of Air Absorption in Atelectasis. P. N. Coryllos and G. L. Birnbaum, New York.—p. 347.
*Pathology of Rheumatic Pneumonia. B. A. Gouley and J. Eiman, Philadelphia.—p. 359.
*Abdominal Crises in Sickle Cell Anemia. F. E. Leivy and T. G. Schnabel, Philadelphia.—p. 381.
Unilateral Opacities in Chest Films. J. J. Singer, St. Louis.—p. 392.
Superficial Thrombophlebitis: New Cause of Chest Pain. W. B. Daniels, Washington, D. C.—p. 398.
Significance of Colloidal Gold Reaction as Diagnostic and Prognostic Aid in Neurosyphilis. F. G. Novy, Jr., Ann Arbor, Mich.—p. 401.
Chronic Adult Idiopathic Tetany: Report of Case. S. S. Leopold and L. Jonas, Philadelphia.—p. 418.

**Infective Asthma.**—Cooke believes that asthma of infective origin is subject to hereditary influence. This, of course, only proves that asthma, whether of the infective or the skin-sensitive type, is the offspring of hereditary influences. But the facts that 15 per cent of all asthmas are combined sensitization and infective types, that skin-sensitive allergies are frequent in the antecedents of infective asthma and that the opposite condition also obtains, all lend support to the view that the two types may be regarded as of the same nature. Eosinophilia may be regarded as an allergic phenomenon. Experimentally it is produced only under conditions that are regarded as favoring sensitization. Local eosinophilia of histogenous origin is believed to be shown. Eosinophilia is as frequent in asthma of infective origin as in that of the skin-sensitive type. Infective asthma may be regarded as an allergic reaction quite as properly as is the skin-sensitive type, although the immunologic reactions in the two forms are not identical.

**Pulmonary Gas Absorption in Bronchial Obstruction.**—Coryllos and Birnbaum have devised experimental methods which give evidence that, when a bronchus is completely obstructed, the entrapped alveolar air rapidly undergoes qualitative and quantitative changes as determined by successive gas analyses. Qualitatively, the percentages and partial pressures of the gases comprising the alveolar air tend to, but never quite, reach an equilibrium with the gases of venous blood. Quantitatively, the entrapped alveolar gases pass through the respiratory membrane into the blood circulating in the perialveolar capillaries until complete airlessness of the involved area is produced. The mechanism of production of atelectasis in the compressed lung (pneumothorax, pleural exudate, intrathoracic tumors, and so on) is exactly the same as in bronchial obstruction. Besides the gases of the air, diffusion of other gases was studied by introducing them into a lung previously rendered atelectatic. The different gases used in these experiments were: (1) active gases, oxygen and carbon dioxide; (2) neutral gases, hydrogen, nitrogen and helium, and (3) anesthetic gases or vapors, ether, ethyl chloride; nitrous oxide and ethylene. A new experimental method was devised which allows direct vision of the pulmonary changes occurring during the experiment. Nitrogen in the respiratory air plays the part of a "mechanical buffer," retarding the absorption of more diffusible and more soluble gases. This experimental work has allowed the formation of a theory on the mechanism of atelectasis based on the physiology of exchange of gases in the lung.

**Pathology of Rheumatic Pneumonia.**—Gouley and Eiman present nine cases of acute rheumatic fever with reference to the pathologic changes in the lungs. Eight of these showed an acute inflammation of lung tissue with consolidation; the ninth showed pleurisy with subacute lung involvement. All of them were associated with acute rheumatic heart disease. The inflammatory pulmonary reaction consisted of an interstitial perivascular exudate of large endothelioid cells, identical in morphology with those found in rheumatic heart lesions and considered pathognomonic of rheumatic fever. Hemorrhage and fibrinous exudate were prominent features. The authors therefore consider that in many virulent cases a characteristic rheumatic pneumonia is to be found.

**Abdominal Crises in Sickle Cell Anemia.**—Leivy and Schnabel report three cases of sickle cell anemia to illustrate the critical abdominal attacks that may occur in this disease. Current explanations of such paroxysmal abdominal pains as found in the literature are discussed and other explanations not previously suggested are examined. None of these, whether old or new, are thought to explain adequately the abdominal crises under consideration. It is quite possible that a single explanation may not apply for all of the critical abdominal episodes as they occur in sickle cell anemia. On the basis of marked bony changes in the vertebrae of the authors' first case, they suggest root pains as a cause for the paroxysmal crises of pain and rigidity.

## American Journal of Public Health, New York

**22**: 237-352 (March) 1932

*Study in Epidemiology of Diphtheria in Relation to Active Immunization of Certain Age Groups. E. S. Godfrey, Jr., Albany, N. Y.—p. 237.
Numbers of Bacteria in Frozen Food Stored at Several Temperatures. S. C. Prescott, Cambridge, Mass., and F. K Bates and M. E. Highlands, Dayton, Ohio.—p. 257.
*Bacteriologic and Antigenic Analysis of Shigella Paradysenteriae Sonne Isolated from Nine Cases. H. Welch and F. L Mickle, Hartford, Conn.—p. 263.
Health Facts: What to Tell. D. B. Armstrong, New York.—p. 271.
Incidence of Tuberculosis in Industrial Population. L. I. Dublin, New York.—p. 281.
What Is Health News? G F. Wright, Montreal—p. 292
Intradermal Method of Virulence Testing of Corynebacterium Diphtheriae. J. R. Wells, St. Louis.—p. 308.

**Epidemiology of Diphtheria.**—According to Godfrey, the injection of from 50 to 70 per cent of children aged more than 5 years with three doses of toxin-antitoxin has failed in numerous instances to produce any marked effect on the diphtheria incidence of a community. The immunization of 30 per cent or more of children in the age group under 5 years in addition to more than 50 per cent of children aged from 5 to 9 years has in several instances produced an immediate and striking decline in the diphtheria rate of the community as a whole. The promptness of this seeming response suggests that a high degree of immunity is quickly acquired by a majority of those given three doses of toxin-antitoxin. It is a matter probably of a few weeks rather than of several months. In only two instances known to the author has a community that had attained 30 per cent immunization of the age group under 5 years suffered even a moderate epidemic. It is possible that immunization of the age group under 5 years should not be uniformly distributed through the community but should be largely concentrated in sections of highest prevalence if diphtheria is prevalent; if not, then in the congested areas. The study is presented as a working hypothesis, worthy of trial as a means of quickly ridding a community of epidemic diphtheria. More data from more varied sources are necessary to establish its validity. To this end, uniformity in the tabulation of immunization statistics is a necessity. The Committee on Administrative Practice and all health departments should adopt the standard age grouping in their tables, should classify immunizations by single years of age up to 10 years and should annually or oftener so tabulate their material as to show the present status. It is suggested that the unrecognized case rather than the healthy carrier is responsible for the occult infections occurring during epidemics or periods of high prevalence. It seems not improbable that many mild nasal cases would be discovered if diligently sought. Such cases are the ones most likely to spread infection. Finally, it should be clearly understood that this presentment is in no sense a plea for any community to stop work when it has attained a 30 per cent immunity. That figure may be much too low. Active immunization, like antitoxin, was introduced on a wholesale scale during a period when diphtheria was receding from a period of high epidemicity. It is the more difficult, therefore, to measure its effect. The immunity conferred may not suffice for an organism of greater invasiveness, virulence and pathogenicity. In any event, the only reasonably sure production for the individual is individual immunization.

**Bacteriologic Analysis of Shigella Paradysenteriae Sonne.**—Welch and Mickle report nine cases of diarrheal disease caused by Shigella paradysenteriae Sonne. A detailed, morphologic, physiologic and serologic study is presented. The American Type Collection Cultures Shigella paradysenteriae Sonne 31 and Metadysenteroides 4086 appear to be identical in their fermentative and serologic reactions. Shigella dispar 29 appears to be distinct from Shigella paradysenteriae Sonne in its serologic and fermentative characteristics. A serologic relationship between Shigella paradysenteriae Flexner and Shigella dispar is demonstrated by direct agglutination and by agglutinin absorption. Further emphasis is placed on the significance of Shigella paradysenteriae Sonne as a cause of diarrheal disease in this country.

## American Review of Tuberculosis, Baltimore

**25**: 285-417 (March) 1932

Etiology of Tuberculosis. R. Koch, Berlin, Germany.—p. 285.
Abnormal Mental States in Tuberculosis. A. M. Forster and C. E. Shepard, Cragmor, Colo.—p. 324.
Tuberculous Infection in Mental Defectives as Estimated by Pirquet Tuberculin Test. A. N. Bronfenbrenner, Thiells, N. Y.—p. 334.
*Use of Metaphen-in-Oil in Pulmonary Cavitation. M. Jacobs, Eagleville, Pa.—p. 342.
*Use of Artificial Pneumothorax Apparatus During Thoracoplasty. C. Haight, New Haven, Conn.—p. 349.
Present Status of Skin Reaction in Tuberculous and Nontuberculous Subjects. E. S. Mariette and E. P. K. Fenger, Oak Terrace, Minn.—p. 357.
*Laboratory Tests for Tubercle Bacilli by Culture Methods. J. F. Norton, J. G. Thomas and Norma H. Broom, Detroit.—p. 378.
*Summary of Study of Types of Tubercle Bacilli Isolated from Human Lesions. R. M. Price, Toronto.—p. 383.
Dynamic Bronchial Tree. C. C. Macklin, London, Canada.—p. 393.

**Metaphen-in-Oil in Pulmonary Cavitation.**—Jacobs believes that collapse therapy and thoracoplasty constitute the only rational treatment in the management of pulmonary cavitation. In the far advanced and inoperable cases, external drainage should be encouraged. This can be accomplished by intrapulmonary medication with different drugs dissolved in oil, which should be followed by postural drainage. With this method, the expectoration is mechanically facilitated and reduced. The cough is diminished and the temperature, pulse and respiration are greatly improved. Thus far in the author's experience, metaphen-in-oil, 1:5,000 solution, has proved to be the best available agent. It has antiseptic properties, and it is nontoxic and nonirritating.

**Use of Artificial Pneumothorax Apparatus During Thoracoplasty.**—Haight reports a case of tuberculous empyema with pneumothorax, in which an increase in the intrapleural pressure during the second-stage thoracoplasty resulted in marked respiratory and circulatory embarrassment. Prompt lowering of the intrapleural pressure by withdrawal of air from the pleural cavity relieved the condition, which might otherwise have proved fatal. The routine use of the pneumothorax apparatus during thoracoplasty in cases of closed pneumothorax is suggested. By regulation of the intrapleural pressure during the operation, it is possible to obviate a shift of the mediastinum and consequent respiratory and circulatory embarrassment. Furthermore, on completion of the operation, an optimal collapse of the chest wall may be attained by decreasing the pneumothorax as desired or by abolishing it entirely.

**Laboratory Tests for Tubercle Bacilli by Culture Methods.**—Norton and his associates describe experiments whose results are in agreement with those of previous workers, who maintain the superiority of cultures over animals in identifying tubercle bacilli in material sent to the laboratory for examination. Culture methods produce more positive results, save expense, usually save time, and allow the bacteriologist to proceed at once with further tests if they are desired. Growths were obtained from 137 specimens in which tubercle bacilli were not found on direct examination, in the average time of thirty days, with a minimum of twelve and a maximum of seventy-seven days. No significance is attached to the slight differences found in the various groups of specimens. The use of not less than four tubes and two different mediums are recommended. In the authors' hands, the Petragagni medium was somewhat superior to the modified Petroff medium employed.

**Types of Tubercle Bacilli Isolated from Human Lesions.**—Price reports that of 220 patients in the juvenile group suffering from some form of tuberculosis, 190 proved infected with the human type and thirty patients were infected with the bovine type of the tubercle bacillus. In the majority of instances in which the human type of the tubercle bacillus was isolated, there was a known history of contact with open pulmonary tuberculosis. Contact was usually close, the patient being exposed to tuberculous parents, grandparents, guardians, near relatives, and occasionally individuals sharing the home with the family. In some of the cases, two or more children in the family proved infected. Physical or roentgen examination or both showed evidence of tracheobronchial or pulmonary disease, the evidence pointing to the respiratory route of infection. In thirty cases in the series, the youngest an infant 5 months of age and the oldest a girl of 12 years, the infection was caused by the bovine type of the tubercle bacillus. Without exception, the children harboring an infection with the bovine tubercle bacillus have come from parts in the province of Ontario where pasteurization of milk was not carried out. The history invariably revealed the fact that the child had been fed on raw milk. It was possible on a number of occasions to demonstrate virulent tubercle bacilli in the milk consumed by the child and in the cattle responsible for the transmission of the disease to the human host and thus bring forward the indubitable evidence of the source of the childhood infection. On the basis of his observations, the author draws the following conclusions: 1. Bovine tuberculosis is an almost negligible factor in adult human infection. 2. The bovine tubercle bacillus is a factor of considerable importance in childhood tuberculosis. Thirteen and six-tenths per cent of nonpulmonary tuberculosis, leading to disablement, operation and necessitating prolonged and costly treatment, with doubtful results at the outcome, is caused by the bovine tubercle bacillus. 3. The disease is milk-borne. 4. Bovine tuberculosis is preventable and can be controlled by the effective pasteurization of milk. The truth of this statement is forcibly brought out in the fact that in the city of Toronto, where pasteurization of milk is compulsory and has been rigidly enforced since 1915, not a single case of bovine infection has been encountered in the group of children brought up on the pasteurized milk of the district (1915 to 1930).

### Archives of Surgery, Chicago

**24:** 339-530 (March) 1932

*Irradiation of Mammary Cancer, with Especial Reference to Measured Tissue Dosage. B. J. Lee, G. T. Pack, Edith H. Quimby and F. W. Stewart, New York.—p. 339.
Diseases of Large Intestine. C. C. McClure, Cleveland.—p. 411.
*Operations on Superior Pole of Thyroid. C. A. Roeder, Omaha.—p. 426.
Rôle of Periosteum in Healing of Fractures: Experimental Study. K. O. Haldeman, San Francisco.—p. 440.
Anatomy of Gasserian Ganglion: Its Relation to Tic Douloureux. F. van Nouhuys, Leiden, Holland.—p. 451.
Breaking Strength of Healing Fractured Fibulas of Rats: II. Observations on Standard Diet. R. M. McKeown, M. K. Lindsay, S. C. Harvey and E. L. Howes, New Haven, Conn.—p. 458.
Fractures of Lower Radial Epiphysis. W. L. Watson, New York.—p. 492.
*Incidence of Nodules in Thyroid: Comparative Study of Symptomless Thyroid Glands Removed at Autopsy and Hyperfunctioning Goiters Operatively Removed. C. O. Rice, Minneapolis.—p. 505.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; L. D. Keyser, Roanoke, Va.; Jean Verbrugge, Antwerp, Belgium; A. A. Kutzmann, Los Angeles, and A. B. Hepler, Seattle.—p. 516.

**Irradiation of Mammary Cancer.**—Lee and his associates state that preoperative external irradiation for mammary carcinoma is of value, as is proved by (1) the occasional regression of tumors so treated; (2) the histologic changes produced, and (3) the better clinical end-results. An efficient devitalizing dose cannot be delivered by external irradiation alone. To deliver an efficient dose one must use interstitial irradiation. The tissue dose delivered to the tumor should be measured and expressed in skin erythema units. This dose should be prescribed. Tables prepared in the physical department enable the clinician to translate into terms of skin erythema units the tissue dose delivered, whether by external or interstitial irradiation. The universal tissue dosage necessary to effect destruction of a radioresistant mammary cancer approximates twelve skin erythema doses. The safest procedure is to treat all patients with mammary cancers with the same sufficient dose, because (1) radiosensitivity cannot always be determined before operation, and (2) the same tumor may contain radioresistant and radiosensitive areas. Mammary cancers vary markedly with respect to radiosensitivity. The mammary gland will tolerate safely an enormous dose of interstitial irradiation. The possible menace of dissemination of the disease by the method of interstitial irradiation is considered. The authors have not seen evidence of such a dissemination in this series. Preliminary external irradiation lessens this possibility. All preoperative irradiation should be given within three weeks or less time. Six weeks should elapse following interstitial irradiation before radical amputation is performed. An interval of six weeks is necessary, because after this interval (1) the effects of irradiation are complete; (2) complete destruction of the tumor is accomplished, and (3) wound healing is unimpaired. The authors' present treatment for primary operable mammary cancer is external irradiation, then interstitial irradiation and finally radical amputation six weeks later. The axilla is irradiated by (1) preoperative roentgen rays or radium element pack, followed by (2) interstitial gold-filtered radon distributed along the lymph-node-bearing areas. The pathologic changes produced in mammary cancer by external irradiation are mainly due to vascular effects. There are moderate hydropic swelling of the tumor cells, moderate atrophic degeneration, marked collagen swelling, productive arteritis with thrombosis and calcific deposits in the vessel walls and productive fibrosis. The changes produced by interstitial irradiation are mainly direct effects on the tumor tissue, namely, ballooning degeneration, hydropic swelling, giant nuclei and atypical degenerative mitoses, a tendency toward squamous metaplasia followed by sloughing, hemorrhage, infiltration by fatty macrophages with ensuing extensive calcific deposits, often acute capillary necrosis with resultant tumor necrosis, squamous metaplasia of normal adjacent lobules in the breast, collagen swelling, productive fibrosis and late atrophy of the residual tumor.

**Operations on Superior Pole of Thyroid.**—Roeder enumerates thus the significant complications that may occur during the removal of the superior pole of a goitrous thyroid: (1) injuries to the inferior and superior laryngeal branches of the vagus, producing (*a*) partial or complete loss of voice, (*b*) obstruction to inspiration, (*c*) aspiration of ingested fluids into the bronchi, (*d*) loss of sensation to the mucosa of the larynx, and (*e*) referred pain to the lower portion of the pinna through the "vagopinna reflex"; (2) referred pain to the mandibular teeth through the "thyromandibular reflex"; (3) paralysis of the soft palate; (4) referred somatic pain through any or all of the first four cervical spinal sensory nerves; (5) hemorrhage from the superior thyroid vessels, and (6) injury to or removal of parathyroids.

**Incidence of Nodules in Thyroid.**—According to Rice, nodules occur as frequently in the postmortem thyroid that is assumed to be physiologically normal as in hyperfunctioning goiter operatively removed. The greater prevalence of colloid nodules in the postmortem thyroid may be due to the fact that differences in the degree of reversion, growth, differentiation and encapsulation have not been forced on the normal gland as strongly as they have in the toxic goiter. Multiple nodules are not found more frequently in hyperfunctioning goiters than they are in physiologically normal thyroids. Nodules are found in 56.95 per cent of the physiologically normal thyroids and in 57.14 per cent of the toxic goiters. Forty-two and eighty-five hundredths per cent of the toxic goiters have no nodules and are manifested as exophthalmic goiter. Thirty-five per cent of the thyroids that become hyperfunctioning can be classified as adenomatous goiter with hyperthyroidism. The remaining 22 per cent of glands contain nodules but manifest their hyperthyroidism as exophthalmic goiter. Diffuse hyperplastic goiter (exophthalmic goiter) occurs proportionately as frequently in glands with nodules as in glands without nodules. Lymphocytic foci are found more often in hyperfunctioning goiters than in normal thyroids. From these observations it appears that the presence of nodules in the thyroid is physiologically normal and that the incidence is not appreciably altered by the development of hyperthyroidism.

## Indiana State Medical Society Journal, Fort Wayne

**25:** 107-156 (March) 1932

Endoscopy as an Aid in Diagnosis. D. O. Kearby, Indianapolis.—p. 107.
Gastro-Intestinal Diseases: General Phase: Intussusception. R. D. Caylor and T. E. Caylor, Bluffton.—p. 112.
*Id.: Medical Phase: Duodenitis and Motor Disorders of Duodenum. R. L. Sensenich, South Bend.—p. 117.
Id.: Surgical Phase: Abdominal Surgery in Infancy and Early Childhood. H. O. Bruggeman, Fort Wayne.—p. 123.
True Hypertrophic Ovary: New Theory for Cause of "Idiopathic Menorrhagia" and Abortion Habit. A. S. Jaeger, Indianapolis.—p. 127.

**Gastro-Intestinal Diseases: Medical Phase.**—According to Sensenich, disturbances of duodenal motility, with or without duodenitis, may give rise to symptoms simulating duodenal ulcer, gallbladder disease, chronic appendicitis or other gastro-intestinal disease. Impaired motility may be due to mechanical compression or distortion, local or general factors, or purely nervous causes. Delay in duodenal drainage and absorption of contents causes chronic intoxication, varying in intensity from mild malaise to seriously toxic and exhausted states. Characteristic clinical phenomena manifest in some types of this disorder are described. Some disturbances of duodenal motility are distinguishable only with great difficulty and will require the earnest cooperation of roentgenologist and internist to determine points of more definite identification. The author presents this subject in the hope that repeated discussion may awaken a greater interest among clinicians and lessen the possible confusion with other conditions, notably duodenal ulcer and gallbladder disease.

## Journal of Biological Chemistry, Baltimore

**95:** 387-783 (March) 1932. Partial Index

Purification of Benzidine, and an Improved Reagent for Estimating Hemoglobin in Blood. F. C. Bing, Cleveland.—p. 387.
Metabolism of Phospholipids: IV. Rate of Phospholipid Metabolism, with Especial Reference to Question of Intermediary Rôle of Phospholipids in Fat Metabolism. R. G. Sinclair, Rochester, N. Y.—p. 393.
Glycogenesis from Glucose Administered to Fasting Dog. Margaret Dann and W. H. Chambers, New York.—p. 413.
Effect of Urea Ingestion on Nitrogen Partition of Urine at Endogenous Nitrogen Level. R. A. Kocher and H. C. Torbert, Carmel-by-the-Sea, Calif.—p. 427.
Studies on Calcium Content of Human Blood Corpuscles. M. R. Rymer and R. C. Lewis, Denver.—p. 441.
Relationships Between Structure of Organic Compounds and Their Inhibiting Effect on Liver Esterase: Resemblance to Lyotropic Series of Anions. D. Glick and C. G. King, Pittsburgh.—p. 477.
Anserine in Mammalian Skeletal Muscle. W. A. Wolff and D. W. Wilson, Philadelphia.—p. 495.
Composition of Gallstones and Their Solubility in Dog Bile. M. Pickens, G. O. Spanner and L. Bauman, New York.—p. 505.
Manometric Analysis of Gas Mixtures: III. Manometric Determination of Carbon Dioxide Tension and pHs of Blood. D. D. van Slyke, J. Sendroy, Jr., and Shih Hao Liu, New York.—p. 547.
Method for Microgravimetric Determination of Silica in Tissue. J. C. Morgan and E. J. King, Toronto.—p. 613.
Studies on Blood Glycolysis: I. Effect of Arsenate. S. Morgulis and S. Pinto, Omaha.—p. 621.
Diet and Blood Lipids. W. R. Bloor, Rochester, N. Y.—p. 633.
Microcolorimetric Studies: III. Estimation of Organically Bound Phosphorus: System of Analysis of Phosphorus Compounds in Blood. T. Kuttner and L. Lichtenstein, New York.—p. 661.
Inorganic Composition of Parotid Saliva of Dog and Its Relation to Composition of Serum. E. J. de Beer and D. W. Wilson, Philadelphia.—p. 671.
Irradiated Milk: Amount of Vitamin D and Its Rate of Formation. G. C. Supplee and Zaida M. Hanford, New York, and M. J. Dorcas and H. H. Beck, Cleveland.—p. 687.
Recovery Process After Exercise in Mammal: II. Conversion of Infused *d*-Lactic Acid into Muscle Glycogen. C. N. H. Long and F. L. Horsfall, Jr., Montreal.—p. 715.
Effect of Adrenalin on Free Muscle Sugar and Total Carbohydrate. F. Bischoff and M. Louisa Long, Santa Barbara, Calif.—p. 743.

## Journal of General Physiology, Baltimore

**15:** 363-485 (March 20) 1932

Heat Inactivation of Antistaphylococcus Bacteriophage. A. P. Krueger, San Francisco.—p. 363.
Intermittent Stimulation by Light: I. Validity of Talbot's Law for Mya. S. Hecht and E. Wolf, New York.—p. 369.
Separation of Reactions in Photosynthesis by Means of Intermittent Light. R. Emerson and W. Arnold, Pasadena, Calif.—p. 391.
Analysis of Geotropic Orientation of Young Rats: V. W. J. Crozier and G. Pincus, Boston.—p. 421.
Id.: VI. W. J. Crozier and G. Pincus, Boston.—p. 437.
Combining Weight of Gelatin as an Acid. A. L. Ferguson and A. W. Schluchter, Ann Arbor, Mich.—p. 463.
Mobility of Gelatinate Ion. A. L. Ferguson and A. W. Schluchter, Ann Arbor, Mich.—p. 477.

## Journal of Preventive Medicine, Chicago

**6:** 1-86 (Jan.) 1932

*Studies of Acute Respiratory Infections: III. Filter-Passing Anaerobic Bacteria of Nose and Throat in Health and in Colds. W. C. Noble, Jr., and D. H. Brainard, New York.—p. 1.
Superinfection of Cats with Taenia Taeniaeformis. H. M. Miller, Jr., St. Louis.—p. 17.
*Persistence of Acquired Immunity to Cysticercus Fasciolaris After Removal of Worms. H. M. Miller, Jr., and E. Massie, St. Louis.—p. 31.
Further Studies on Immunity to Metazoan Parasite, Cysticercus Fasciolaris. H. M. Miller, Jr., St. Louis.—p. 37.
*Passage of Poliomyelitis Virus Through Intestinal Tract. P. F. Clark, D. J. Roberts and W. S. Preston, Jr., Madison, Wis.—p. 47.
Vital Statistics in Development of Neighborhood Health Centers in New York City. G. J. Drolet and L. Weiner, New York.—p. 59.

**Acute Respiratory Infections.**—Noble and Brainard studied the anaerobic bacteria found in the filtered nose and throat washings of fourteen persons with colds, and eleven normal persons. The ordinary aerobic flora, which may grow anaerobically and obscure some of the more slowly growing anaerobes, was removed by using Berkefeld filters of the coarser grades. This procedure also removed anaerobic gram-negative cocci of the gazogenes type, which were found previously to be normal flora. Many anaerobic bacteria were isolated from the filtrates. Most of these were gram-negative, but there were a few gram-positive forms. The authors studied 114 strains, 73 being grouped tentatively according to their agglutinative reactions. The gram-positive flora, isolated from one patient with acute catarrhal coryza, consisted of two strains of bacilli, identical culturally and agglutinatively, and one strain of cocci. The gram-negative flora was much more numerous, a search disclosing minute cocci and bacilli of different sizes and forms. The cocci were similar culturally, but of four groups agglutinatively. The bacilli were even more heterogeneous, falling into several cultural and agglutinative groups; all were distinct from Bacterium pneumosintes, which could not be found. These groups were distributed with approximately equal frequency among both normal control subjects and persons with colds. As to the significance of these observations, the fewness of strains of the gram-positive group and their demonstration in only one subject would weigh against their primary etiologic relationship. The almost universal occurrence of the gram-negative cocci and their innocuousness when injected into rabbits would indicate that they are normal saprophytic flora. The heterogeneity of the gram-negative bacilli, the approximately equal distribution of their groups among normal subjects and persons with colds, and the absence of epidemic strains would make it unreasonable to assign a causative rôle to any one of these organisms, even though it is apparent that pathogens exist among them.

**Persistence of Immunity to Cysticercus Fasciolaris After Removal of Worms.**—Miller and Massie report that the acquired immunity conferred on the albino rat by an infection with Cysticercus fasciolaris was not lost in twenty-four individuals from which the worms were removed. An interval of from thirty-three to sixty days was allowed between removal of the cysticerci and infection. The onchospheres fed at that time resulted in an average of seventy-seven larvae, living and dead, in the control rats, whereas development was completely inhibited in the rats from which the worms of the initial infection had been removed.

**Passage of Poliomyelitis Virus Through Intestinal Tract.**—Clark and his associates failed to produce poliomyelitis in Macacus cynomolgus monkeys by the oral administration of large quantities of virus or by the injection of 10 cc. of virus into a loop of the small intestine. Infective quantities of virus were demonstrated in the feces (from 1.5 to 3.5 Gm.) from monkeys that had been infected in various ways. 1. The fecal concentrate from two monkeys that had been injected with 10 cc. of active brain cord suspension in a loop of the small intestine was injected into two other monkeys, both of which developed poliomyelitis. 2. Similarly, infection resulted from the feces of monkeys that had been fed on active brain cord suspensions or filtrates for a period of several days. Two experiments of this type were carried out. In the first, two animals were fed and fecal concentrate from these was injected into two monkeys, both of which developed poliomyelitis. The second experiment was similar, but with a negative result. 3. Two monkeys were fed large doses of active filtrates for one day. Fecal concentrate from them was injected into two other monkeys. One of the latter came down with typical poliomyelitis, while the other did not. The animal giving the negative result had been used previously, although without symptoms. 4. Typical poliomyelitis developed in two monkeys injected with the dialyzed concentrate of the feces of two other monkeys that had been fed, for one day, with doses of virus concentrated by distillation in vacuo and subsequent dialysis. Attempts to demonstrate the virus in the feces of animals suffering from the disease proved futile.

## Journal of Urology, Baltimore

**27:** 279-370 (March) 1932

*Pathogenesis of Hydronephrosis. C. M. Johnson, San Francisco.—p. 279.
*Carbuncle of Kidney (Metastatic Staphylococcus Abscess of Kidney Cortex). L. Brady, Baltimore.—p. 295.
Sarcoma of Adult Kidney. L. Herman and L. B. Greene, Philadelphia.—p. 317.
Study of Pyridium as a Urinary Antiseptic with Especial Reference to Its Elimination by Kidneys. P. J. Riaboff, Philadelphia.—p. 329.
Multilocular Cyst of Prostate. D. R. Melen, Rochester, N. Y.—p. 343.
Teratoma Testis with Embryonal Carcinoma: Case Report (Brief Clinical and Detailed Pathologic Report). G. H. Romberg, Baltimore.—p. 351.
*Surgical Problem of Epididymitis and Vasitis. B. W. Turner, Houston, Texas.—p. 359.

**Pathogenesis of Hydronephrosis.**—In order to determine the exact changes that occur in the renal tubules in progressive hydronephrosis, Johnson attempted their actual dissection. He found that dilatation begins at the glomerulus and proceeds quickly and evenly to the papillary ducts by the end of two or three weeks. By the end of one month there is beginning atrophy in the glomerulus and proximal convoluted tubules, with some dilatation still present in the distal convoluted tubules and collecting tubules. From this point on there is progressive atrophy of the glomeruli and convoluted tubules and progressive dilatation of the collecting tubules in the medulla. In other words, there is atrophy above the corticomedullary line where the arcuate vessels exist and dilatation below. By the end of three months some glomeruli may be directly in communication with collecting tubules, as a result of the shortening, straightening and finally disappearance of the convoluted tubules. Others never reach this stage but undergo atrophy and lose their communication with the collecting tubules entirely by four or five months. Maximum dilatation of the remaining collecting tubules in the medulla is reached at five months. Gradual atrophy and shrinkage in all dimensions then take place.

**Carbuncle of Kidney.**—Brady states that, when the diagnosis of carbuncle of the kidney has been made, prompt operation is indicated. However, if the patient's condition does not contraindicate it, a differential phenolsulphonphthalein test should be carried out, as it may be a great aid to the surgeon in deciding whether or not to remove the involved kidney. A low phenolsulphonphthalein reading for the uninvolved kidney indicates that the surgeon should, if possible, save the kidney containing the carbuncle. A low phenolsulphonphthalein output from the kidney containing the carbuncle does not necessarily mean that this kidney has been irreparably damaged and must be removed, for in a number of instances after the carbuncle has been drained the function of the kidney has returned to normal. The size of the lesion does not in itself decide the proper operative procedure unless at operation a very large part of the kidney is found to be involved by the carbuncle. However, as was true in a case reported by the author, the carbuncle may be so large that excision of the portion of the kidney containing it is not feasible, and if the operator intends to be conservative he can do no more than incise and drain the carbuncle. It is probably a good rule never to perform a nephrectomy except under one or two conditions: 1. If the general infection is so overwhelming that it is absolutely imperative to remove as much of the infected tissue as possible, a nephrectomy is indicated. For instance, if the patient is having chills, a high fever and is showing signs of septicemia, his best chance of overwhelming the infection probably lies in removal of the kidney. 2. If a patient has good renal function in the uninvolved kidney and is in poor general condition either through advanced age or through other pathologic conditions in addition to the renal carbuncle, it is wise to remove the kidney so as to shorten the convalescence as much as possible.

**Surgical Problem of Epididymitis and Vasitis.**—Turner believes that the Hagner operation and its various modifications for epididymitis is not sufficient to cope with all types of the disease that are encountered because its surgical principles are not extensive enough to relieve them. All other methods are palliative and allow too many cases of epididymitis to go on to destruction of the function of the testis by sclerosis of the epididymis, nodule in the vas or funicle adhesion with vasitis, perivasitis and obliterative seminal vesiculitis. The operation for panepididymitis aiding drainage to all parts as described by the author offers a remedy for most cases heretofore considered hopeless without radical surgical removal. Bold incision through the longitudinal axis of the fibrous epididymis with incased drainage, combined, when indicated, with excision of a nodule in the vas and silkworm-catgut end-to-end repair, supplants the previous elaborate epididymis-vas anastomosis for sterility in most instances.

## Kansas Medical Society Journal, Topeka

**33:** 75-110 (March) 1932

Some Anatomic Studies in Oblique Inguinal Hernia. L. V. Hill, Kansas City.—p. 75.
Public Health Organization and Medical Profession. A. J. McLaughlin, Chicago.—p. 77.
Epidemiology of 1930 Poliomyelitis Epidemic in Kansas. E. G. Brown, Topeka.—p. 81.
Treatment of Poliomyelitis. W. C. Menninger, Topeka.—p. 85.

## Medical Journal and Record, New York

**135:** 261-312 (March 16) 1932

Traumatic Neuroses in Industrial Workers. A. W. Hammer, Philadelphia.—p. 261.
Comparison of Precipitation Test with Complement Fixation Test in Serum Diagnosis of Syphilis: Based on Two Thousand One Hundred and Forty Tests. J. W. Smith, Jr., Fort Schafter, Hawaii.—p. 263.
Serum Sickness: Dangers of Serum Therapy Following Toxin-Antitoxin Immunization: Twofold Reaction. A. I. Goldschlager, Islip, N. Y.—p. 265.
Vitamins: Their Rôle in Prevention and Treatment of Disease. H. F. Langhorst, Elmhurst, Ill.—p. 266.
Successful Treatment of Tuberculous Adenitis with Protein Mineral Combination (Protein-Calcium Phosphate, Milk Minerals, Lactose). O. B. Wanshenk and M. L. Furman, New York—p. 270.
Corrective Treatment of Hernia: Observations from Thirty Years of Experience in Injection Method. I. Mayer, Detroit.—p. 275.

## Nebraska State Medical Journal, Lincoln

**17:** 93-132 (March) 1932

Some Aspects of Physiology of Bone. C. A. Dragstedt, Chicago.—p. 93.
Mantoux Observations in Five Hundred and Twenty Indian Children. H. Davis, Genoa.—p. 98.
Etiology and Mechanics of Massive Atelectasis. E. Korol, Lincoln.—p. 101.
Obstruction of Small Intestine Due to Benign Granuloma. C. Andrews, Lincoln.—p. 106.
Management of Child with Defective Heart. H. M. Jahr, Omaha.—p 109.
Health Program in Public Schools. Elizabeth Ash Langfeld, Omaha.—p. 113.
Principles Underlying Reduction of Pain in Postoperative Phase of Anorectal Diseases. R. R. Best, Omaha.—p. 115.

## New England Journal of Medicine, Boston

**206:** 545-600 (March 17) 1932

*Limitation of Electrocardiogram as an Aid in Diagnosis of Coronary Occlusion. C. W. Holland, Halifax, Nova Scotia, and S. A. Levine, Boston.—p. 545.
*Chronic Ulcerative Colitis. E. D. Kiefer, Boston.—p. 552.
Mortality and Expectation of Life in Mental Deficiency in Massachusetts: Analysis of the Fourteen-Year Period 1917-1930. N. A. Dayton, C. R. Doering, Margaret M. Hilferty, Helen C. Maher and Helen H. Dolan, Boston.—p. 555.
Arguments in Favor of Compulsory Vaccination for Private School Children. S. B. Woodward, Worcester, Mass.—p. 570.

**Electrocardiogram in Diagnosis of Coronary Occlusion.**—In a study of 328 cases of coronary occlusion in which the electrocardiograms were taken, Holland and Levine found there were thirty-five that showed essentially normal tracings at one time or another following the onset of the attack. For the purpose of the study, curves were regarded as essentially normal if they lacked the following changes: alterations in the T wave that are generally regarded as occurring with acute coronary occlusion (high take off, convexity and sharp dipping of the T wave), low amplitude, disturbances of auriculoventricular conduction and spreading of the Q-R-S complex. Because tracings were not taken with the same frequency or at fixed time intervals, it was impossible to draw any statistical conclusions, except of a vague nature. In most cases several curves were made in the first week or two; in a small number the only ones obtained were made months after the attack. In six cases, so-called normal electrocardiograms were obtained from a few hours to seven days after the onset of the attack. In all these, subsequent tracings showed characteristic alterations in the ventricular complexes. In twenty cases, typical changes in the tracings taken soon after the onset of the attack were replaced by "normal" curves at some subsequent time. The return to normal varied greatly, coming as quickly as four days after the onset of the attack in one case and more gradually and requiring several months in another. In nine cases the only electrocardiograms obtained were normal. In only one of these nine cases were curves obtained within the first ten days. Of the entire series of 328 cases there were only eight in which "normal" electrocardiograms were obtained at any time during the first ten days. On the basis of their observations the authors conclude that, regardless of the time elapsing after an attack, a normal electrocardiogram in a case considered clinically as coronary occlusion does not exclude the diagnosis. A most important feature in this problem is the marked changes in the electrocardiogram that occur from day to day, especially during the first two weeks. By taking repeated tracings, therefore, normal curves may be found later to change to those more characteristic of coronary artery disease.

**Chronic Ulcerative Colitis.**—Kiefer reports his experiences with twenty-five cases of chronic ulcerative colitis. He believes that the proctoscopic and sigmoidoscopic examination is the most important diagnostic procedure. The etiology is unsettled, but the possible importance of amebic infections is discussed. Treatment consists of a suitable diet, antiamebic drugs, antispasmodics, supportive measures, treatment for the secondary anemia, blood transfusions and ileostomy. Ileostomy is the operation of choice because it puts the bowel at complete rest. The operation is important as a life-saving measure in severe cases but does not stop the local destruction in the intestinal wall. The therapeutic results with antiamebic treatment have been sufficiently favorable to lend importance to the possibility of a primary amebic infection.

## New Jersey Medical Society Journal, Orange

**29:** 101-188 (Feb.) 1932

Observations of Governor's Conference on Child Health and Protection. F. C. Johnson, New Brunswick.—p. 101.
Sinus Disease in Children. E. L. Wood, Newark.—p. 103.
Accessory Nasal Sinus Infections in Children. G. W. Strickland, Roselle.—p. 108.
Credulity of Rhinologists Anent Sinuses. C. S. McGivern, Atlantic City.—p. 111.
Bladder and Prostatic Carcinoma. B. S. Barringer, New York.—p. 115.
Mediastinal Tumors: Report of Three Cases. A. Strelinger, Elizabeth.—p. 122.
Medicolegal Aspects of Soft Tissue Injury. M. Kummel, Newark.—p. 127.
Matter of Reducing and Gaining Weight. H. S. Read, Atlantic City.—p. 132.
Rôle of General Practitioner in Conservation of Vision. E. S. Sherman, Newark.—p. 134.
Electrocardiograms of Mental Patients. L. Levin, Trenton.—p. 140.
Medical Aspects of Workman's Compensation Act. M. S. Avidan, Newark.—p. 143.
Maggots and Other Insects in Medicine. H. I. Goldstein, Camden.—p. 145.

## New York State Journal of Medicine, New York

**32:** 309-374 (March 15) 1932

Health Instruction the Best Social Insurance. R. L. Wilbur, Washington, D. C.—p. 309.
Medical Research. F. G. Banting, Toronto.—p. 311.
Diagnosis and Treatment of Syphilis: Viewpoint of the General Practitioner. A. B. Cannon, New York.—p. 316.
*Control and Management of Cardiopathic Child. E. L. Benjamin, New York.—p. 325.
Dilatation and Its Interpretation. P. T. Harper, Albany.—p. 328.
Medical Practice Act: Five Years' Results. H. Rypins, Albany.—p. 334.
Lumbar Hernia with Ovarian Cysts. J. Sarnoff, Brooklyn.—p. 337.
Urinary Retention from Vaginal Occlusion: Two Cases. J. A. Lazarus, New York.—p. 339.
Recorded and Resident Death Rates in New York State. J. V. de Porte, Albany.—p. 341.

**Management of Cardiopathic Child.**—Benjamin emphasizes the fact that the cardiopathic child is a type that requires special attention, study and supervision. Employment of measures to improve the general health and eliminating all foci of infection, especially in the upper respiratory tract, tends to protect the heart from further damage, prevents recurrent infections and aids in the progressive improvement of the child. Too much restriction on some children converts them into neuropaths and encourages a low morale, and too little restriction on others tends to further extension of the lesion present and increases the tendency to frequent exacerbations. In comparison to the manner in which the author treated these cases prior to the advent of a better understanding of this type of child, he now gives them a better chance in life and a better outlook through attempt at regulation and management of their lives. However, a more thorough, effective and ideal control and management of them can be possible only through the establishment of a cardiac colony—including a school—where the daily routine of these children can be observed and an intensive study of the child, his habits, characteristics, temperament and physical condition, properly evaluated. The investment would be sound, and the result a community of self-sustaining and healthier children as a dividend, and from the standpoint of preventive medicine an opportunity to formulate proper and definite rules of prophylaxis by correlating all the facts and thus reducing the incidence of rheumatism among children.

## Oklahoma State Medical Assn. Journal, Muskogee

**25:** 95-136 (March) 1932

Roentgenologic Aspect of Duodenal Ulcer. J. E. Heatley, Oklahoma City.—p. 95.
Cancer Problem. A. L. Blesh, Oklahoma City.—p. 97.
Anemia: Clinical Lecture. W. Langston, Oklahoma City.—p. 100.
Gallstone Ileus. C. S. Neer, Vinita.—p. 105.
Geriatrics. J. T. Martin, Oklahoma City.—p. 107.
Examination of the Urologic Patient. A. R. Sugg, Ada.—p. 110.
Dice Removed from Child's Bronchus on Friday the Thirteenth. R. N. Smith, Tulsa.—p. 115.
Achondroplasia. F. E. Dill, Oklahoma City.—p. 117.
Fractures of Elbow in Childhood. W. H. Bailey, Oklahoma City.—p. 119.

## Pennsylvania Medical Journal, Harrisburg

**35:** 347-436 (March) 1932

Contemporary Fads and Fallacies, Therapeutic and Diagnostic, Which Reflect Dangerous Professional Credulity. S. R. Miller, Baltimore.—p. 347.
How to Diminish Deaths from Cancer in Pennsylvania. W. A. Lell, Philadelphia.—p. 354.
Gallbladder: Recent Advances as Applied to Treatment. I. S. Ravdin and C. G. Johnston, Philadelphia.—p. 357.
*Remarks on Etiology and Treatment of Cholecystitis. J. P. Griffith and H. A. Kipp, Pittsburgh.—p. 362.
Diffuse Gastric Hemorrhage. E. L. Bortz, Philadelphia.—p. 367.
Gastric Hemorrhage from Surgical Standpoint. D. B. Pfeiffer, Philadelphia.—p. 370.
Medical Conditions Simulating Surgical Conditions of Upper Abdomen. F. J. Kalteyer, Philadelphia.—p. 373.
Treatment of Postoperative Obstruction. D. Guthrie, Sayre.—p. 376.
Etiology, Diagnosis and Treatment of Peptic Ulcer. J. M. T. Finney, Baltimore.—p. 380.
*Focal Infection in Early Childhood: As Seen by Otolaryngologist. G. M. Coates, Philadelphia.—p. 389.
Id.: From Standpoint of Dentist. W. A. Jaquette, Philadelphia.—p. 392.
Pediatrist's Study of Focal Infection in Children. E. W. Stitzel, Altoona.—p. 395.

**Etiology and Treatment of Cholecystitis.**—Griffith and Kipp believe that cholecystitis is an indication of infection of the biliary duct system and its lymphatics. The removal of the gallbladder is an important but occasionally incomplete operation for the cure of symptoms interpreted as cholecystitis. The drainage of the bile ducts by the introduction of a tube through the cystic duct into the common duct is the method of choice. There is no greater risk incurred in drainage of bile ducts following cholecystectomy than with cholecystectomy alone. In some cases the drainage of the ducts is of the greater importance.

**Focal Infection in Early Childhood.**—According to Coates, each mucous lined cavity, bony or otherwise, of the head, is a potential focus either directly or indirectly, and in searching for such a focus, patience, skill and mechanical and laboratory aids are essential. No portion must be overlooked, and roentgenologic aid is usually necessary although not to be absolutely relied on. Slight changes in the drum membrane in color, light reflection or position, and slight drooping of the posterosuperior canal wall may be the only indications of a virulent middle ear or mastoid infection. Slight differences in transillumination of the sinuses, changes in the color or appearance of the nasal mucosa, the observation of even small quantities of pus or mucopus in the middle or superior meatuses, after the application of negative pressure, or in the choanae and dropping behind the palate, slight bogginess of the turbinates, or the cytologic and bacteriologic study of maxillary sinus washings, may give the clue that leads to the discovery of a chronic, almost symptomless sinus infection. Every part of the pharynx and fauces should be examined with care. It is not enough to know that a tonsil operation has been performed. The fossae must be examined for stumps, tags, regrowths, small crypts concealed behind the pillars or beneath scar tissue, compensatory hypertrophies of the lateral pharyngeal folds, and isolated lymphatic masses in the posterior pharyngeal wall containing crypts filled with presumably infectious material, infected adenoid remnants, often surprisingly large, and the commonly overlooked lingual tonsil and infratonsillar lymph nodes, which were shown by French, years ago, to be not uncommon foci of infection. These tissues may all be primarily infected, cause acute infection of the accessory sinuses, and prolong chronic infections of these cavities. These tissues are frequently infected secondarily by sinus drainage, causing, in their turn, focal infection, either toxic or actual, elsewhere. Laryngitis, tracheobronchitis and other infections of the lower respiratory tract are often caused by gravity extension of infected secretions from these higher areas, as well as by direct extension downward of inflamed mucosa. Efficient treatment of the nose and throat not uncommonly results in a cure of an intractable case. Some allergic conditions have their origin in the sinuses and the throat. Many disorders of the kidneys, the joints, both acute and chronic, the gastro-intestinal tract, the eyes, the heart, the blood and the glandular system are due to focal infection, no matter how the latter may be defined, and it seems safe to say that by far the majority of these infections may originate in the upper respiratory tract.

### Philippine Journal of Science, Manila

**47:** 197-304 (Feb.) 1932. Partial Index

Studies on Early Leprosy in Children of Lepers: II. Reexamination of Cases After Five Years. J. Rodriquez, Cebu, Cebu.—p. 245.
New Species of Hookworm from Philippine Civet. B. G. Chitwood, Washington, D. C.—p. 259.

### Physical Therapeutics, Elmira, N. Y.

**50:** 41-80 (Feb.) 1932

Further Observations on Use of Infra-Red Rays in Cases of Pylorospasm. C. E. Brush, Nashville, Tenn.—p. 41.
Practical Suggestions for the Bath. C. Pope, Louisville, Ky.—p. 51.
New Apparatus and Procedures in Physical Therapy. F. F. de Courmelles.—p. 57.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

**40:** 105-160 (March) 1932

Diagnosis and Surgical Treatment of Cysts of Thyroglossal Duct. F. W. Rankin and N. W. Crisp, Rochester, Minn.—p. 105.
Indications for Open Reduction of Fractures. F. Christopher, Evanston, Ill.—p. 110.
Treatment of Complicated Fractures of Humerus Involving the Shoulder Joint. E. L. Gilcreest, San Francisco.—p. 124.
Developmental Anatomy and Surgical Significance of Orbicularis Oris. T. F. Mullen, San Francisco.—p. 134.
Surgical Problems of Thyroid. A. S. Jackson, Madison, Wis.—p. 142.

### Yale Journal of Biology & Medicine, New Haven

**4:** 369-648 (March) 1932

Some Phases of Growth of Physiologic Chemistry in America. R. H. Chittenden, New Haven, Conn.—p. 371.
Surface-Area Constant in Comparative Physiology. F. G. Benedict, Boston.—p. 385.
Gastric Digestion; Survey. H. C. Bradley, Madison, Wis.—p. 399.
Some Trends in Current Researches on Vitamin B Complex. G. R. Cowgill, New Haven, Conn.—p. 419.
*Applications of Physiology of Respiration to Resuscitation from Asphyxia and Drowning and to Prevention and Treatment of Secondary Pneumonia. Y. Henderson, New Haven, Conn.—p. 429.
Cystinuria: Review of Some Recent Investigations. H. B. Lewis, Ann Arbor, Mich.—p. 437.
*Nutritive Aspects of Human Milk. Icie G. Macy, Detroit.—p. 451.
Creatine and Creatinine. V. C. Myers, Cleveland.—p. 467.
Brief Survey of Group of Acid-Producing and Acid-Tolerating Bacteria Known as Lactobacillus Genus. L. F. Rettger, New Haven, Conn.—p. 485.
Nutritional Significance of Some Mineral Elements Occurring as Traces in Animal Body. Mary Swartz Rose, New York.—p. 499.
Amino-Acids in Nutrition. W. C. Rose, Urbana, Ill.—p. 519.
Respiration at High Altitudes. E. C. Schneider, Middletown, Conn.—p. 537.
Some Biochemical Aspects of Growth. A. H. Smith, New Haven, Conn.—p. 551.
Review of Certain Researches Relating to Occurrence and Chemical Nature of Vitamin A. H. Steenbock, Madison, Wis.—p. 563.
Certain Aspects of Water Metabolism. F. P. Underhill, New Haven, Conn.—p. 579.
Recent Contributions to Theory of Protein Structure. H. B. Vickery, New Haven, Conn.—p. 595.
*Chemotherapy of Tuberculosis. H. G. Wells, Chicago.—p. 611.
Nitrogenous Muscle Extractives. D. W. Wilson, Philadelphia.—p. 627.

**Applications of Physiology of Respiration to Resuscitation.**—Henderson calls attention to the fact that ten years ago he and Haggard introduced the inhalation of a mixture of oxygen and carbon dioxide as a means of resuscitating the victims of carbon monoxide asphyxia and of removing ether and other anesthetics from the lungs after surgical operations. Many thousands of inhalators are now in use in the cities of the United States, especially by the rescue crews of the fire and police departments and of city gas and electric companies. Hundreds of lives are saved by these crews with their inhalators each year. In surgical operating rooms also, the use of carbon dioxide as a stimulant to respiration and the circulation has largely displaced the generally ineffective, and sometimes harmful, hypodermic and intravenous injection of drugs. These matters are based on the modern principles of the physiology of respiration and, confirmed by wide practical experience, are now established and accepted. Within the past three or four years, two other fields for the application of the same general type of treatment have developed and a third field seems now to offer tempting possibilities. These three fields are, first, resuscitation of the new-born who fail to breathe spontaneously or effectively, and prevention of pneumonia in those whose lungs are not fully expanded; second, prevention and treatment of the collapse of a lung after surgical operations, the condition from which postoperative pneumonia commonly develops; and, third, the possible contribution that inhalation of carbon dioxide with oxygen may make to the treatment of bronchial and lobar pneumonias.

**Nutritive Aspects of Human Milk.**—Under controlled methods of expression, sampling and analysis of milk, Macy has demonstrated that there are significant changes in the composition of milk from nursing to nursing and from day to day. Daily trends are apparent in the fat, total solids, total nitrogen, total ash, calcium, phosphorus and chloride components of milk irrespective of diet, rest, activity, and stage of lactation. Such observations suggest that there is some peculiarity of mammary gland physiology that produces these rhythmic fluctuations of individual milk constituents. It has been demonstrated that although some of the milk constituents vary in a characteristic rhythmic manner they fluctuate about a level that is characteristic for a particular individual. This individuality not only is maintained during one lactation but may persist through succeeding periods of milk production. The quantity and quality of milk produced depend in the human mother in no small measure on her physiologic capacity and well being. At times, mother's milk may fail to meet all the needs of the baby. Although incomplete knowledge exists concerning the physiologic changes experienced by women during lactation, there are variations in the quantity and quality of milk that are significant in the nutritional welfare of the infant.

**Chemotherapy of Tuberculosis.**—Wells states that, although the last decade has seen an almost complete abandonment of systematic experimental research on the specific chemotherapy of tuberculosis, this fact by no means proves that there remains no possible future for this principle. But it certainly seems reasonable to believe that tuberculosis offers less prospect of early success than almost any other bacterial infection, in consideration of the resistance of the tubercle bacilli and the highly protective wall of active and labile macrophages separating them from the chemotherapeutic agent. One can hardly expect a triumph here before the chemotherapeutic conquest of less resistant organisms in a less protected environment, as with typhoid, erysipelas and bacterial endocarditis, to name a few typical examples. Probably some new success with some other bacterial infection will be needed to stimulate a new attack on the more difficult problem offered by tuberculosis.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British J. of Dermatology and Syphilis, London

64: 117-172 (March) 1932

*Further Observations on Etiology of Papular Urticaria (Lichen Urticatus). R. Hallam.—p. 117.
*Some Observations on Autohemotherapy. N. Burgess.—p. 124.
Survey of Modern Development of Leprosy Work (1917-1931), with Appreciation of Present Position. R. G. Cochrane.—p. 132.

**Etiology of Papular Urticaria (Lichen Urticatus).**—Hallam believes that papular urticaria is an allergic manifestation. Since the complaint may be controlled by detaining the child in the hospital for the night only, the exciting cause is probably associated with the home sleeping arrangements. A food factor is not the exciting cause.

**Autohemotherapy.**—According to Burgess, the action of whole-blood injections does not depend on the production of a leukocytosis. The hemoclasic crisis is not a satisfactory test for allergy. In the cases examined, no relation between whole-blood injections and the hemoclasic reaction was discovered. Whole-blood injections had no effect on the sedimentation rate of the red corpuscles as estimated by the method of Zeckwer and Goodell. Proteose was obtained from the urine of normal persons and those with various dermatoses. No constant effect on the production of proteose by single whole-blood injection could be demonstrated.

### British Journal of Ophthalmology, London

16: 129-192 (March) 1932

Short History of Ophthalmia During Egyptian Campaigns of 1798-1807. M. Meyerhof.—p. 129.
Treatment of Limbal Tumors with Radium. T. H. Butler.—p. 152.
*Intracapsular Extraction of Cataract: Analysis of Sixty-Seven Cases as Plea for Its Wider Adoption. R. C. J. Meyer.—p. 156.
Iris Anesthesia by Retrobulbar Injection and Paralysis of Orbicularis Oculi by Seventh Nerve Block. L. B. Somerville-Large.—p. 166.

**Intracapsular Extraction of Cataract.**—On the basis of his experiences in sixty-seven cases, Meyer enumerates the advantages of the intracapsular extraction of cataract thus: (1) applicability to immature cataract, which is technically easier than swollen mature cataract; (2) absolute lack of irritation of the eye during convalescence (this must be due to there being absolutely no capsule or cortex to irritate the eye, which remains quiet and white, showing no ciliary irritation whatever), and (3) early rupture of the lens capsule merely reducing the operation to the old and well known extracapsular extraction. The capsule ruptures either early or on delivery; in either case it does not matter. The author has never had one rupture half way, this is the operator's main fear; apparently it is groundless. The disadvantages of the operation are as follows: 1. Technically it is not so easy as the extraction out of the capsule. It is not a beginner's operation, but well within the reach of any surgeon of average capability. 2. The duration of operation is longer, owing to the injecting of procaine hydrochloride and the sewing of the conjunctiva, though the sedative and the procaine apparently keep the patient quiet, and the eye almost immobile. 3. There is no capsule to hold back the vitreous.

### British Medical Journal, London

1: 411-456 (March 5) 1932

Two Specimens of Early Human Ova. W. Shaw.—p. 411.
*Malignant Disease of Lungs: Radiographic Features. P. Kerley.—p. 416.
*Injury of Rectum Caused by Faulty Administration of an Enema. H. H. Rayner.—p. 419.
Pharmacologic Properties of Iso-Amylethyl Barbituric Acid (Amytal). R. C. Garry.—p. 421.
Some Interesting Drug Eruptions. H. Haldin-Davis.—p. 422.

**Malignant Disease of Lungs.**—Kerley states that there are two equally common roentgen manifestations of primary lung cancer. In one a lung or a lobe is involved in a pneumonic process, and in the other the disease appears to be limited to the hilus. Certain roentgen features are common to the two forms, but as a rule they maintain distinctive appearances to the end. The appearances of the lobar or pneumonic form vary with the number of lobes affected. Contraction of the lobe, as evidenced by displacement of the fissure, was first noted by roentgenologists and led to a revision of the preroentgenologic idea that neoplasms of the lung increased the thoracic contents. Primary lung cancer by obliteration of bronchi and destruction of lung tissue always diminishes the thoracic contents. On closer study of a roentgenogram of a lobar carcinoma, it will be observed that the opacity is densest near the root and diminishes in intensity toward the periphery. If a very hard picture is taken, one can often distinguish two opacities: the first an extremely dense one attached to and spreading from the hilus, the second a less dense one covering the affected lobe in all directions. These two shadows represent growth near the hilus and collapse in the periphery of the lobe. If the vascular markings of the lung are invisible in the light peripheral opacity and visible in the dense opacity near the root, one can diagnose carcinoma with certainty, for their is no other lobar pneumonic process that produces this dual effect. In all nonmalignant pneumonic processes the lung markings are either completely invisible or faintly visible in every part of the affected area. Diaphragmatic paralysis is an invaluable sign. A less well known disturbance of innervation associated with carcinoma of the lung is compression or invasion of the vagus. Pleural effusion, as a complication of the pneumonic or lobar form of carcinoma, is the bugbear of the radiologist, for it masks nearly everything. If the effusion is small it has no significance, but if, as so often happens in malignant conditions, the effusion is large, one is confronted with great difficulties. The visualization of enlarged bronchial or mediastinal lymph nodes is one of the most valuable diagnostic points and is, moreover, of considerable clinical significance, since it contraindicates surgical intervention. An equally frequent roentgen manifestation of bronchial carcinoma is the so-called hilar form, which is seen as a dense opacity round the root of the lung without collapse or consolidation in the peripheral parts of the affected lobe or lobes. This type of the disease is easier to diagnose than the pneumonic type, because there are few other lung diseases causing similar appearances. A sudden transition from the hilar type to the pneumonic type is not uncommon, and probably if one saw the disease early enough one would find it first as a small hilar opacity later causing lobar or lung collapse. Obstruction of the superior vena cava takes place earlier and more often with a growth of the hilar type than with one of the pneumonic type. It is obviously impossible to describe all the varying appearances that are to be seen in roentgenograms of pulmonary carcinoma. But there is one roentgen feature common to all malignant growths of the lung: there is never normal lung tissue between the shadow of the neoplasm and the shadow of the mediastinum.

**Rectal Injury Caused by Faulty Enema.**—Rayner reports a case of injury of the rectum caused by the faulty administration of an enema. He suspects that the injury is by no means so rare as it is believed to be, and that the distress of inflicting it may befall any nurse. Because the mishap may have the most disastrous consequences and because it is entirely avoidable, attention should be called to it with some emphasis, even if it is a very uncommon occurrence. The injury is always a grave one, for it causes sloughing of the mucous membrane of the anal canal and rectum, and it is commonly necessary to perform a temporary colostomy in order to promote healing of the extensive raw surface left after separation of the sloughs. Sometimes, in consequence of the dense cicatricial stricture that follows healing, the colostomy may have to be a permanent one. In some cases death has resulted from sloughing of the rectal wall into the peritoneal cavity, or from spread of sepsis along the fascial planes of the pelvis. In addition to the gravity of the injury there is another important consideration—the legal aspect. The essential factor in the production of the injury is the use of a hard conical nozzle, usually of bone, sometimes of glass. The injury is caused by forcing the tip of the nozzle through the mucosa of the anal canal. Penetration of the mucous membrane by the nozzle tip may occur in certain circumstances without gross or unpardonable carelessness on the part of the administrator. Such circumstances, for example, as a poor exposure of the perineum from bad lighting and faulty position of the patient, insufficient lubrication of the nozzle, the use of some force to overcome the resistance caused by inaccurate insertion of the nozzle, and an everted condition of the anal mucous membrane, as in prolapsed hemorrhoids, may combine to trap the nurse, particularly if she is comparatively inexperienced and therefore handicapped by a feeling of awkwardness in the giving of an enema. The nurse, unaware of the perilous position of the nozzle—for the actual puncture of the anal mucosa gives the patient little pain—proceeds to inject a strong solution of soap and water into the submucous layers of the anal canal. The enema fluid strips up the mucosa of the anus and rectum over a large area, the extent of which depends on the amount of the fluid that has been injected. The injection of fluid under strong pressure into the submucosa causes such great pain to the patient that the nurse soon realizes that something is amiss and stops the enema, but not before some damage has been inflicted. The patient may experience a sensation of nausea and faintness, or he may even collapse, but in most cases these constitutional disturbances quickly pass off after the abandonment of the enema; so, too, the intense pain diminishes and becomes a mere discomfort or bearing-down sensation, of which the patient makes no complaint. At this stage, then, to the nurse there may be no visible evidence of the injury—no swelling and no bleeding from the anus—and she ascribes the patient's distress during the injection to some abnormal sensitiveness on his part, and so no report of the incident may reach the medical man.

## Edinburgh Medical Journal

**39:** 121-228 (March) 1932

*Cause and Treatment of Displacements of Heart in Pulmonary Tuberculosis. C. Clayson.—p. 121.
Tuberculosis Schemes: Administrator and Clinician. A. S. M. MacGregor.—p. 126.
Some Observations on Death Rate from Tuberculosis in Glasgow. J. A. Wilson.—p. 131.
*Underlying Principles in Treatment of Bone and Joint Tuberculosis. A. Dale.—p. 142.
*Some Observations on Tuberculids. R. C. Low.—p. 154.
Pregnancy in Tuberculosis. J. H. Ferguson.—p. 165.
Human Tuberculosis of Bovine Origin. A. S. Griffith.—p. 177.
Incidence of Human and Bovine Types of Tuberculous Infection in Children Living in West of Scotland. J. W. S. Blacklock.—p. 190.

**Displacement of Heart in Pulmonary Tuberculosis.**—From a review of the literature, Clayson concludes that the main causes of cardiac displacements in pulmonary tuberculosis are fibrosis and pleuropericardial adhesions, associated or not with a previous pleural effusion. Persistent afebrile tachycardia is not necessarily an indication of active disease and may be due to a displaced heart. When the roentgenogram shows a displaced heart, treatment should not be postponed till symptoms occur. A trial should first be given to breathing exercises, and then, if embarrassing symptoms develop, to phrenic evulsion. Displacements of the heart may possibly be prevented by the systematic practice of breathing exercises, begun as early as is judged to be safe.

**Treatment of Bone and Joint Tuberculosis.**—According to Dale, the modern conception of the pathologic changes in bone and joint tuberculosis divides the treatment of the disease into two equally important parts. The lesion in the bone or joint is regarded as being secondary (with the exception of a few cases of direct infection) to a lesion elsewhere, usually in the lymph nodes, often hidden from view, as in the bracheobronchial or retroperitoneal groups. The spread to the bone or joint takes place by the blood stream, the tubercle bacilli reaching the circulation by way of the lymphatics. The patient must be viewed in a dual light. He is suffering from a general tuberculous infection and a localized tuberculous lesion. The latter is a local manifestation of the former. Treatment that aims at correcting the local condition, while disregarding the general infection, is necessarily unsound. The two must be treated simultaneously and with equal persistence. Even the complete eradication of the local focus, by excision or amputation, does not cure the patient. If treatment of this general condition is not continued, the persistence of the general infection may manifest itself in a further local outbreak.

**Tuberculids.**—Low states that in investigations on tuberculids some observers have noted positive observations of tubercle bacilli, either microscopically or by animal inoculation. Others have obtained negative results; but from analogy, especially in the work done with ringworm fungus in producing microsporids and trichophytids and with favus fungus in producing favids, one is safe to assume that the tubercle bacillus is actually present in all tuberculids and can be found if the lesion is examined early enough. The reaction produced between the bacillus and the allergic skin is so great that within a short time the bacillus is destroyed. Probably in all cases of tuberculid, provided the lesion was removed within two or three days, the tubercle bacillus could be shown to be present. In cases in which negative results were obtained, the lesion was examined too late. Another well known fact also supports this view. After an attack of measles, the Pirquet skin test, although previously positive, becomes negative for some weeks or months. If, during that negative period, the child gets a blood infection with the tubercle bacillus, instead of the bacilli, which lodge in the skin, producing a tuberculid which would destroy them, they cause no reaction and are the starting point of multiple patches of lupus vulgaris. The author believes, therefore, that one may take it as proved that the tuberculid is a reaction between the tubercle bacillus itself and the allergic skin.

## Lancet, London

**1:** 495-548 (March 5) 1932

Pathology and Treatment of Anemia. L. J. Witts.—p. 495.
*Electrocardiographic Changes During Treatment of Severe Diabetes. K. Shirley Smith and R. A. Hickling.—p. 501.
*Staphylococcal Toxin. P. N. Panton and F. C. O. Valentine.—p. 506.
*Hemorrhagic Purpura Following Scarlet Fever: Report of Two Cases in One Family. A. G. Gibson and F. G. Hobson.—p. 509.

**Electrocardiographic Changes in Severe Diabetes.**—Smith and Hickling took successive electrocardiograms during treatment in twenty diabetic persons of all ages. These were at first at intervals of a few days, and later of weeks and months. The tabulated results showed that the most pronounced changes occurred in patients below the age of 40, the T waves being commonly flattened in leads I and II and often diphasic in lead III. Increasing amplitude of the T waves in leads I and II, and the substitution of an upright for a diphasic T wave in lead III, were the effects most frequently observed during treatment. In two patients, inversion of the T wave in all leads was recorded at the outset. All these changes disappeared progressively during treatment, whether by diet alone or by diet and insulin. The most uniform change and restoration was observed in lead II, while the T wave in lead III was more easily influenced by treatment and less stable in its form and direction. Other occasional electrocardiographic changes occurring during treatment were progressive diminution of the P wave and progressive lessening of slurring in the Q-R-S complexes. The causal factors underlying the changes described were considered under the following structural and metabolic heads: (1) coronary sclerosis, (2) coronary intimal fatty deposition, (3) abnormal metabolic products, and (4) defective nutrition of the myocardium. On the basis of their observations, the authors conclude that the electrocardiographic changes produced by diabetes represent mainly a parenchymatous damage to the heart resulting from defective nutrition. Coronary disease, whether sclerotic and permanent or of an early reversible fatty type, probably occupies a subsidiary position in the production of abnormal electrocardiograms.

**Staphylococcal Toxin.**—Panton and Valentine prepared toxic filtrates from twenty-two strains of Staphylococcus aureus. Their capacity to hemolyze rabbit red cells, necrose rabbit's skin and destroy the leukocytes in human blood was estimated. The results confirm the observations of others that the hemolysin and necrotoxin vary closely together with no relation to the leukocidin. The lethal action for rabbits, when investigated, was found to vary with the hemolysin content of the filtrate. Comparison with the human lesions indicates that strains yielding strong leukocidin and weak hemolysin are commonly associated with acute severe infections and the reverse combination with long-standing superficial infection of the sycotic type. The association of certain combinations of toxins with certain types of staphylococcal infection suggests differences in the specific treatment of these conditions. The employment of an antiserum is chiefly efficacious against pyemic infection, and the important antibody in the serum is probably the antileukocidin. Two sycosis cases were, on the contrary, both associated with a strong hemolysin and weak leukocidin. These cases notoriously respond badly to vaccine treatment and are sometimes made worse by it. There is also some suggestion that they do worse with an autogenous than with a stock vaccine. Treatment with toxoid in these and possibly in other staphylococcal lesions is more rational than treatment by vaccine, and in the sycosis the toxoid should contain leukocidin and possibly the minimum amount of hemolysin. The authors have treated only two such cases, but both were carefully selected as examples of extreme chronicity, widespread lesions, and resistance to every form of treatment. The result in both cases was sufficiently encouraging to test the method further. Immunization by toxin or toxoid is, in theory, preferable to vaccine therapy. The vaccine dose comprises a roughly calculated number of dead bacteria, and a very uncertain amount of toxins, mixed in quite unknown proportions. The dose of toxoid can be accurately measured, and by a choice of toxin the relative proportions of the different constituents can be chosen at will. The comparative values of toxin and vaccine treatment can be determined only by thorough clinical trial.

**Hemorrhagic Purpura Following Scarlet Fever.**—Gibson and Hobson enumerate thus the unusual features of two cases of hemorrhagic purpura following scarlet fever which they observed: 1. Purpura hemorrhagica as a late sequela of scarlet fever appears to be extremely rare. 2. This complication developed in two children of the same family, sixteen and twenty-one days, respectively, after an attack of scarlet fever which clinically was of a mild type and unaccompanied by any evidence of unusual toxemia. 3. While the mode of death was characteristic of death from hemorrhage, the actual loss of blood evident in the one case subjected to postmortem examination was small in comparison with the clinical anemia. 4. In contrast with the case reported by Box and Massingham, there was no reduction in the platelets. 5. It would seem possible to conclude only that in these children there existed some unusual constitutional susceptibility to the scarlatinal toxin.

## Archives des Maladies du Coeur, Paris

**25: 73-136 (Feb.) 1932**

Physiopathology and Semeiology of Tonicity of Heart: Myocardial Dystonias. N. Pende.—p. 73.
*Transitory Agranulocytosis with Pultaceous Erythematous Angina. M. Roch, Mlle. E. Perrot and A. Sierro.—p. 94.
*Ventricular Fibrillation as Unrecognized Cause of Death in Diphtheria. J. Chalier and R. Froment.—p. 102.
*Clinical Diagnosis of Acute Leukemia. M. Szour.—p. 110.

**Transitory Agranulocytosis with Pultaceous Erythematous Angina.**—Roch and his co-workers describe a case in which agranulocytosis had permitted a rapid development of pulmonary gangrene which resulted in death despite a change in the blood picture to polymorphonuclear leukocytosis. Their observation leads them to believe that the blood disturbance is primary and that the infected foci, in which the ulceronecrotic angina is most frequent, are secondary. In comparing the results of their study with the agranulocytosis as defined by W. Schultz in 1922, they state that their case has the following differences: Their patient is a man, whereas Schultz reports the disease as predominant in women. The angina does not have the habitual ulceronecrotic character but rather an erythematous and pultaceous character. In spite of the seriousness and the intensity of the agranulocytosis, the patient began to improve; death was due to pulmonary gangrene, and then a polymorphonuclear leukocytosis had succeeded the agranulocytosis. The agranulocytosis is transitory and not as pronounced as in the instances reported by Schultz. A marked presence of myelocytes in the blood leads one to suspect a relationship between leukemia and agranulocytosis. In conclusion, the authors recommend a classification for agranulocytosis which would include (1) the agranulocytosis of W. Schultz and (2) symptomatic agranulocytosis due to (*a*) septicemia, (*b*) intoxication, (*c*) roentgen radiation, (*d*) medullary disturbance: pernicious anemia, thrombocytopenia, acute, myeloblastic leukemia and, perhaps, myeloid leukemia.

**Ventricular Fibrillation as Unrecognized Cause of Death in Diphtheria.**—Chalier and Froment state that, during the course of diphtheria, at least two kinds of grave and sometimes fatal arrhythmias occur; the one is a blockade as a result of an auriculoventricular dissociation, and the other is the grave extrasystoles, which announce a ventricular fibrillation. The cardiac mortality in diphtheria is not over 10 per cent. Death caused by ventricular fibrillation during diphtheria can be not only sudden but even unexpected (a diphtheritic heart can pass in five hours from normal to ventricular fibrillation). The author finally says that ventricular fibrillation as an ultimate manifestation of such infectious diseases as pneumonia, poliomyelitis and bronchopneumonia is of minimum interest, since it is a detail of an agonal physiopathology rather than a clinical phenomenon. In diphtheria it is otherwise, since the ventricular fibrillation is manifested in the hours or the days preceding death and the prefibrillatory tachyarrhythmia may be one of the first and only signs for the prognosis of a fatal issue.

**Clinical Diagnosis of Acute Leukemia.**—After a discussion of two case histories, Szour concludes that the absence of pathologic lymphocytes does not distinguish an acute aplastic anemia from an acute lymphatic leukemia. Modern authors consider an acute leukemia as a general atypical reaction of the hematopoietic apparatus with toxic and bacterial factors. In a clinical study the diagnosis should be exact and as limited as possible, and a prognosis as certain as possible. The fact that very marked anemia can occur in the course of chronic, acute or contagious diseases that usually do not cause a grave anemia ought to be remembered in differential diagnosis and prognosis, since the anemia is an expression of a disease of the hematopoietic system or, better, a functional insufficiency of that system. Certain cases of acute leukemia can occur not only without manifestations of the hemorrhagic diathesis, without ulcerations in the mouth and elsewhere, without visible hypertrophy of the lymph nodes and the spleen, or increase in the number of white cells in the peripheral blood, but also without qualitative changes of the white cells in the peripheral vessels. The acute leukemia can last several months; the acuity of that disease is then a relative thing. The violence and the acuity of the evolution of the acute leukemia in some instances ought to be related to the terminal periods of that disease. The final periods are sometimes preceded by prolonged phases of hidden (occult) acute leukemia in which the more characteristic qualities are general prostration, anemia, a subfebrile state or, more frequently, slight oscillations in temperature. These signs are not characteristic for a definite disease; they do not give a solid basis for a diagnosis. The addition to the symptoms of bleeding of the gums or other bloody effusions may also in certain cases possess a value in differential diagnosis.

## Lyon Chirurgical

**29: 1-136 (Jan.-Feb.) 1932**

*Benign Tumors of Pelvis. Tavernier and Pouzet.—p. 9.
*Calcified Bursitis. E. Naz and S. Kadrnka.—p. 25.
Twenty Cecocolic Resections (Sixteen in Two Stages). R. Leriche.—p. 48.
Occlusive Sarcoma of Ileum: Resection with Ileostomy and Cure Lasting Twenty-Four Months. R. Leriche.—p. 50.
Resection in Two Stages of 1.9 Meters of Small Intestine for Multiple Tuberculous Stenosis. R. Leriche.—p. 53.
Ileocecocolic Resection in Two Stages for What Proved to Be a Posterior Appendicitis. R. Leriche.—p. 55.

**Benign Tumors of Pelvis.**—According to Tavernier and Pouzet, malignant tumors of the pelvis with the exception of sarcoma have, on the whole, a sharply defined character; roentgenograms of them are distinct and their evolution is rapid. The benign tumors of the pelvis are far different; they have generally a proteiform aspect in the roentgenograms, their evolution is slow, and they have a long latent period unless revealed by mechanical accidents. The authors report a fibroma, a myeloplaxoma, an unclassified tumor, an hydatid cyst, and two chondromas. In all the benign tumors, with the exception of the chondroma, the iliac bone is enlarged *en masse,* but one can distinguish two types, a spongy bone with a special trabeculation but without a destructive aspect (the fibroma, the undifferentiated tumor) and a spongy bone with cavities and zones of destruction (myeloplaxoma, and the hydatid cyst). The diagnosis of tumors of the pelvis may be very delicate but aside from secondary tumors and chondromas the tumors are easy to recognize when one has once seen the image. Outside of these cases and clinically it is a question of large spongy bone, which may be an osteosarcoma, a benign tumor, an inflammatory lesion and usually lesions in adolescents or young adults. The osteosarcoma evolves rapidly, generally with pain, and soon rarefies the ilium. The benign tumors, on the contrary, are insidious; there are no recognizable symptoms and the increase in volume is slow. The inflammatory lesions are usually cold or warm abscesses. Roentgenograms give the chondroma a special character: the mass adjacent to the bone has a cauliflower aspect with disseminated ossifications in the tumor. The series of benign tumors enlarge the ilium in a regular manner with variable trabeculation. The persistence of the cortex, even though deformed, is an apparent sign of benignity. Finally there is the large ilium, more or less spongy, with areas of destroyed bone. In the latter condition the diagnosis between osteosarcoma, hydatid cyst, and a myeloplaxoma is difficult; an explorative osteotomy may sometimes lead to serious accidents (the patient with a myeloplaxoma had a hemorrhage after a biopsy, infected his wound and then his tumor, and died). The prognosis is unusual because extirpation of tumors of the pelvis is difficult. The development, although slow, causes progressive alterations in the solidity of the pelvis and finally serious sequelae. Chondromas of the pelvis are not always benign and after a slow growth may suddenly increase in volume; removal is followed by recurrence. Extirpation of tumors of the iliac wing *en masse* would be ideal but, unfortunately, when they have spread to the hip the intervention becomes quite extensive. In every case resection is less grave than curettage of the lesions (the latter caused death as a result of shock in their patient with an hydatid cyst) and the cavitary surfaces are easily infected (the patient with a fibroma died of infection). When a complete operation cannot be performed it is perhaps best to refrain from operating because the patient may lead an active life for a long time despite the lesion, and the operative mortality is high.

**Calcified Bursitis.**—Naz and Kadrnka state that inflammatory conditions of the bursae are common, but rarely is there an evolution toward calcification. The better known calcified bursae are found in the subacromial and subdeltoid regions and are designated as scapulohumeral periarthritis or disease of Duplay. They discuss a personal observation of bursolithiasis. Roentgen examination revealed a far advanced stage of calcification. The localization and the image of the calcified bursitis involved the whole question of the diagnosis of infections of the elbow which are accompanied by an ossifying or calcifying hyperplasia and especially the capsular chondromatosis, which has been described but without anatomic verification. The bursolithiasis was subtricipital, the size of a small egg, first noticed about six months previously following a traumatism, and presented few clinical signs. The bursitis seemed to have been brought on by the peculiar work which the young woman was doing (ringing the church bells of the village). The case history, the pathologic anatomy and histology, the etiology, symptomatology, roentgenology and a classification for a differential diagnosis are discussed in detail. The authors state that the prognosis in calcified bursitis is generally good; the only thing to fear is the infection of the bursa and its perforation into the neighboring articulation. In a calcified bursitis a traumatism may produce an acute or subacute inflammatory process that is always aseptic; in that case, surgical intervention is an absolute indication and it should be early if one wishes to avoid a particularly rapid muscular atrophy. To avoid a recurrence, the extirpation of the bursa ought to be total and include the capsule in its entirety. In chronic cases, when the condition of the patient permits, one can try a conservative treatment whose duration will always be long and the result of which remains uncertain. The patient may be treated by diathermy, massage, mobilization, roentgen therapy and crenotherapy. Although good results have been reported with roentgen therapy, the authors recommend total extirpation as the treatment of choice.

## Paris Médical

1: 181-192 (Feb. 27) 1932

*Alimentary Anemias in Infancy. J. Cathala.—p. 181.
*Suppurating Gonococcic Thyroiditis Following Gonococcemia with Polyarticular Rheumatism and Gonococcic Nodular Erythema. C. Alexandresco-Dersca and D. Jonesco.—p. 188.
Aphorisms of Transthoracic Intrapulmonary Injection Called Lardage of Lung. G. Rosenthal.—p. 189.
Reduction of Shoulder Dislocation. A. Schwartz.—p. 191.

**Alimentary Anemias in Infancy.**—Cathala describes alimentary anemia as an evolutive type of curable anemia which at a certain age attacks some children submitted to certain diets. This anemia appears after the age of 6 or 8 months, is frequent at the end of the first and during the second year, and is not found any more after the third year. Although the time of its appearance coincides with the period of weaning there is no relation of effect and cause. It attacks especially certain children fed artificially and exclusively with excessive quantities (more than 1 liter) of cow's or goat's milk, and depends on some constitutional debilitating factor or a familial predisposition. Striking pallor of the skin and mucous membranes in an apathetic child, aged more than 6 months and less than 3 years, of regular weight and growth, but with flabby musculature and retardation of psychomotor development, will raise the suspicion of anemia, and a blood examination will establish the diagnosis. Splenomegaly may be present, auscultation may reveal fine crepitant and sibilant râles due to edema of the lungs, and there may be a slight rise in the temperature as a result of the nutritive disturbances. Often, but not always, alimentary anemia is associated with rickets; but there is no proportionate relation between the blood and the bone disturbances, and their respective treatments are totally different. Fever, rhinopharyngitis, bronchitis, pulmonary edema and even otitis accompany alimentary anemia, and dyspepsia or diarrhea is not uncommon. The hematologic formula is not specific but gives information on the degree and type of the anemia and on the reaction of the organism to the loss of red blood corpuscles. The author discusses the theories advanced by different authors to explain the occurrence of this anemia and outlines the treatment, which consists in an appropriate correction of the diet. The diet should be liberalized and completed with the juices of fresh fruits and vegetables, purées of green vegetables, meat juice, yolk of egg and stewed fruits, especially apples, the quantity of milk given being proportionately reduced. In complicated cases the necessary therapeutic measures must be instituted in order to obtain good results from the changed diet.

**Suppurating Gonococcic Thyroiditis.**—Alexandresco-Dersca and Jonesco report the case of a female patient suffering from gonorrhea with fever and very early gonorrheal localizations in the metacarpophalangeal articulation of the left and the right medius, the left radiocarpal and scapulohumeral articulations, the left elbow and the right knee. One week after the onset of the disease, localized pain on swallowing appeared in the right thyroid region with nocturnal copious perspirations, fever and chills. Painful polymorphous erythema nodosum lasting two weeks was a subsequent manifestation, while the right thyroid region was red, swollen and very painful on palpation: 12 cc. of pus was obtained from this region by exploratory puncture. Twenty-one autogenous vaccine injections, given subcutaneously one each day, combined with routine treatment have cured this patient.

## Revue Méd.-Chir. des Maladies du Foie, Paris

7: 1-80 (Jan.-Feb.) 1932

*Tumors of Subhepatic Region: Eccentric Enlargement of Duodenal Outline. J. Didiée.—p. 5.
Reticulo-Endothelial System. C. P. Leblond and M. Ansel.—p. 16.
*Laboratory Research in Diseases of Liver. G. Parturier.—p. 24.
Study of Choluria Using Stalagmometry Combined with Hay's Test. L. Béthoux and P. Mounier.—p. 50.

**Tumors of Subhepatic Region.**—Didiée states that roentgen study of subhepatic problems assists sometimes materially in the localization and investigation of tumors; the modifications in the outline of the duodenum help to localize the abnormal mass found by palpation. The author describes a case in which roentgenographic in addition to clinical examination pointed to a large tumor lying entirely above the mesocolon and in addition retroduodenally to the inside of the duodenal circle, which it displaced eccentrically. Examination at necropsy showed a large, lobulated mass projecting into the duodenal outline, displacing the stomach upward and anteriorly and convex in front of the second and third portions of the duodenum; at this level the pancreas was visible, pressed against the anterior face of the tumor but remaining distinct from it. The mass extended to the posterior abdominal wall and enclosed the aorta, which traversed it from end to end. The rest of the abdominal cavity (especially the spleen) showed nothing abnormal. The cancerous mass was lardaceous and yellowish, with several areas of softening having the appearance of ecchymoses. The author concludes that the clinical history, the physical examination and the laboratory observations indicate a malignant tumor, deep in the subhepatic region, above the mesocolon, involving the connective tissue but no vital organ; the roentgenograms confirmed the clinical indications and localized the neoplasm at the level of the head of the pancreas behind and within the duodenal outline.

**Laboratory Research in Diseases of Liver.**—Parturier discusses the technic of duodenal intubation and its clinical applications in icterus and a painful syndrome without icterus. He concludes that duodenal intubation cannot in itself suffice to solve hepatopancreaticoduodenal problems; but its usefulness in a great number of cases cannot be denied. Its domain will certainly become extended when more is learned about the functions of elimination of the liver. Duodenal intubation may pass through the diagnostic and enter the therapeutic realm. Gastric or duodenal ulcers may be placed at rest; some authors, however, fear a method that brings a foreign body in contact with the lesion. Nevertheless the fact that considerable relief is experienced following the introduction of a duodenal tube and feeding through it may be considered as an argument in favor of an ulcer. Other authors have proposed and successfully used the same method in cholecystitis.

## Schweizerische medizinische Wochenschrift, Basel

**62:** 225-248 (March 5) 1932

The Individual as Object of Therapeutics T. Oettli.—p. 225.
Electrocardiogram in Poisoning with Sodium Mono-Iodo-Acetate. W. Frey, W. Berger and H. Pfister.—p. 230.
*Pharmacotherapy of Arteriosclerosis. T. Gordonoff.—p. 232.
Sodium Bicarbonate and Citric Acid. F. Axmacher and H. Süllmann.—p. 236.

**Pharmacotherapy of Arteriosclerosis.**—Gordonoff ascribes the lack of an effective therapeutic method for arteriosclerosis to the fact that its etiology is as yet not fully understood, and that it is difficult to produce it in animals. But he further points out that Russian authors administered to rabbits cholesterol in sunflower oil and thus produced changes in various organs, but particularly in the aorta and in the larger arteries, which can be considered as an artificial sclerosis. The author employed this animal experiment to study the therapeutic value of various remedies that have been recommended for the treatment of arteriosclerosis, and he reports in detail his studies on the efficacy of chlorophyll. A series of control animals was given only cholesterol. A second group of animals was given chlorophyll and cholesterol. A third series was first treated for several weeks with chlorophyll, and then this was discontinued and cholesterol was given. To a fourth group he first administered cholesterol until hypercholesteremia had developed and then began to give chlorophyll. These experiments, the outcome of which is shown in charts and tables, revealed an antagonism between chlorophyll and cholesterol, in that the cholesterol content was reduced after chlorophyll administration. It is difficult to state to what this action of chlorophyll is due. The author is inclined to ascribe it largely to the reticulo-endothelial system, for not only does this system store cholesterol but recent researches indicate that it also takes an active part in the cholesterol metabolism. Chlorophyll is stored in the spleen, liver and lymph nodes, and it is possible that this pigment substance has a slight blocking effect and by thus inhibiting the function of the reticulo-endothelial system the resorption of cholesterol is partially or wholly prevented.

## Annali Italiani di Chirurgia, Naples

**11:** 1-95 (Jan. 31) 1932

*Posttraumatic Jacksonian Epilepsy: Surgical Treatment. R. Alessandri.—p. 1.
Pseudocholecystic Syndrome in Women with Disturbances of Organs of Reproduction. D. Taddei.—p. 9.
Angioma of Striated Muscles: Pathogenesis. O. Bartoli.—p. 16.
*Intestinal Ureterostomy and Cutaneous Ureterostomy. M. Cilento.—p. 25.
*Bilateral Subdiaphragmatic Resection of Vagus Nerves. G. Pieri.—p. 53.
Removal of Needle from Right Ventricle of Heart. V. Simeoni.—p. 60.

**Posttraumatic Jacksonian Epilepsy: Surgical Treatment.**—Alessandri, on the basis of many cases that came to operation, outlines his ideas on surgical treatment in cases of posttraumatic jacksonian epilepsy, which consists essentially in seeking to restore the local anatomic conditions as far as possible to the normal state. With respect to the bone lesion, it is necessary to reconstruct the irregular margins occasioned by the loss of cranial substance, and especially to remove shreds of tissue buried in the cavity, and to repair the breach with a flap derived from the external cortex and left adherent to the pericranium. If there is a cicatrix or absence of the dura, the latter should be replaced by a free autotransplant of fascia. If there is a cicatrix buried in the cerebral cortical substance, it should be excised and a free autotransplant of muscular tissue employed to arrest the hemorrhage and fill out the cavity. It is advantageous also, if the cranial teguments are too thin or too much scarred, to cover the pericranial bone flap with normal skin, which may be taken with a torsion flap from the adjacent tissues. On the basis of his clinical experience and experimental researches, the use of small fragments of muscle for hemostatic purposes on bleeding points of the cerebral cortex is preferable with heterotransplants (rabbit or pigeon). Also extracts of muscular tissue have been tried and have been found capable of marked hemostatic action, and have the advantage of being always ready at hand and not leaving any foreign body in the brain. After removal of cerebral tumors or cicatrices or opening of cysts in the cortical substance, it will be necessary to employ some hemostatic action and at the same time to fill the cavity. On the basis of three operations performed and of experimental researches, the author thinks that the best results are secured with muscular autotransplants.

**Intestinal Ureterostomy and Cutaneous Ureterostomy.**—Cilento studied experimentally the results of intestinal ureterostomy with various operative methods, and by means of functional control with methiodal he ascertained the behavior of the function of renal elimination following the intervention. He studied also the results of cutaneous ureterostomy and concludes that the latter operation is preferable and that in any event bilateral intestinal ureterostomy must be performed in two stages, and after having controlled the function of the opposite kidney by means of descending pyelography, following always the extraperitoneal route and the technic of the submucous implant.

**Bilateral Subdiaphragmatic Resection of Vagus Nerves.**—Pieri performed in man, in fourteen cases, bilateral resection of the vagus nerves below the diaphragm, for gastric disorders. He describes the peculiar anatomic features and gives his personal technic. By means of supra-umbilical median laparotomy combined with resection of the xiphoid process of the sternum, the abdominal segment of the esophagus was exposed; the peritoneum that covered it was incised transversely, and the branches of the vagus nerves were isolated and divided, the left vagus anterior to the esophagus and the right vagus posterior to the esophagus and to the right. The operation was always well tolerated and did not cause appreciable untoward incidents. In performing the operation, the author did not apply anesthesia to the nerve trunks nor supplementary gastro-enterostomy.

## Archivio Italiano di Chirurgia, Bologna

**30:** 581-686 (Dec.) 1931

*Diagnosis and Prognosis of Acute Abdominal Syndromes. C. Trinchera.—p. 581.
Action of Testicular Hormone on Process of Cicatrization. S. Gussio and S. Gibilisco.—p. 610.
Action of Nephrogenic Toxins. V. Ghiron and S. Scandurra.—p. 645.
*Preferred Method of Cholecystectomy. E. Leo.—p. 655.

**Diagnosis and Prognosis of Acute Abdominal Syndromes.**—Trinchera, taking as his point of departure the results secured in one of his previous researches, repeated the same researches (chlorides and urea in the urine and in the blood; indican, acetones and biliary pigments in the urine) in a systematic manner, extending them in the clinical field to patients with acute syndromes of the abdomen: occlusions, hernial strangulations, generalized peritonitis. To control the clinical observations, similar experimental researches were carried out, provoking in dogs acute diffuse peritonitis and acute occlusions. From the ensemble of these clinical and experimental researches, the author was able to make the following observations: a constant and marked increase of the xanthoproteic reaction, the rose bengal test and the test for indican and bile pigments and of urea in the blood and of indican in the urine in acute intestinal occlusions; negligible changes in the chronic occlusion syndromes. The maximal increase of these values was found in the acute types of occlusion complicated by active peritonitis and in acute generalized peritonitis. In hernial strangulations the increase is moderate or slight in cases not followed by resection of the strangulated loop, while it is considerable in the cases in which such intervention is necessary. In dogs operated on for the purpose of producing simple occlusions, the author found at necropsy distention and moderate though very evident nutritional changes in the proximal stump.

**Preferred Method of Cholecystectomy.**—Leo criticizes the various methods of cholecystectomy, with and without drainage, subserous and otherwise. He attacks vigorously subserous cholecystectomy, giving his reasons for opposing it, and describes his own method of total cholecystectomy, without drainage, characterized by a new treatment of the gallbladder stump, which is covered with a pedunculated flap of the peritoneum of the gallbladder itself, or of the hepatic recess, to which peritonization, hemostasis and biliostasis by means of a special suture is applied.

## Policlinico, Rome

**39:** 165-204 (Feb. 1) 1932. Practical Section

Conservative Surgery and Benefits Derived from a Urethral Retention Sound. G. Baggio.—p. 165.
Disorders of Neck of Bladder. E. Mingazzini.—p. 168.
Rare Traumatic Lesion of Female Urethra and of Erectile Organs of Vulva. G. Babini.—p. 178.
A Simple Procedure to Open Catheters Introduced into the Ureters, Without Modifying Concentration of Urine. D. Taddel.—p. 181.

**39:** 205-242 (Feb. 8) 1932. Practical Section

*Deformation of Pupil Following Bilateral Pressure on Eyeball as Sure Sign of Death. L. Tonelli.—p. 205.
Clinical and Experimental Study on Use of "Avertin" as an Anesthetic. G. La Cava.—p. 210.
Dermoid Cyst of Mesentery. E. Cortella.—p. 217.

**Deformation of Pupil Following Pressure on Eyeball as Sign of Death.**—Tonelli states that the sign of deformation of the pupil after death is distinct and easy to elicit. In a living person (also in a state of apparent death), energetic pressure applied with the finger to two or more sides of the eyeball does not produce any modification of the round contour of the pupil, whereas, in a dead person, bilateral or plurilateral pressure applied to the eye, even though slight, produces, promptly, easily observable deformation of the pupil, the pupil becoming oval, triangular or polygonal, depending on the directions in which the pressure is applied. The author, on the basis of 655 observations, emphasizes the practical value of the sign of pupillary deformation as a reliable proof of death.

## Archivos de Medicina, Cirugía y Espec., Madrid

**35:** 161-180 (Feb. 27) 1932

Roentgen Examination of Gastric Mucosa. H. G. Mogena.—p. 161.
*New Method of Lumbar Anesthesia, the So-Called Peridural Anesthesia. J. M. Martínez Sagarra.—p. 165.

**The So-Called Peridural Anesthesia.**—Martínez Sagarra describes a new method of lumbar anesthesia, the so-called peridural anesthesia, according to Dogliotti's technic (injection of the anesthetic into the epidural space, without perforation of the dura mater). The patient is prepared in the same manner as if he were going to be given spinal anesthesia. The level at which the injection is to be made is determined according to the region in which the operation is going to be performed. A short needle, mounted on a mandrin, is introduced slowly until it passes beyond the resistance offered by the yellow ligaments of the vertebral laminae. The mandrin is then detached from the needle while the latter is left in place. If cerebrospinal fluid does not ooze through the needle, it is an indication that the needle's point is in the epidural space, where the injection should be made. Without moving the needle, one connects a syringe of 10 cc. capacity, filled with 10 cc. of physiologic solution of sodium chloride, and slowly injects its contents. The epidural space offers no resistance to the injection. In case of resistance, a slight withdrawal of the needle places it in the proper location. Then a syringe of 50 cc. capacity (of the Luer type), filled with 50 cc. of a 1 per cent solution of procaine hydrochloride is connected. As the important point before giving the injection is to be sure that the needle did not perforate the dura and that the injection is made in the epidural space, only 10 cc. of the anesthetic is given first. The absence of symptoms, which commonly appear in five minutes in spinal anesthesia, gives one the proof of the proper position of the needle in the peridural space, and the injection may be slowly continued until the patient receives from 25 to 50 cc. of the anesthetic. The needle and the syringe are then withdrawn together. Twenty minutes should elapse between the injection and the beginning of the operation to obtain a complete anesthesia. During this time the patient is instructed to keep in the proper position so as to obtain the larger displacement of the anesthetic toward the nerve roots that supply the given operative area. Peridural anesthesia is safer and gives better results than spinal and paravertebral anesthesia because of the absence of shock and of postanesthetic complications (intense headache, due to the loss of cerebrospinal fluid through the opening of the puncture, and sometimes relaxation of the sphincters or retention of the urine), the simplicity of the technic by performing only one puncture, and its longer duration (more than three hours). Extremely nervous patients may present during the operation either slight nervous disturbances or a diminished arterial pressure and peripheral vasoconstriction with marked paleness. The inhalation of a few drops of ether or chloroform by the patient permits one to finish the operation without any more nervous disturbances, while the injection of 1 cc. of caffeine improves the arterial or vascular pressure. The method gives satisfactory results in 85 per cent of the cases. Its principal indication is for lumbar and upper abdominal operations.

## Deutsche medizinische Wochenschrift, Leipzig

**58:** 321-358 (Feb. 26) 1932. Partial Index

Teaching Staff, Student Body and State Supervision in German Universities. W. Hellpach.—p. 321.
*Practical Significance of Arterial Atony for Development of Arteriosclerosis. J. Plesch.—p. 325.
Clinical Significance of Seroreaction for Carcinoma According to Fuchs. von Falkenhausen.—p. 329.
Traumatic Diaphragmatic Hernia and Significance of Roentgenoscopy for Its Detection. S. Samuelson.—p. 332.
Bee Venom in Treatment of Rheumatic Diseases. W. Fehlow.—p. 334.
Decrease in Tuberculosis Mortality. L. Ascher.—p. 341.

**Significance of Arterial Atony for Development of Arteriosclerosis.**—Plesch maintains that arteriosclerosis is only a partial manifestation of a systemic disease; that it is not restricted to certain parts but involves at once the entire vascular system; that the disease may develop in persons of all ages, and that it may be arrested. He thinks that during the early stage it is curable, and that even during the later stages it can be favorably influenced. It is not necessarily a disease of senility, which is progressive and incurable. Following these introductory statements the author brings, in the main portion of his article, first pathologico-anatomic proofs for his thesis. In discussing the etiology he expresses the opinion that every influence capable of weakening the organism so that a general atony results is a cause of arterial atony and of sclerosis. As a statistical argument in favor of his theory that arteriosclerosis is not necessarily a disease of senility, he cites the fact that it was found in many of the young soldiers who died during the war. Of the clinical proofs for his theses, he first discusses the blood pressure. He points out that the minimal blood pressure is one of the most reliable indicators of the condition of the circulation. In arteriosclerosis the minimal pressure is usually increased, even when the maximal pressure does not yet show a noticeable increase. For this reason the author advises that the term hypertension should be applied to the minimal pressure rather than to the maximal pressure. In regard to the quantity of blood, he states that it is generally increased. After discussing the roentgenologic signs on the aorta, he calls attention to one of the most characteristic symptoms, namely, the serpentine course of the temporal artery. Other symptoms that he discusses are angina pectoris, changes in the bulbus oculi and elevation of the diaphragm. As the first therapeutic measure the reduction of the blood pressure is recommended, which is more readily obtained if the patient lies down. It is also necessary to reduce the quantity of the circulating blood. In presclerotic plethora, venesection has proved valuable. But it is also possible to reduce the amount of blood by a diet with restricted amounts of nitrogen and of sodium chloride intake. In the majority of cases, cardiac stimulants can be dispensed with. Prolonged administration of small doses of potassium iodide is more harmful than good, but if arteriocapillary fibrosis has already set in, potassium iodide should be given in large doses (up to 8 Gm. daily) for about ten days. This treatment may be repeated two or three times at intervals of ten days. To counteract meteorism, the author recommends medication with tincture of asafetida.

## Klinische Wochenschrift, Berlin

**11:** 353-400 (Feb. 27) 1932

Microscopically Visible Endogenous Iron Metabolism. G. Wallbach.—p. 353.
Quantitative Modification of Circulation in Human Beings. K. Hartl.—p. 356.
*Aspects of Enterococcic Endocarditis. G. Rosenberg.—p. 359.
*Influence of Epinephrine on Diastolic Blood Pressure in Aortic Insufficiency and in Exophthalmic Goiter Similar to That in Beriberi. W. C. Aalsmeer.—p. 362.
Influence of Thyroxin on "Avertin" Concentration in Blood. W. Nell.—p. 367.
Pathogenesis of Urea Retention ot Extrarenal Origin. A. Jezler.—p. 370.
Incomplete and Complete Genital Cycle of White Mice. C. Clauberg.—p. 373.
Severe Anemias Following Total Resection of Stomach. K. Gutzeit.—p. 376.
Significance of Posterior Lobe of Hypophysis for Lactation. E. Fauvet.—p. 377.
Posttonsillitic Sepsis. C. Hirsch —p. 377.

**Aspects of Enterococcic Endocarditis.**—In the introduction, Rosenberg calls attention to studies by other investigators, which revealed that the clinical aspects of endocarditis lenta may exist although Streptococcus viridans is not present. He then describes a case of his own observation with the aspects of endocarditis lenta. In the course of the disease, several blood cultures were made. The pathogenic organism showed variable qualities, for in the first culture it showed characteristics that indicated its position between type A and type B of enterococci. The later cultures always revealed the type B enterococcus. It is emphasized that the term endocarditis lenta should be reserved for those infections of the endocardium which are caused by Streptococcus viridans. This demand is based on the experience that other pathogenic organisms, particularly enterococci, do not cause a typical endocarditis lenta as Schottmüller describes it. Endocarditis caused by enterococci differs from endocarditis lenta, especially in its pathologico-anatomic aspects, in that in enterococcic endocarditis the infarcts are infected, puriform and softened.

**Influence of Epinephrine on Diastolic Blood Pressure.**—Aalsmeer relates that in studying the blood pressure of patients with beriberi it was found that the subcutaneous injection of 1 mg. of epinephrine produced a peculiar circulatory manifestation, in that the maximal blood pressure increased only occasionally, whereas the minimal blood pressure decreased always systematically. This decrease was the more marked, the further advanced the disease was. The author found that this manifestation not only gave information about the type of the circulatory disturbance but also was valuable in determining the efficacy of a therapeutic measure, for, as the patient's condition improves, this sign gradually disappears. Since certain aspects of the circulatory disturbance of beriberi, such as increase in pulsation and the decrease in the minimal pressure, are also present in aortic insufficiency and in exophthalmic goiter, it was decided to make the epinephrine test also on patients with these disorders. It was found that the epinephrine reaction in patients with aortic insufficiency or with exophthalmic goiter showed, according to the degree of the disturbance in the peripheral circulation, a surprising similarity with that in patients with beriberi. The author thinks that the epinephrine effect in combination with the minimal pressure gives a better indication of the degree of the circulatory insufficiency than the so-called pulse pressure.

## Medizinische Klinik, Berlin

**28:** 293-316 (Feb. 26) 1932

*Biologic Curve of Leukocytes as Indicator of Course of Disease: Its Practical Significance. V. Schilling.—p. 283.
Crystallographic Analogies to Immunity, Infection and Stimulation Conduction. A. Tschermak-Seysenegg.—p. 287.
Fatal Pulmonary Embolism and Surgery of Goiter. V. Lieblein.—p. 292.
Problem of Dosage in Acetarsone Treatment of Congenital Syphilis. W. Stern.—p. 295.
Therapy of Encephalitic Sequelae. S. Muntner.—p. 295.
Conservative Treatment of Muscular Torticollis. M. Kollmann.—p. 296.
Influence of Administration of Phosphate and Creatine on Physical Capacity. R. Nothhaas.—p. 297.
Dry Convalescent Serum. A. Lichtenstein.—p. 299.

**28:** 317-350 (March 4) 1932

Protein Therapy. R. Schmidt.—p. 317.
*Biologic Curve of Leukocytes as Indicator of Course of Disease: Its Practical Significance. V. Schilling.—p. 319.
How to Protect Obstetricians Against Charge of Carelessness. W. Lüttge.—p. 323.
Atypical Ulcers of Bladder. K. Heusch.—p. 325.
Results of Medical Examination for Occupational Fitness of Drivers of Motor Vehicles. C. Heidepriem.—p. 329.
Is Sarcoma Curable? A. Hintze.—p. 331.
Disturbances During Dentition. F. Rothenberg.—p. 333.
Law of Irradiation of Autonomic Reflexes. B. Kisch.—p. 334.
Treatment of Endocrine Obesity by Means of Combination of Thyroid Substance with Potassium and Phosphoric Acid. Gertrud Koehler.—p. 335.

**Biologic Curve of Leukocytes as Indicator of Course of Disease.**—Schilling calls attention to the fact that, when the study of the leukocytic blood picture was first begun, it was assumed that certain pathogenic organisms produced typical changes, such as a monocytosis in malaria. But in due time it was recognized that the main characteristics of a blood picture were not determined by the type of the pathogenic organism but that the various phases of the biologic curve of the leukocytes corresponded to certain reactions of the patient's organism. It was found that during the progressive stage of the disease neutrophilia predominates, at the time of the crisis there is a monocytosis, and during the period of convalescence there is an increase in the lymphocytes and in the eosinophils. These three phases correspond to the reactions of the three defense systems of the organism; namely, the bone marrow, the reticular monocytic system and the lymphatic system. After thus explaining the foundations of the simple biologic curve, the author shows the course it takes in the event that the virulence or special development of the pathogenic organism leads it into different routes. As an example he takes the artificial malaria infection. He further discusses the significance of the leukocyte curve in gynecology. During a normal delivery the leukocyte curve usually presents the aspects of a mild infection or of a slight injury. Considerable changes are noticeable during septic puerperal processes. If an infection takes a malignant course, the blood picture shows a constantly increasing neutrophilia, and this tendency is not interrupted even during a surgical intervention. The author further shows the significance of the leukocyte curve during such conditions as sandfly fever, benign erysipelas, recurrent fever, measles, pneumonia, typhoid, tuberculosis and even psychic disorders. In the conclusion he refutes the statement that this form of examination of the blood is too specialistic. He emphasizes that it is a reliable method of observation at the bedside, and that it gives indications for therapeutic measures.

## Monatsschrift für Kinderheilkunde, Berlin

**52:** 1-176 (Feb. 23) 1932

*Intracranial Hemorrhage During Birth: Clinical Diagnosis. W. Catel.—p. 1.
*Cause of Death in Premature Birth. H. G. Creutzfeldt and A. Peiper.—p. 24.
Central Hyperpyrexia During Childhood. M. Weichsel.—p. 37.
Nitrogen Metabolism in Convalescing Children During Sojourn on Sea Shore. H. Schadow and F. Roeloffs.—p. 50.
Occurrence of Colon Bacteria in Stomach and Feces of Premature Infants. Susanne Seyffarth.—p. 73.
Occurrence in Blood Serum of Egg and Milk Antibodies Effecting Complement Fixation. Alexandra Strobl and A. Wasitzky.—p. 95.
*Treatment of Whooping Cough by Means of Bordet Vaccine. M. Weichsel.—p. 106.
Chronic Pyuria in Infants and Small Children: Experiences in Examination and Treatment. W. Grävinghoff and H. Viethen.—p. 117.
Acidity of Cerebrospinal Fluid in Intoxication of Nurslings. Hilde Bruch, F. von Graevenitz and S. Rosenbaum.—p. 135.
Unemployment and Development of Children and of Young Persons. E. Schlesinger.—p. 146.
Idem. A. Keller.—p. 150.
Conservative Treatment of Empyema. K. Lewkowicz.—p. 151.

**Intracranial Hemorrhage During Birth.**—Catel shows that, with the aid of the simultaneous quantitative determination of bilirubin in the serum and in the cerebrospinal fluid, it is possible to diagnose intracranial injuries received during birth while the child is still alive. Although the number of cases in which this was possible is as yet not large, the method has the advantage that it is based on a reliable foundation. Observation proved that, even when the course of birth is normal, intracranial hemorrhages are comparatively frequent, but symptoms in the form of a lack of vitality are present only in about one half of these cases. In spite of the fact that a first birth and a pathologic course of the birth (use of forceps or breech presentation) favor the development of birth injuries, the author considers it as not permissible to conclude from the birth anamnesis alone the presence or absence of a birth trauma. In a child that has been delivered by means of forceps or from a breech presentation and that later shows symptoms of Little's disease or of imbecility, it is not right to assume without reservation a causal relation between the two factors, as is often done by pediatricians and neurologists. The author admits that extensive intracranial injuries sustained during birth may be a direct cause of death or may lead to cerebral injuries that become manifest at a later date, but on the basis of his observations he considers it as out of the question that the birth trauma has significance as a cause of death or as a cause of late central nervous disorders which have been ascribed to it in recent years. Postmortem examinations revealed that, in 6.6 per cent of the children, death was a direct result of birth trauma, and after-examinations in children who were severely injured during birth showed that the further development was generally unimpaired.

**Cause of Death in Premature Births.**—Creutzfeldt and Peiper describe the results of the histologic examination of the brains of seven premature infants, who all had shown before death serious respiratory disturbances. Six of them revealed no hemorrhages whatever in the brain stem, and in the seventh child there were small extravasations without reactions of the surrounding tissues, that is, so-called agonal hemorrhages. In this case there also was a slight hemorrhage from the right vena terminalis. These observations contradict the assumption of Ylppö, of Schwartz and of others who believed that the fatal respiratory disturbances in premature infants must be the result of cerebral hemorrhages. On the contrary, the observations prove that death is only the result of the immaturity of the central nervous system and of the resulting weakness of the respiratory center.

**Treatment of Whooping Cough by Means of Bordet Vaccine.**—Induced by the hygiene commission of the League of Nations, Weichsel employed the Bordet vaccine in the treatment of fifty cases of whooping cough. All the children were in the early paroxysmal stage. There was no opportunity for a prophylactic use of the vaccine during the incubation period. Those children in whom the paroxysmal stage had begun more than two weeks previous were excluded from the vaccination. The Bordet vaccine consists of a culture suspension of killed Bordet-Gengou bacilli in ampules containing 1 cc. each. Six injections are supposed to be sufficient to check the whooping cough, and they were administered at intervals of forty-eight hours. Since no special directions were given as to how the vaccine was to be administered, the author made some of the injections subcutaneously and some intramuscularly. Local and general reactions were entirely absent in either form of administration. A therapeutic effect of the vaccine was not noticeable.

## Wiener klinische Wochenschrift, Vienna

45: 257-288 (Feb. 26) 1932

*Pathogenesis of Diabetes Mellitus. L. Pollak.—p. 257.
First Development and Differences in Succession of Hereditary Organopathies in Human Beings and in Animals. V. Hammerschlag.—p. 263.
Modification of Elimination of Galactose by Paravertebral Injection. H. L. Popper and S. Hirschhorn.—p. 268.
Unusual Malformation of Kidney. F. Hawlisch.—p. 269.
Ketogenic Diet in Bronchial Asthma. M. Julesz.—p. 271.
Causes and Development of Urinary Incontinence in Women. H. Kamniker.—p. 272.
Indications for Therapeutic Use of Carbon Dioxide Respiration. K. Hitzenberger.—p. 276.
Simulation of Mental Diseases. K. Grosz.—p. 277.

**Pathogenesis of Diabetes Mellitus.**—Pollak discusses the question whether diabetes mellitus is always a pancreatic diabetes, more particularly an insular diabetes, or whether there are also cases of extra-insular origin. He calls attention to certain contradictions in galactose and dextrose assimilation, which he terms the galactose paradox of diabetes, and describes the tests he made to determine the mechanism of certain processes in the sugar metabolism. The last group of his experiments he sums up as follows: A galactose tolerance test produces in diabetic patients a considerable increase in the dextrose content of the blood. This indicates elimination of enormous quantities of sugar by the liver. Ergotamine tests revealed that in diabetic patients, just as in persons without diabetes, the glycosecretory impulse comes from two distinct endocrine glands. Both types of impulses are found in entirely different forms of diabetes. If these conditions are to be traced to a common cause, the author considers only one explanation possible. The glycosecretory impulses are the same in persons with or without diabetes. That in diabetic patients there is a much greater increase in the dextrose content of the blood must therefore be due to the fact that in diabetes there is no checking influence of insulin, which otherwise reduces the stimulation susceptibility of the liver.

## Zeitschrift für Kinderheilkunde, Berlin

*52: 299-430 (Feb. 9) 1932*

*Chronic Hepatogenic Hypoglycemia During Childhood. S. van Creveld.—p. 299.
Sympathetic Nervous System in Tuberculous Meningitis During Childhood. P. S. Medowikov and D. O. Schenkmann.—p. 325.
Change of Potential Difference in Method of Evaluation of Dynamics of Organism During Childhood. P. Medowikov, H. Dernowa, E. Lebedewa and A. Marenina.—p. 331.
Clinical Studies on Supravital Granular Erythrocytes in Children's Diseases. M. Kasahara and K. Maeda.—p. 338.
*Action of Toxic Component of Viosterol (Calcinosis Factor) on Bone Phosphatase. G. Bischoff and A. Loeschke.—p. 349.
Influence of Large Doses of Creatine on Excretion of Phosphoric Acid in Urine. H. Fasold and A. Loeschke.—p. 358.
Hormone A of Anterior Lobe of Hypophysis as Active Substance on Generative Glands of the New-Born and of Children. H. O. Neumann and F. Péter.—p. 363.
Toxic Diphtheria: Virulence of Diphtheria Bacilli of Various Origin. Gertrud Heissen.—p. 372.
*Subepiphyseal Zones of Decreased Density in Roentgenogram of Nursling. P. Gyorgy.—p. 389.
Subacute Bacterial Endocarditis During Childhood (Endocarditis Lenta). A. E. Fischer.—p. 405.
Toxic Diphtheria: Constitutional Influences on Character of Diphtheria Bacilli F. Gruneberg.—p. 423.

**Chronic Hepatogenic Hypoglycemia During Childhood.**—Van Creveld relates the clinical history of a boy, aged 10, in whom a chronic hypoglycemia had been observed for several years. This hypoglycemia is noticeable during fasting and it is combined with ketosis. The patient gives the impression of having adiposogenital dystrophy, and he also has an unusually large liver, the abnormal size having been noticed during the first year of life, when an exploratory laparotomy was done. The chronic hypoglycemia in this patient is different from the great majority of other cases that have been described, in that such symptoms as anxiety, hunger, rapid pulsation, trembling, spasms, dizziness, coma and reduction in blood pressure are entirely absent. The metabolism also shows typical differences from other cases of chronic hepatogenic hypoglycemia. Numerous experiments were made to gain a better insight into the metabolic disturbances of this patient. The existence of hyperinsulinism can be excluded almost with certainty. The ketosis was unfavorably influenced by epinephrine, even when the latter was given in minute quantities. As the origin of the complicated disturbance the author assumes the persistence of a fetal condition, and as proof for this assumption he cites the fact that in premature infants acetonuria and also hypoglycemia are much more frequent than in mature ones. This of course does not explain the disturbance in the reported case, but here the author sees the cause in a disturbance of the fermentative decomposition of the liver glycogen and perhaps also of the glycogen in other organs. The glycogen content of the blood was increased.

**Action of Toxic Component of Viosterol (Calcinosis Factor) on Bone Phosphatase.**—Bischoff and Loeschke found that greater doses of the calcinosis factor are tolerated by rachitic dogs than by normal dogs. The bone phosphatase is reduced by the calcinosis factor in normal as well as in rachitic animals. In rachitic dogs, the calcinosis factor increases the calcium and the phosphorus values of the serum. Simultaneously with this chemical regulation of the blood, calcium is deposited in the bones.

**Subepiphyseal Zones of Decreased Density in Roentgenogram of Nursling.**—György reports that in a nursling, aged 10 months, who was free from rickets, generalized edema developed in the course of an intensive antirachitic treatment, with signs of a renal disturbance of a mostly tubular character. Simultaneously in the long bones there became noticeable subepiphyseal areas of lessened density, such as are observed only in animals that have been treated with large doses of viosterol and have received a diet deficient in calcium. After the antirachitic treatment was discontinued, the osteoporotic zones of decreased density extended in the direction of the diaphysis and were noticeable for several months. The author discusses what significance these observations have for the intermediate calcium metabolism.

### Zeitschrift für Urologie, Leipzig

**26:** 81-152, 1931

Tuberculosis of Kidneys. A. Schmidt.—p. 81.
Injuries of Urinary Organs and Late Results of Same. E. Simon.—p. 98.
*Cytology of Pus in Gonorrhea in Men. L. R. Leites and D. G. Tulbermann.—p. 111.

**Cytology of Pus in Gonorrhea in Men.**—Leites and Tulbermann studied the ratio between the various types of pus cells during the different stages of gonorrhea and during the various complications. Their object was to detect in the gonogram a diagnostic aid similar to the spermoculture method or to gonococcus antigen determination. A difficulty in the study of the gonogram is that there is no normal pyogram as a basis of comparison, pus being always a pathologic condition. For this reason it was necessary first to determine certain threshold values. As such the authors considered for the eosinophils from 0.1 to 0.4 per cent; for the young forms from 0.1 to 0.6 per cent; for the staff nuclear cells (monocytes and lymphocytes) from 0.1 to 0.9 per cent. The method of examination was as usual. After the fresh smears had been dried in the air, they were fixed for fifteen minutes in alcohol and ether and then stained for twenty minutes in a Giemsa solution. The authors examined material from ninety-two patients and made in all 500 tests. In some of the patients the pus was examined only once or twice. In another group of thirty-two patients the pus was regularly examined from the beginning of the disease until there was no longer any discharge (from ten to twenty times in a period of several weeks). In cases of gonorrheal prostatitis the secretion of the prostate was likewise examined. Of the ninety-two patients, fifty-four had acute uncomplicated gonorrhea, nine acute epididymitis, twelve acute prostatitis, seven chronic gonorrheal urethritis, five chronic postgonorrheal urethritis, three chronic prostatitis and two nongonorrheal urethritis. In classifying their material according to weeks, the authors aimed to detect a characteristic gonogram during the same clinical stage, and they also tried to determine whether a change in the treatment had an influence on the cellular composition of the pus. The results of the investigations are shown in tables.

### Zentralblatt für Gynäkologie, Leipzig

**56:** 577-640 (March 5) 1932

Development of Perineum in Human Embryo. G. Politzer.—p. 579.
Accessory Mammary Glands. M. Hirasawa.—p. 585.
Tubal Pregnancy as Immediate Result of Surgical Intervention. W. Hannes.—p. 592.
Disturbance in Delivery as Result of Holoacardius Amorphus. F. C. van Tongeren.—p. 594.
*Prophylactic and Therapeutic Value of Ergot in Puerperium. J. Sühs.—p. 596.
General Cause of Lübeck Fatalities: Estimation of Genital Tuberculosis. A. Greil.—p. 601.
Warning Against Rectal Examination as Therapeutic Aid in Obstetrics. F. Eberhart.—p. 610.

**Value of Ergot in Puerperium.**—On two groups of fifty-three puerperas each, Sühs made tests to detect the therapeutic and prophylactic value of ergot. During the first three or four days of the puerperium the first group received eight drops of an ergot solution, three times daily, for prophylactic purposes. To the other group the ergot was administered only when disturbances developed in the involution. It was observed that, in the women who had received prophylactic ergot treatment, disturbances in the discharge of the lochia and in the involution of the uterus were less than half as frequent as in the women who had not been subjected to prophylactic ergot application. An entirely undisturbed course of the puerperium was observed in only 6 per cent of the women who had not received prophylactic treatment; but in those who had been subjected to the ergot prophylaxis, the course was normal in 57 per cent of the cases. The author thinks that this is a conclusive demonstration of the prophylactic value of ergot during the puerperium. When the ergot solution was administered only after the disturbances became manifest, it was noted that in one third of the cases the course was almost the same as would be expected without therapy, but in two thirds of the cases there was a favorable effect on the involution of the uterus and its attendant phenomena.

### Polska Gazeta Lekarska, Lwów

**11:** 157-172 (Feb. 28) 1932

Etiology of Influenza (C'td.). M. Gieszczykiewicz.—p. 157.
*Rôle of Histamine in Arterial Hypertension. W. Koskowski.—p. 162.
Denicotinization of Tobacco Smoke. J. Nikolowowa and Z. Wójcik.—p. 164.

**Histamine in Arterial Hypertension.**—Koskowski states that histamine is antagonistic to epinephrine. Excess of histamine stimulates the suprarenals to increased secretion. Both substances exert their action on the blood vessels. The author's experiments show that ordinary intravenous injections of histamine cause a considerable and characteristic fall of blood pressure. Very slow injections, however, of greatly diluted histamine increase the blood pressure slowly but constantly. By previous experiments the author, jointly with Giedroyć, demonstrated that the red blood cells are the carriers of epinephrine and that they are capable of storing it up. The substance causing this excess of epinephrine in the blood is histamine. By causing hyperepinephrinemia, histamine is then indirectly responsible for certain cases of hypertension. Thus one of the therapeutic problems in these cases of high blood pressure is to select the diet so that the proteins digested produce a minimum amount of histidine, which is the source of histamine. It is known that animal myosin, globin, casein and so on contain histidine. In view of the foregoing problem, it would be logical to review next the plant proteins for the amount of histidine contained.

### Acta Chirurgica Scandinavica, Stockholm

**69:** 305-400 (March 3) 1932

Osteochondritis Dissecans Capituli Radii. A. Nielsen.—p. 305.
Treatment of Severe Septic General Infections by Immunotransfusion. K. Hallberg.—p. 314.
Treatment of Complete Postoperative Biliary Fistulas. S. Hybbinette.—p. 327.
*Urea Tolerance Tests in Hypertrophy of Prostate. A. Hellstadius.—p. 339.
Contribution to Knowledge of Familial Hemolytic Icterus in Sweden, with Particular Reference to Results of Operation. T. M. Beckman and K. B. Jäderholm.—p. 353.
Operation in Case of Obliteratio Pericardii. A. Odelberg.—p. 378.
*Tuberculosis and Grawitz's Tumor of Same Kidney. E. Ljunggren.—p. 383.
Heminephrectomy in Case of Kidney with Two Ureters with Hydronephrosis and Stone in One Renal Pelvis. S. Friberg.—p. 393.

**Urea Tolerance Tests in Hypertrophy of Prostate.**—Hellstadius calls attention to the fact that urea tolerance tests have been used for testing the renal sufficiency in cases of hypertrophy of the prostate with the view of obtaining information regarding the renal capacity for excreting urea in cases in which the nonprotein nitrogen in the blood is not obviously increased. In comparing the outcome of the urea tolerance and the water tests, one generally obtains a certain agreement between the two; but in some cases there is noticed an obvious discrepancy between the two tests. It may be of advantage, therefore, at least in doubtful cases, to carry out a urea tolerance test besides the water test. There is no reason to conclude that the uric acid in the blood would increase earlier than the nonprotein nitrogen in an early stage of renal insufficiency, at least as far as it can be ascertained by the urea tolerance test.

**Tuberculosis and Hypernephroma of Same Kidney.**—Ljunggren describes a case in which a Grawitz's tumor (hypernephroma) and tuberculosis were present in the same kidney. He found seven similar cases in the literature. In his view it is most natural to assume in these cases that it was a coincidence that the two conditions occurred simultaneously, but he nevertheless thinks one has to take into account the possibility of a renal tumor predisposing to the development of a tuberculous process in the kidney. That the tuberculous infection would in any of the cases have been the primary factor, and secondarily given rise to tumor formation, he considers unlikely. One would rather contemplate the possibility of a tumor predisposing in some way or other to the development of a tuberculous process in the kidney; in a case that he observed recently, for example, one can envisage that the circulatory disturbances which experience shows exist in the renal parenchyma in the proximity of a tumor create a locus minoris resistentiae.

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# LEG ULCERS OF UNRECOGNIZED ETIOLOGY

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In a series of 150 cases of leg ulcer, seen in clinic and in consultation, 50 patients were found in whom varicose veins were not visible and the Wassermann reaction was not positive to point to the cause of the ulcer. Ulcers with no obvious etiology present a neglected problem in diagnosis.

The clinical picture is distressing: the patients are incapacitated for self-support; they are unable to sleep at night for pain; they go unhealed for five years, ten years, twenty years, even thirty-eight years!

The past histories of these fifty cases showed that the average practitioner is puzzled to know what to do with them. He tries ointments, light treatments or ingenious surgical procedures to the part. Improvement is temporary. Eventually the old ulcer breaks down again or new ulcers form because the original cause of the ulcer has not been ascertained.

In my experience, a way out can usually be found in a discovery of the causes of the ulcers. The whole series is listed in an analysis of causes, in order that practitioners may have it available for reference, in considering possible explanations of a difficult ulcer case. Some cases due to more than one cause are entered twice in the list. Out of the list, only those types will be discussed which have not been found reported in the literature or which I have found to be commonly unrecognized.

### THE LACUNAR ULCER

There is a type of ulcer, rarely recognized, whose cause is found in invisible varicose veins, too deep in the tissues even for palpation, but which may be demonstrated by x-rays after intravenous injection of such radiopaque substances as iopax (uroselectan). Such roentgenograms or phlebograms are shown in figures 1 and 2. They demonstrate positively the cause of ulcers which otherwise might never have been diagnosed. Although only seven are included in the list, I am increasingly impressed by their importance and believe that in other cases such roentgenograms would have demonstrated this cause as at least contributory. The term "lacunar" is suggested for this type because the ulcer is due to a lake of stagnant blood in veins beneath or near the ulcers.

The indications for taking a phlebogram may be:

A history of obliteration of small varicose veins higher in the leg without curing the ulcer.

A history of phlebitis long ago, even though no varicose veins are visible.

A slight sense of fluctuation in the region of the ulcer.

The presence of varicose veins visible in the other leg.

The use of iopax for this purpose has been described thus far in the continental literature only. Its use as a radiopaque medium in the veins was first made by Ratschow.[1] Warning should be given against the present use of iodized poppy-seed oil into the veins for roentgenologic demonstration. Ratschow did this in dogs. From ten to fourteen days later the dogs died of pneumonia, and sections of their lungs stained with sudan III showed minute fat emboli scattered through the lungs as the cause of death. Iopax has now been used in so many thousands of cases for pyelography that its safety is demonstrated. There are two methods: injection from above, and injection from below. In injecting from above, the usual procedure is to insert the needle into the great saphenous vein just below the knee. However, there is an important valve in the vein here which is commonly competent, and I have found that injection is made better below this valve about one third of the way down from the knee. Sometimes it is impossible to inject from above, and I have then utilized a method of my own. While the patient stands, a rubber bandage is bound around the leg, beginning at the ankle and winding upward in a spiral

*Various Causes in One Hundred and Fifty Cases of Chronic Leg Ulcer to Dec. 5, 1931*

| Causes | Number of Cases Diagnosed | Diagnosis Established |
|---|---|---|
| Circulatory diseases | | |
| Lacunar ulcers | 7 | 6 |
| Ordinary varicose ulcers | 92 | 92 |
| Arteriosclerotic ulcers | 3 | 2 |
| Senile | 7 | 7 |
| Syphilitic | 2 | 2 |
| Lymphangitic ulcers | 3 | 2 |
| Thrombo-angiitis obliterans | 1 | 0 |
| Metabolic diseases | | |
| Endocrine ulcers | | |
| Hypothyroidism | 2 | 1 |
| Hypo-insulinism (contributory) | 11 | 10 |
| Hypopituitarism | 0 | 0 |
| Anemia ulcers | | |
| Primary anemias | | |
| Sickle cell anemia | 1 | 1 |
| Pernicious anemia (also blastomycosis) | 1 | 1 |
| Secondary anemias | 6 | 5 |
| Gluttony ulcers | 3 | 1 |
| Malnutrition ulcers | 1 | 1 |
| Infections | | |
| Wassermann-negative ulcers | 8 | 7 |
| Wassermann-positive syphilis | 11 | 9 |
| Tuberculosis (Bazin's erythema induratum) | 1 | 0 |
| Mycotic ulcers | | |
| Blastomycosis | 2 | 2 |
| Drug ulcers | | |
| Iodermia | 1 | 1 |
| Neurotrophic ulcers | | |
| Hyperesthetic type—irritable ulcer | 1 | 1 |
| Anesthetic type—tabes dorsalis | 1 | 1 |
| Carcinoma | | |
| Basal cell | 2 | 2 |

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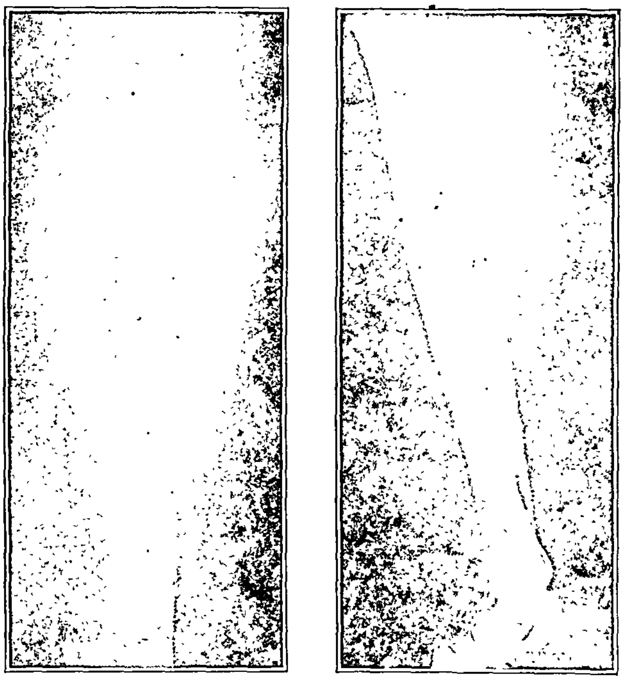
[1] Ratschow, Max: Uroselectan in der Vasographie, Fortschr. a. d. Geb. d. Röntgenstrahlen 42: 37 (July) 1930.

without overlapping the edges of the bandages. This empties the superficial veins and at the same time makes the veins of the foot stand out. A 24 gage needle on a 20 cc. Luer syringe containing 30 per cent iopax is then inserted into the most prominent vein of the foot. With the needle still in place, the patient lies down. The rubber bandage is now unwound from below upward. Sometimes it is left on just below the knee as a light constrictor. Injection is then made and x-ray shadows are photographed immediately and again fifteen seconds after injection. The injection is slightly painful if the constrictor is left on. No slough occurs if iopax is injected out of the vein.



Figs. 1 and 2.—Invisible varicose veins causing lacunar ulcers.

Treatment of the lacunar ulcer requires the injection of any veins visible above the ulcer whether they are varicose or not, and the application of McPheeters'[2] sponge heart. Early experience in my clinic with the sponge heart was unsatisfactory: The skin surrounding the ulcer broke down under the pressure of the rough sponge, forming new ulcers. Since I put an abdominal pad of cotton between the sponge and the leg, the results have been excellent. The patient is urged to walk as much as possible, for every movement of the muscles presses on the sponge, which in turn squeezes blood out of the veins. The tissues soften so that unseen veins become barely palpable as a slight sense of fluctuation. Injection of these brings permanent cure. Sometimes the only place where the veins become accessible for injection is surprisingly superficial in the layers of the thickened skin itself. The injection of such veins is difficult and requires long experience.

Figure 3 shows a lacunar ulcer which had been treated by skin grafting by an excellent plastic surgeon. The operation was a perfect piece of work and the graft "took" without a break. The result was beautiful. But when the patient was on his feet three weeks later the graft broke down. This illustrates my insistence on etiologic treatment.

A roentgenogram of the venous circulation demonstrated the cause of the trouble in invisible varicose veins.

### ARTERIOSCLEROTIC ULCERS

In ulcers due to obliterating arteriosclerosis the diagnosis is made by digital examination of the dorsalis pedis and tibialis posterior arteries. If arterial pulsation is not present in either of these arteries to the foot, the chances are strong that the ulcer is due to arterial disease. Sometimes the toes and foot have a waxy pallor. It should be remembered that the terminal arteries to the skin of the lower leg commonly sclerose long before the terminal arteries to the toes. Eloesser[3] has described these ulcers. He advised amputation of the leg, but in my cases there have been cures or steady improvement without sacrificing the limb.

Many of these patients should be given the benefit of the doubt and receive a therapeutic test to rule out Wassermann negative syphilis as the cause of the obliterating endarteritis.

In two cases in which there was no pulsation whatever in the arteries, amputation had been proposed. However, I insisted on a therapeutic test of injections of a bismuth compound, even though the Wassermann test was negative. In both cases the ulcer has healed and has stayed healed and the leg has been saved. In both cases pulsation has returned to the dorsalis pedis artery.

When the therapeutic test fails or when great age makes it clear that the arteriosclerosis is senile, improvement has been obtained by bed rest, by the use of diathermy with one pole at the sole of each foot, by massage, by frequent massive hot compresses, by supporting bandages, and by the use of thiocresol[4] solution or of insulin locally. I am opposed to ligation of the vein in these cases, for reasons already stated.[5] Sympathectomy is also inadvisable.

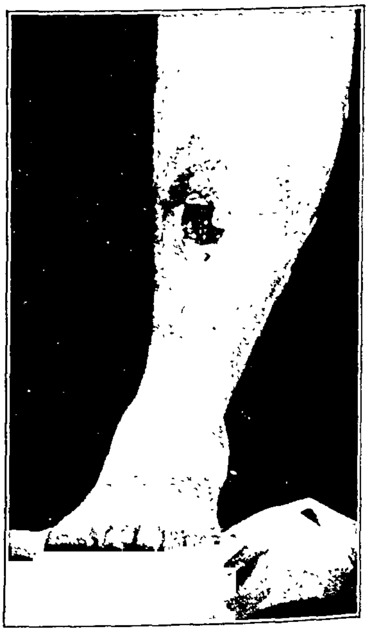


Fig. 3.—Lacunar ulcer.

### ULCERS CAUSED BY ENDOCRINE DEFICIENCY

*Hypothyroidism.*—I have not found in the literature such a case as this reported:

A housewife, aged 42, had had an enormous ulcer on the lower part of the right leg as large as an outspread hand for seventeen years. It caused her great pain, especially when she was obliged to stand, so that she was a dependent on her relatives.

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[2] McPheeters' sponge heart will go down through medical history as a major contribution to surgery. McPheeters, H. O., and Merkert, C. E.: Varicose Ulcers: Treatment with Rubber Sponge or Venous Heart, Surg., Gynec. & Obst. **52**: 1164 (June) 1931.

[3] Eloesser, Leo: Leg Ulcer, S. Clin. North America **2**: 537-552 (April) 1922.

[4] Reiman, S. P.: Use and Reasons for the Use of Thiocresol to Stimulate Wound Healing, J. A. M. A. **94**: 1369 (May 3) 1930.

[5] Kilbourne, N. J.: Varicose Veins: Indications and Contraindications to Injection, Ann. Surg. **93**: 690 (March) 1931.

The past history of the patient was irrelevant with the possible exception of phlegmasia alba dolens six years before the ulcer appeared.

The patient was 39 pounds (18 Kg.) overweight. There was an enormous pituitary apron. Adipose tissue was marked both above and below the elbows and knees. The affected leg was larger than the left leg even above the knee, so that the right thigh was 4½ inches (11.5 cm.) larger in circumference than the left. The blood pressure at this time was 150 systolic and 95 diastolic. The pulse was 70. The ulcer covered most of the lower portion of the anterior part of the leg and was very deep with steep walls. The surrounding tissue had an edema which allowed pitting on pressure.

A previous diagnosis of varicose ulcer had been made although no varicose veins could be found. Twenty-two Unna's paste casts had been applied without improvement.

A basal metabolic rate was requested. The report came, "We cannot determine the basal metabolism of this patient."

"Why?"

"Because her rate is so low that it cannot be registered on the basal metabolism apparatus."

Fifteen grains (1 Gm.) of thyroid per day was prescribed and no local treatment. In ten weeks this ulcer, which had lasted almost a quarter of a century, was healed, being filled in with firm solid thick skin!

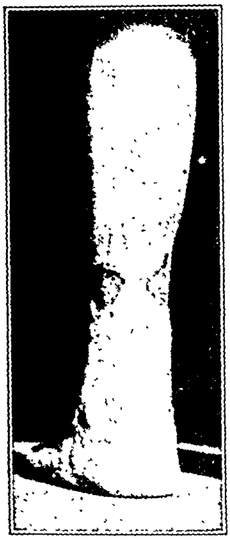

Fig. 4.—Arteriosclerotic ulcer, senile type.

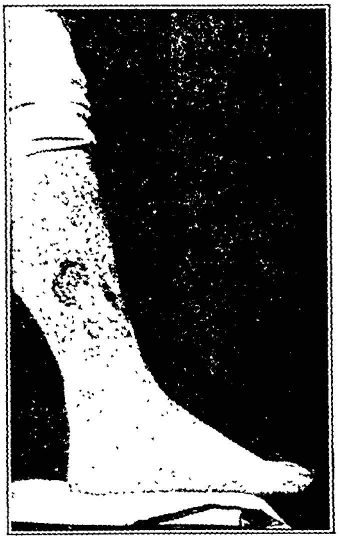

Fig. 5.—Arteriosclerotic ulcer (half healed), senile type.

The ten weeks of thyroid medication caused the systolic blood pressure to drop 72 points to a reading of 78 and the diastolic to drop 11 points to a reading of 54. The pulse slowed as the patient received thyroid, dropping from 70 to 60.[6]

*Hypo-Insulinism.*—In at least eight cases, a lack of insulin secretion contributed to the chronic ulcer, as evidenced by the blood sugar. Several of these were complicated by recurrent attacks of cellulitis.

## ULCERS OF PROFOUND ANEMIA

*Primary Anemias.*—In hemolytic icterus,[7] splenomegalic anemia[8] and sickle cell anemia, leg ulcer is a classic symptom.

A negro chauffeur, aged 22, had had an ulcer of the leg for five and a half years. It caused pain both at night and in the daytime when he tried to walk very far.

Other symptoms were absence of libido, lightning pains in the legs, productive cough, pain in the abdomen, and loss of 10 pounds (4.5 Kg.) in the past three weeks.

A year before a diagnosis of varicose ulcer had been made. For a year he had been receiving repeated applications of Unna's paste casts. The casts seemed to relieve the pain for the first two days after application, but after that the pain would be worse. He had not improved under this year of Unna's cast treatment. More recently it had been diagnosed as a syphilitic ulcer.

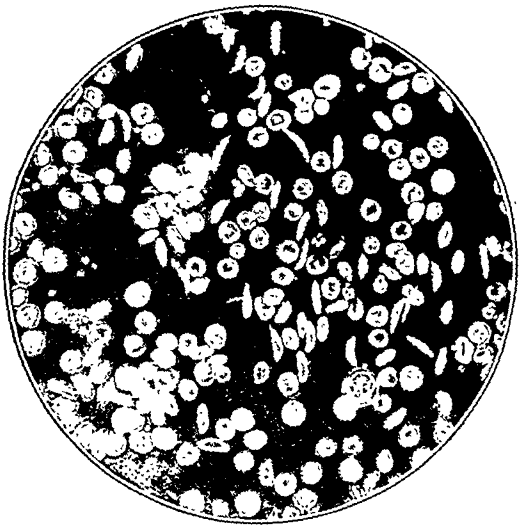

Fig. 6.—Sickle cell anemia.

The patient was very thin, with thin long fingers and extremities remarkably long in comparison with the body. The lower extremities were 22 cm. longer, as compared with the body, than one would expect from average measurements.

Laboratory examination produced three negative Wassermann reports even after provocative injection of neoarsphenamine. A roentgenogram of the right tibia showed no periostitis, syphilitic or otherwise. The sputum was purulent but contained no acid fast bacilli, and roentgen examination of the chest showed no material pulmonary pathologic changes. The urine contained a few pus cells and hyaline casts. Chemical examination of the blood showed an icterus index of 17.7 but otherwise was normal. The hemoglobin was 54 per cent; the red blood cell count was 3,600,000, the white blood count 20,000.

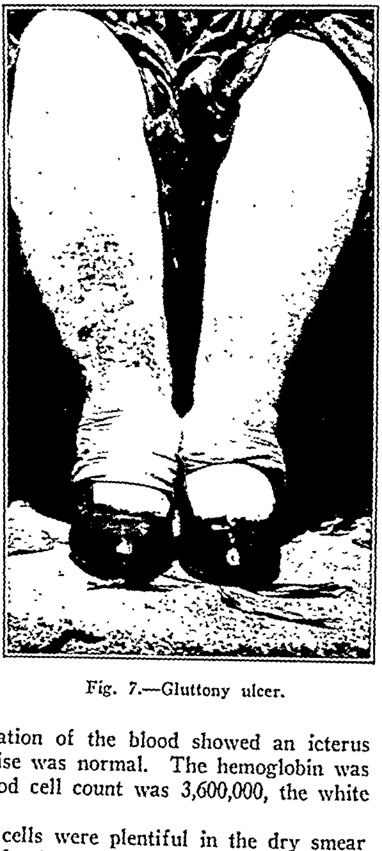

Fig. 7.—Gluttony ulcer.

Crescent-shaped sickle cells were plentiful in the dry smear and are shown in figure 6. A standing wet mount showed the usual increase in their number to 50 per cent of all red corpuscles. The patient's mother also had her blood examined and it showed sickle cells after standing thirty-six hours in a wet mount.

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[6] This patient drifted away and stopped taking thyroid. Five months later she had a small recurrence. Thyroid alone did not immediately cure this recurrence. A phlebogram taken by x-rays with iopax injected through the veins of the foot showed deeply buried varicose veins which were contributory to the recurrence.

[7] Seelig, S., and Jaffé, Kaete: Unterschenkelgeschwüre bei hämolytischen Ikterus, Klin. Wchnschr. 9:840 (May 3) 1930. Eppinger, Hans: Ueber schwer heilbare Fussgeschwüre bei hämolytischen Ikterus, ibid. 9:10 (Jan. 4) 1930.

[8] Nanta, A.: Les ulcères de jambe des splénomégaliques, Bull. Soc. Franç. de dermat. et syph. 35:946 (Dec.) [illegible] and Emile-Weil, Prosper: Les ulcères de [illegible] Bull. et mém. de la Soc. nat. de chir. 55:91-94 (Feb. 2) 1929.

The ulcer of the leg was of course diagnosed as the ulcer classically associated with sickle cell anemia.

Sickle cell anemia has been presented as a disease peculiar to the Negro race, presenting clinically two surgical features: attacks of acute abdominal pain, and chronic leg ulcers.

For a year this patient was treated medically. The ulcer would not stay healed. Then the veins of the leg appeared rather more prominent than a year before and the ulcer grew rapidly. One injection of quinine-urethane was given in the great saphenous vein above the ulcer. The result was the most rapid healing of an ulcer I have seen. Obviously the veins were the cause of the ulcer, and probably there had been deep veins there as causative factors even when the superficial veins were not obvious. The treatment with Unna's paste casts had not been a reliable therapeutic test.

This is only one case, but it raises the question as to whether there is any essential direct connection between sickle cell anemia and leg ulcer as has been so long taught.

tration of 90 grains (6 Gm.) of iron and ammonium citrate. This cured the ulcer.

A gilder, aged 61, had had an extensive ulcer of the right leg for five years. In the past year he had had 208 large dressings with an ointment without improvement. The patient's physician suggested syphilis as a diagnosis, but improvement under antisyphilitic treatment was not impressive. The hemoglobin proved to be 45 per cent. His mouth contained old tooth snags, which were not only toxic but also prevented mastication of his meager diet. He refused to have his teeth removed but consented to take massive doses of iron. The ulcer has improved rapidly, *pari passu* with a rise in hemoglobin.

A third patient, whose anemia was due to uterine hemorrhage, was cured when this was corrected.

It is unreasonable to expect to cure a chronic leg ulcer with ointment, lights or skin grafts when a patient has a hemoglobin ranging from 40 to 55 per cent.

### GLUTTONY ULCERS

In three obese patients with normal basal metabolic rates, the ulcer was attributable to chronic gluttony.

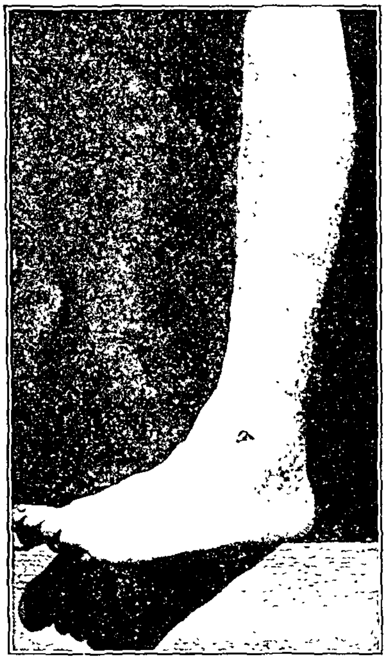

Fig. 8.—Syphilitic ulcer.

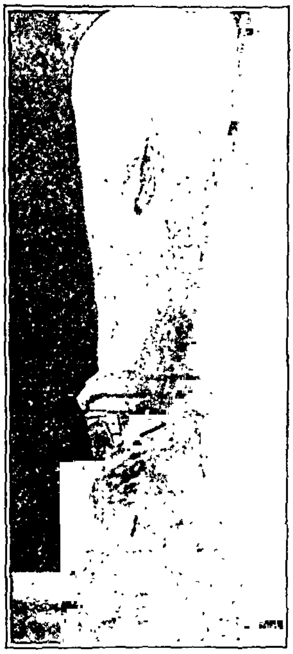

Fig. 9.—Wassermann negative ulcer (before treatment).

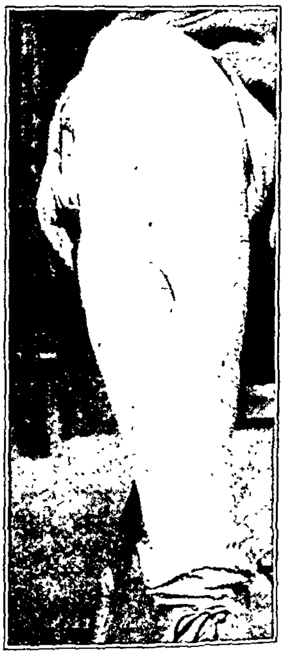

Fig. 10.—Wassermann negative ulcer (after treatment).

*Pernicious Anemia.*—In this case pernicious anemia was basic, complicated with blastomycosis:

A pedler, aged 65, had a raised ulcer of the lower leg as large as two palms, which was clinically blastomycosis. The blood hemoglobin was 21 (Sahli). The color index was 1.4 and the blood smear classic for pernicious anemia.

*Secondary Anemias.*—It is known that primary anemias cause leg ulcer; it is known that a local anemia due to arteriosclerosis of the leg causes leg ulcer; it is therefore not surprising to find profound secondary anemia as the cause of seven cases of leg ulcer in this series. The hemoglobin readings respectively were 45, 55, 45, 47, 56 and 40. These anemias cannot be diagnosed merely by looking for a pale skin; the patient with a hemoglobin of 47 had a natural pink appearance of the skin.

A housewife had a large leg ulcer for which an eminent physician suggested Bazin's erythema induratum (tuberculosis) as a diagnosis. When the hemoglobin was taken it proved to be 55 per cent. The patient's mouth contained foul tooth snags. Treatment consisting of tooth extraction and the daily adminis-

A housewife, aged 57, complained of painful shallow ulcers on the anterior aspects of both legs, surrounded by a broader area of erythema. This area discharged copious serous fluid. There was a burning pain which kept her awake at night, although she felt sleepy all the time. She was enormously obese, but the basal metabolic rate was within normal limits.

A diagnosis was made of gluttony ulcer. She was placed on a diet of 1,000 calories a day. In three weeks she lost 14 pounds (6.4 Kg.) and the ulcers, with the dermatitis, were healed.

### MALNUTRITION ULCERS

In at least one patient, lack of nourishment caused failure of the ulcer to heal:

A Negro "patent medicine" peddler, aged 39, complained of two enormous foul smelling ulcers of the leg. The Wassermann reaction had at one time been positive, but for two and one-half years he had been under intensive treatment; it had been negative for some time, and he had recently been discharged by a clinic for syphilitic patients as cured. The ulcer was no better. The hospital records showed 213 dressings with ointments without improvement. The patient was 71 inches (180 cm.) tall and weighed 134 pounds (61 Kg.), showing a deviation from normal of minus 53 pounds (24 Kg.).

This ulcer was possibly syphilitic at its inception, but the syphilis was no longer active. The ulcer continued because the patient was so undernourished that he lacked resistance to throw off the chronic secondary infection. He was urged to eat eggs, cream, milk and beef steak. He has since been gaining steadily in weight, and the ulcer is healing *pari passu*.

Vitamin deficiency must be considered in some of these cases.

### THE WASSERMANN NEGATIVE ULCER

The diagnosis of the syphilitic leg ulcer may present extreme difficulty.

Clinically, the diagnosis may be difficult. Syphilologists have good reason to disagree as to whether a given leg ulcer is clinically syphilitic. Of course, when an ulcer is deeply punched out, with an irregular border, situated on the lateral aspect of the leg not far below the knee, with no pain until secondary infection sets in, the diagnosis is fairly clear. Frequently, however, I have found ulcers in various locations on the leg without the typical syphilitic configuration, painful from the start, and these healed rapidly under antisyphilitic treatment.

Roentgenologically, the diagnosis is difficult. Roentgen study of the tibia and fibula is occasionally conclusive but is usually inconclusive and often misleading. Roentgenologists both in this country and in Europe[9] are in disagreement as to what constitutes roentgenologic evidence of syphilitic or nonsyphilitic periostitis. Many nonsyphilitic leg ulcers, indeed, most varicose ulcers of long standing, show extensive periostitis, not merely under the ulcer but along the whole shaft of the tibia, suggesting resemblance to the saber-shaped tibia.[10]

Serologically the problem is baffling. It must be remembered that in these cases a negative Wassermann reaction means nothing. It will be observed that in seven out of seventeen on the list the Wassermann reaction was negative. I have found little help from the provocative Wassermann test. On the other hand, I have had two patients with a positive Wassermann reaction in whom removal of other causes, such as invisible varicose veins, brought about the cure.

One test in the clinically doubtful case is simple and inexpensive and has thus far seemed reliable. A therapeutic test of injections of bismuth compounds or of intramuscular injections of milk, and sodium iodide by mouth is ordered. The syphilitic ulcers show marked improvement usually after the second or third injection of the bismuth preparations.

The arsphenamines cannot be trusted to cure this type of tertiary syphilis. Every leg ulcer not explicable on other grounds should receive a therapeutic test of injection of a bismuth preparation, and iodides.

Does a rapid cure under bismuth and iodides prove that the ulcer was syphilitic? With the knowledge of the relation of iodides to the thyroid and of the thyroid to the skin, it is possible to postulate that the cure may be related to the action of the iodides on the thyroid. It is possible also to postulate some nonspecific action of bismuth stimulating the system to healing of the ulcer.

For these reasons a theoretical doubt may be raised as to whether the mere fact of healing under bismuth and iodides proves an ulcer to be syphilitic. I have therefore called these ulcers Wassermann negative ulcers rather than syphilitic ulcers. Practically, however, I find that of the Wassermann negative patients with leg ulcers healed under this test, searching questions into their histories bring out information as to a miscarriage, a chancre, or a positive Wassermann reaction years ago.

A man, aged 59, a cook, had a painful old osteomyelitis wound on the middle of the anterior aspect of the right tibia measuring 5 cm. by 1 cm. A roentgenogram showed no present signs of infection in the bone itself. His endocrine history was unusually interesting and was written up by Llewellys Barker[11] and was published in 1915. He had had a decompression operation on the brain some years before.

Three blood Wassermann tests were negative. The Kahn reaction was plus minus. The patient said that years before a Wassermann reaction had been positive, but this had been regarded as a mistake, for several Wassermann tests taken *immediately afterward* were negative. He scorned the suggestion that his ulcer could be syphilitic and demanded a skin graft operation.

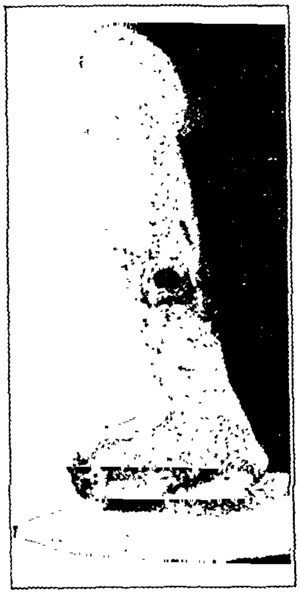

Fig. 11.—Blastomycosis.

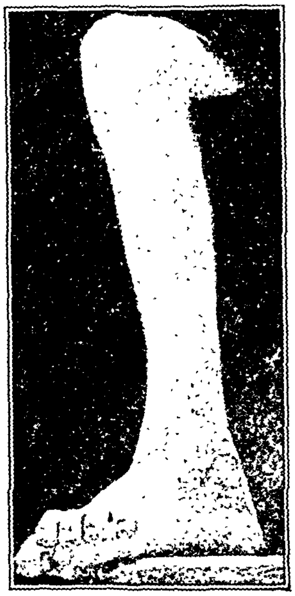

Fig. 12.—Iodermia.

The diagnosis made was Wassermann negative congenital syphilis. With no local treatment and under treatment by bismuth compounds and iodides the ulcer healed as by magic. For six months there has been no sign of any recurrence.

### TUBERCULOUS ULCERS

Leg ulcers due to erythema induratum (Bazin's disease) were formerly thought to be tuberculids, i. e., lesions caused by the toxins of tuberculosis elsewhere in the body; but they are now acknowledged to be true tuberculomas caused by the local presence of the tubercle bacillus. The onset is usually in young persons. The ulcers are preceded by painless nodules which break down, leaving small deep ulcers with undermined margins with a gray base. As contrasted with syphilis, the ulcers are usually bilateral and do not heal under antisyphilitic treatment. Sometimes biopsy material, if ground up and injected into a guinea-pig, will cause tuberculosis in the guinea-pig. There was probably one such case in this series. These ulcers have been described in detail by Hart-Drant.[12]

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[9] Terris, Jonesco and Cohen: Ulcère de jambe—Lésions osseuses et syphilis, Bull. et mém. Soc. méd. d. hôp. de Paris **51:** 1189 (July 15) 1927.

[10] Morris, D. H.: The Deeper Structural Changes Arising from Varicose Ulceration, Surg., Gynec. & Obst. **30:** 72 (Jan.) 1920.

[11] Barker, Llewellys: Am. J. M. Sc. **169:** 1 (Jan.) 1915.

[12] Hart-Drant: Diagnosis of Tuberculosis Cutis, Atlantic M. J. **31:** 159 (Dec.) 1927.

### MYCOTIC ULCERS

The mycotic ulcers characteristically have a hypertrophic raised border with purulent matter easily expressed from small sinuses. The border does not usually have the firmness of an epithelioma. Mycotic forms may or may not be demonstrated by biopsy and culture. They have recently had a detailed description by Jacobson.[13]

### DRUG ULCERS

Ulcers due to bromide medication or to phenobarbital medication have been reported.[14]

There was only one drug ulcer in this series and this was due to iodides given in the treatment of a syphilitic lesion of the foot. The diagnosis was not difficult because in this case similar crusted ulcers appeared on the neck. Drug ulcers, however, may be limited to the leg and be unilateral, single, large and deep.

### NEUROTROPHIC ULCERS: TWO TYPES

If research is to make progress, it must distinguish sharply between two contrasting types of neurotrophic leg ulcer.

*Anesthetic Type.*—This type is associated with anesthesia of the ulcer; perforating ulcers of the foot are in this class. This type is the result of nerve lesions due to tabes, syringomyelia, beriberi, diabetes and leprosy.[15]

A former boiler maker, aged 61, complained of an ulcer of ten years' duration. There were a few varicose veins. There was much edema of the foot and some of the calf above the ulcer. The ulcer was deep, measuring 6 cm. by 8 cm. on the anterior aspect of the middle of the lower right leg. The knee joint was very loose and allowed loose lateral motion. The patellars reacted. The Romberg sign was strongly positive. The blood Wassermann reaction was 4 plus. The ulcer was obviously tabetic and had not responded to ordinary antisyphilitic treatment.

*Hyperesthetic Type.*—The other type is associated not with anesthesia but with exquisite pain and tenderness in the region of the ulcer. This is the irritable ulcer of the malleolus, described by Corlette.[16]

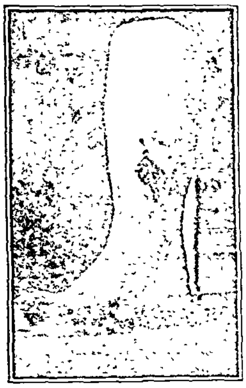

Fig. 13.—Neurotrophic ulcer (anesthetic type).

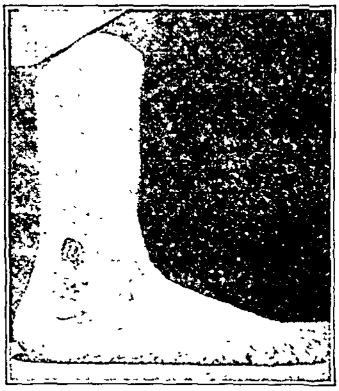

Fig. 14.—Neurotrophic ulcer (hyperesthetic type).

I have seen only one such ulcer and seriously question whether all cases reported by Corlette are due to nerve lesions. In cases which I at first found to meet Corlette's description, further study demonstrated causes other than nerve lesions which, when treated, allowed the ulcer to heal.

In the case of Mrs. U. B., one ulcer occurred just above the external malleolus, of five years' duration, and one just above the internal malleolus, of one year's duration. She was anemic, but a marked ocular nystagmus pointed to a nerve lesion. Neurologic examination demonstrated an upper neurone lesion. Instead of making the subcutaneous section of the nerves as recommended by Corlette, I injected diluted quinine-urethane subcutaneously as a permanent anesthetic. This brought complete relief from pain in both ulcers and rapid healing in one of them. The unhealed ulcer is improving.

### MALIGNANT CONDITIONS

A malignant condition in a leg ulcer is to be suspected whenever there is a hard, rolled border which bleeds easily. White and Weidman[17] have recently issued a warning against the diagnosis of carcinomatous ulcer of the leg on insufficient histologic evidence. I fear, however, that if one waits until, as they suggest, the cells have penetrated to the level of the sweat glands, one may wait too long. In this case, sections through the inguinal lymph glands already showed metastases. The ulcer shown in figure 15 had begun four years before as a small pustule. It had caused very little pain. It had a firm rolled border, and bled easily. The inguinal lymph glands were enlarged.

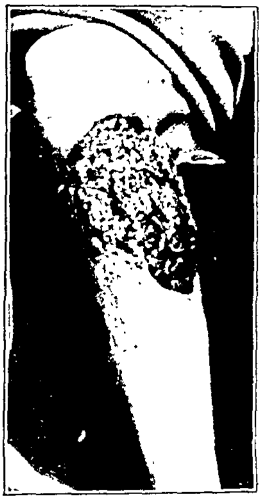

Fig. 15.—Carcinoma

Dr. H. P. Jacobson took the biopsy and I saw the case as surgical consultant. A microscopic examination showed that it was a basal cell carcinoma of the adenocystic type. It was found both in the ulcer and in the inguinal lymph glands. This carcinoma had been unrecognized by a number of eminent clinicians and had been treated with ointments.

### SUMMARY

Several causes of chronic leg ulcer are not commonly recognized. The leg ulcer due to varicose veins which are not visible, but buried as a stagnant lake of blood deeper in the tissues and demonstrable by roentgenograms with iopax, is one of the most common of these unrecognized causes.

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[13] Jacobson, H. P.: Fungus Diseases, Springfield, Ill., Charles C. Thomas, Publisher, 1932.

[14] Peterman, M. G.: A New Skin Eruption Produced by Phenobarbital, J. A. M. A. **97:** 703 (Sept. 5) 1931. White, C. J.: Boston M. & S. J. **196:** 27 (Jan. 6) 1927. Jackson, A. S.: Toxic Reception from Phenobarbital, J. A. M. A. **88:** 642 (Feb. 26) 1927.

[15] Smits, J. C.: Ann. Surg. **63:** 56 (May) 1916.

[16] Corlette, C. E.: M. J. Australia **1:** 782 (May 28) 1927; Surg., Gynec. & Obst. **48:** 811-816 (June) 1929.

[17] White, Cleveland, and Weidman, F. D.: Pseudo-Epitheliomatous Hyperplasia at the Margins of Cutaneous Ulcers, J. A. M. A. **88:** 1959 (June 18) 1927.

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**Normal Range of Basal Metabolism.**—Any definition of "normal range of basal metabolism" is necessarily arbitrary. There is, of course, a gradual diminution in the likelihood that a given person's metabolism is normal, as our measurement shows it to deviate from the zero point. If 7 is accepted as a typical coefficient of variation of the basal metabolic rates of normal persons tested with careful technic, the probability is that a normal person will deviate any given distance in a given direction from the mean. It is obvious that normal range of 10 per cent is dangerously small, as two normal persons in thirteen may be expected to fall outside the normal range, one at either end.—Jenkins, R. L.: Basal Metabolism, *Arch. Int. Med.* 49:181 (Feb.) 1932.

# ARTHRITIS OF THE CERVICAL SPINE

## SOME NEUROLOGIC MANIFESTATIONS

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CHICAGO

Investigation in recent years has established the fact that radiculitis of arthritic origin, or funiculitis (Sicard's[1] terminology), is a common manifestation of vertebral arthritis of the cervical as well as the thoracic, lumbar and sacral spinal segments. Symptoms directly referable to the local disease are usually minimal and frequently absent. In contrast, the magnitude of the nerve root symptoms and the remoteness of their distribution often give rise to such varied, illusive and bizarre clinical pictures that it is not unusual to observe failures to recognize the underlying pathologic process. Consequently, such symptoms are not infrequently classified as clinical entities such as neuritis and neuralgia. That the pain may simulate that arising from visceral disease has been stressed by Oppenheim.[2] In point, a case history compatible with angina pectoris will be described subsequently.

Contributing to the confusion in diagnosis is the fact that the motor and sympathetic as well as the sensory components of the nerve roots are not infrequently involved and, similarly, may reflect evidence both of interference in conduction and of stimulation. The meager references to these phenomena in the literature led to the investigation herewith reported.

Arthritis of the spine may be a part of a generalized process including one or more joints of the extremities, or the process may be limited to the vertebral column. Likewise, the spinal involvement may be restricted to certain segments such as the cervical or lumbar spine and not infrequently only to two or three vertebrae. Of interest is the localization of the process to the bodies of the fifth, sixth and seventh vertebrae in the majority of cases of cervical arthritis. To this observation figures 1 and 2 bear witness. The assumption that these segments suffer greater functional trauma would favor such localization.

A conception of the frequent occurrence of arthritis of the spine in persons past middle life can be gained from a study reported by Garvin.[3] At the Mayo Clinic during the year 1925, roentgenograms of the urinary tract were made of 2,090 patients over 50 years of age, and with few exceptions these examinations had no reference to spinal disease. The incidental observations of frequent radiographic evidence of vertebral arthritis led to an investigation of these patients. It was found that 58 per cent of the series presented roentgen evidence of hypertrophic arthritis of the spine—men 67 per cent and women 40 per cent. From this group detailed analyses were made of 500 cases selected at random, and it was found that 74 per cent of the men and 61.5 per cent of the women with hypertrophic arthritis of the spine had no accompanying complaints of rheumatism or neuromuscular pains. Goldthwait[4] and Baber[5] have commented on the slightness or absence of symptoms in the presence of extensive pathologic changes. Similarly, Nissen[6] has observed its presence in patients for years without symptoms until precipitated by trauma, strain and fatigue.

The pathology of ostearthritis of the spine has been described by Goldthwait[4] and others. It consists of a proliferation of the borders of the articular cartilage with subsequent ossification and formation of osteophytes (lipping, spurs). As the process progresses, it extends into the ligamentous structures, and the newly formed "spurs" or "beaks" may fuse to form bridges, which ankylose adjacent vertebrae. The pathologic changes in the vertebral bodies are well illustrated in figure 1. Radicular involvement, funiculitis, results from the associated inflammatory reaction with irritation of, or pressure on, the nerve roots in the intervertebral foramina.

In outlining the symptomatology of arthritis of the cervical spine, reference will be made to an analysis of sixty cases observed at the University of Chicago Clinics. During a period of four years (1927 to 1932) there were studied in the clinics 386 cases of chronic arthritis of undetermined etiology classified as proliferative (rheumatoid arthritis) and degenerative (ostearthritis). Of this group, sixty cases presented evidence of arthritis of the cervical spine as a localized entity or as part of a more or less generalized process involving one or more joints remote to the spine.

### I. HEADACHES

Thirty-one patients complained of headaches either alone or associated with other symptoms. They were occipital or suboccipital in location with, in some cases, radiation into the neck or up over the head. In many cases they became worse in damp and cold weather and were aggravated by bending or twisting the head and by jarring in walking, coughing or sneezing. Frequently relief was obtained by supporting the head with the hands, by lying down, or by the application of heat.

Holbrook[7] has stressed the necessity of a consideration of the cervical spine in the investigation of every patient complaining of headaches, and states that headaches from cervical arthritis may be sufficiently persistent and severe to suggest the possibility of a brain tumor. The following is an illustrative case:

CASE 1.—J. M., a Scotchman, aged 67, seen Sept. 13, 1930, complained of severe suboccipital headaches of one and one-half years' duration, coming on at first only in damp weather. For a year they had been almost constant when he moved about. He had no headache on awakening in the morning, and relief was always obtained by sitting quiet or lying down. The headache was promptly precipitated and always aggravated by any sudden motion of the head or by rubbing his hands over his head in washing his face.

Examination revealed carious teeth, pyorrhea, and pulmonary emphysema. There were no areas of tenderness of the head or neck, and there was no crepitation or restriction of motion of the neck. Percussion and jarring of the head or neck caused pain. The routine studies of the blood and the urine, including the Wassermann reaction, were negative; the blood pressure was 132 systolic and 90 diastolic. Roentgenograms of the chest were negative; those of the cervical spine showed narrowing of the sixth intervertebral space and lipping of bodies 5, 6 and 7.

The diagnosis was ostearthritis of the cervical spine with radiculitis.

### II. SYMPTOMS LOCALIZED TO THE NECK

Pain, tenderness, stiffness, ankylosis and crepitation, localized to the neck, were observed in thirty-eight cases

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From the Department of Surgery, Division of Orthopedic Surgery, University of Chicago.

[1] Sicard, J. A.: Les lumbago, Progrès méd. **35**: 624, 1922.

[2] Oppenheim, Hermann: Textbook of Nervous Diseases, Edinburgh, O. Schulze & Co. **1**: 509-595, 1911.

[3] Garvin, J. D.: Hypertrophic Arthritis of the Spine, Arch. Surg. **15**: 118 (July) 1927.

[4] Goldthwait, J. E.: Osteoarthritis of the Spine: Spondylitis Deformans, Boston M. & S. J. **141**: 128, 1899.

[5] Baber, E. A., in discussion, Ohio State M. J. **25**: 33 (Jan.) 1929.

[6] Nissen, H. A.: Some Observation on Arthritis, M. Clin. North America **8**: 1789 (May) 1925.

[7] Holbrook, C. S.: Headache Due to Arthritis of the Cervical Spine, South. M. J. **20**: 225 (March) 1927.

as local manifestations alone or in conjunction with remote root symptoms. Tenderness over the spinous processes, drawing sensations, and a sense of fatigue in the neck and shoulders were common complaints. Only four cases, one of Still's disease, two of advanced arthritis deformans and one of rhizomelic spondylosis, presented marked limitation of motion.

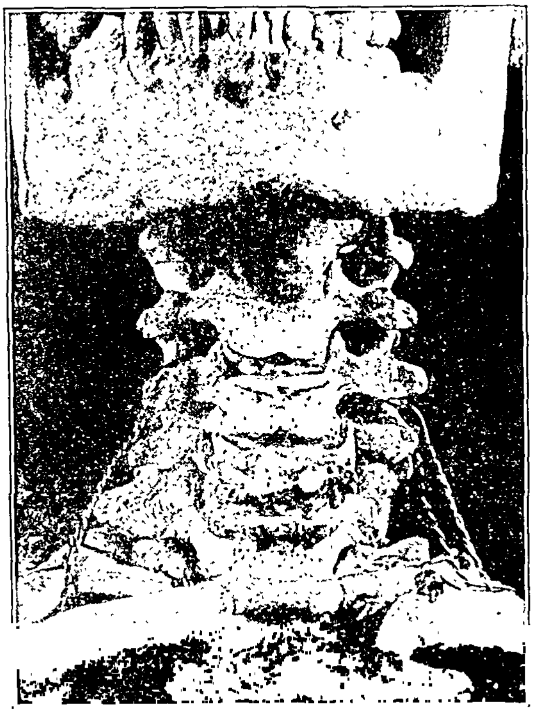

Fig. 1.—The cervical spine of a skeleton illustrating bone proliferation along the upper and lower margins of the body of the fifth and the margins of the adjacent articular surfaces of the fourth and sixth vertebrae.

Cases 2 and 3 illustrate local symptoms:

Case 2.—B. J., a white woman, aged 43 seen, Dec. 18, 1930, gave an indefinite family history of "rheumatism" (maternal). The past history contributed nothing of importance; she stated that she had never had venereal infection. She had three children, living and well, and had had no miscarriages or stillbirths.

Relief was sought from a constant pain of two years' duration in the back of the neck. It extended the full length of the cervical spine and was never sharp but it frequently disturbed her sleep. Some relief was obtained by lying on her face. The course had been punctuated by frequent exacerbations and for two weeks preceding admission the carpophalangeal joints of both hands had become painful, swollen and stiff.

Periodically for ten years there had been similar involvement of the fingers and pain in both hips.

There was tenderness to pressure over the spinous processes of the sixth and seventh cervical vertebrae and some tenderness, swelling and pain on motion of the right first metacarpophalangeal joint. There were no Heberden's nodes, and all joints, including the neck and the hips, had painless normal range of motion. The blood Wassermann and Kahn tests were moderately positive but the spinal fluid was negative. Other studies of the blood and urine were negative.

The roentgenograms of the cervical spine displayed moderate lipping of the anterior margins of the bodies and in the anteroposterior view dense sclerosis of the articular facets.

The diagnosis was (1) ostearthritis of the cervical spine, both hip and phalangeal joints, with radiculitis, and (2) syphilis.

Case 3.—F. S., a man, aged 45, seen, Oct. 7, 1931, with irrelevant family and past histories, complained of an annoying sensation of pain and fatigue of three years' duration in the back of the neck, extending down between the shoulder blades. The pain was constant and not severe but made worse with exposure to cold. The patient felt conscious of an effort to support his head, a "tired feeling" in the neck, relieved by resting his head in his hands. On rotating the head he frequently experienced a sense of crepitation and a sound of creaking. There was no history of antecedent trauma.

Examination confirmed the patient's observation of crepitation, but there was no limitation of motion and no tenderness or pain on motion. The blood pressure was 122 systolic and 86 diastolic. The routine studies of blood and urine, including the Wassermann and Kahn tests, were negative.

A roentgenogram showed some proliferative ostearthritis of the fifth and sixth cervical vertebrae.

The diagnosis was ostearthritis of the cervical spine with radiculitis.

### III. PAIN RADIATING INTO THE ARMS

Eight patients complained of "neuritis" in the shoulders and arms. The pain was usually described as quite severe, often dull and usually paroxysmal, but occasionally constant. Except in one case with a typical ulnar nerve distribution the pain did not have a definite segmental arrangement and in most instances was not well defined. In five cases it was unilateral; in three, bilateral. Its extension varied from the shoulder to the tips of the fingers. Frequently there was an associated sense of weakness and awkwardness in motion of the fingers and arms and, in most cases, numbness and paresthesia. The following case histories are illustrative:

Case 4.—G. L., a man, aged 58, seen, May 4, 1931, supported by crutches and long leg braces, gave a history of paralysis of both lower extremities, persisting since its onset when he was 14 months of age. He had never walked without the aid of crutches. Seven months before he was seen at the clinics, pain developed in the left shoulder and had progressed down the arm, occasionally radiating to all the finger tips. The pain seemed to be located deep in the arm, was frequently severe, and was always worse in cold and damp weather. He had noticed no limitation of motion and no loss of strength, and motion did not influence the pain. There had been no numbness nor paresthesia.

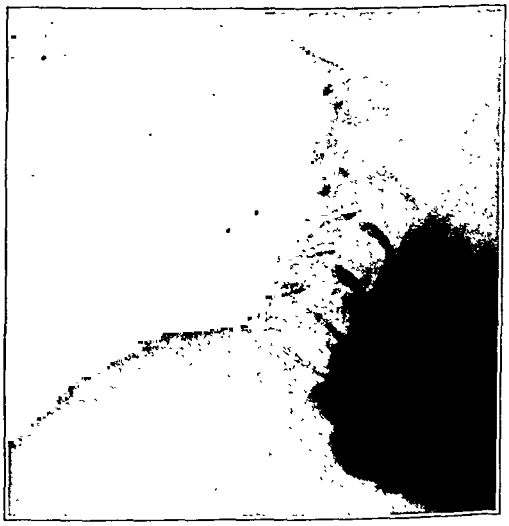

Fig. 2 (case 6).—Rather extensive lipping of the contiguous anterior margins of the bodies of the fifth, sixth and seventh cervical vertebrae.

Both lower extremities were almost completely flail but the abdominal and back muscles had normal strength. The musculature of the upper extremities appeared to be overdeveloped and there was no objective evidence of disturbed function of the motor or sensory nerves. Percussion of the spinous processes of the fifth and sixth cervical vertebrae elicited pain in the neck, but motions of the neck were unrestricted and painless.

Studies of the blood and urine, including the Wassermann and Kahn reactions, were negative.

Roentgen examination revealed normal bony components of the shoulder girdle and no evidence of cervical rib. There was proliferation (ostearthritis) of the anterior margins of the third to sixth cervical vertebrae inclusive, and calcification of the anterior ligaments.

The diagnosis was (1) ostearthritis of the cervical spine with radiculitis, and (2) residual paralysis of anterior poliomyelitis.

Case 5.—P. W., a man, aged 55, seen, April 25, 1930, had had typhoid at the age of 16. For fourteen years he had had frontal headaches and "hay fever" with occasional attacks of asthma. For five years he had had "rheumatism" in the right knee, and five years before admission he was confined to his bed for a week with concussion of the brain as a result of a blow on the head from a falling block.

For one year he had suffered from pain in the neck, radiating down between the shoulders and out into both arms as far as the elbows *(distribution not well defined)*. It became worse in damp weather and often disturbed his sleep. There was an associated sense of stiffness and creaking on motion.

The examination, including dental roentgenograms, examination of the urine and blood, and Wassermann tests, was negative except for a palpable grating sensation of the cervical spine on motion. There was no tenderness or limitation of motion and no evidence of disturbance of sensory or motor function.

Roentgenograms of the cervical spine showed lipping of the bodies of the fifth and sixth vertebrae. The sinuses were clear, and there was no evidence of cervical rib.

The diagnosis was ostearthritis of the knee and cervical spine with radiculitis.

Of interest is the presentation of a definite history of injury.

Case 6.—C. C. a woman, aged 47, seen, Aug. 2, 1929, with moderate hypertension (blood pressure 154 systolic and 104 diastolic) and a diagnosis of chronic functional colitis, complained of sharp pain of one year's duration in the neck on top of and between the shoulders, with radiation into the epigastrium. For six weeks following the onset of these symptoms she had had severe hiccups. They were quite constant with only brief periods of relief obtained occasionally by lying quiet and with pressure applied bilaterally over the anterolateral aspects of the neck. For two weeks before admission, rather severe shooting pains had periodically radiated down both arms and into the fingers.

There was definite tenderness to percussion of the lower cervical and lower thoracic spinal segments. Tenderness could also be elicited in the ninth and tenth intercostal spaces on the left side and at the base of the neck.

The laboratory studies were negative.

The roentgenograms (fig. 2) of the spine showed marked lipping of the anterior margins of the bodies of the fifth, sixth and seventh cervical vertebrae and of the articulating borders of the bodies of the eighth, ninth and tenth thoracic vertebrae. There was no evidence of cervical rib.

The diagnosis was ostearthritis of the cervical and dorsal spine with radiculitis. . .

The symptoms giving rise to the diagnosis of functional colitis and questionable gallbladder disease in this case were no doubt radicular in origin from the arthritis of the thoracic spine. The possibility of involvement of the phrenic nerve is discussed elsewhere.

### IV. NUMBNESS AND PARESTHESIA OF THE ARMS

Sensory disturbances were prominent features in five cases and were noted in four additional cases. The topography of these sensations and the areas of diminished sensations were usually diffuse and in only two instances sufficiently well defined to correspond to nerve root or trunk distribution. These two cases presented objective evidence of sensory nerve involvement capable of nerve root localization. The patients stated that their arms or hands felt as though they were asleep, or they complained of tingling (pins and needles), burning, crawling (of bugs) and stinging sensations. Two illustrative cases are presented:

Case 7.—A woman, aged 54, seen, May 26, 1931, sought relief of numbness and tingling of the arms. The onset occurred six weeks previously with these sensations in the second and third fingers of the left hand and in a few days extended up the medial volar surface of the forearm to 3 inches above the elbow. Three days later the right hand and forearm became identically involved. Subsequently there developed sensations of ants creeping under the skin and dull boring pain which disturbed her sleep. For a few days she experienced sudden quick momentary throbs in both hands, and cramps in the arms.

Slight hypesthesia was demonstrated over the volar surfaces on the medial aspects of both forearms, more marked on the left side, suggesting irritation of the eighth cervical and first thoracic roots bilaterally.

The dental consultant reported periapical lesions of two teeth. The urine, blood, and Wassermann and Kahn tests were negative.

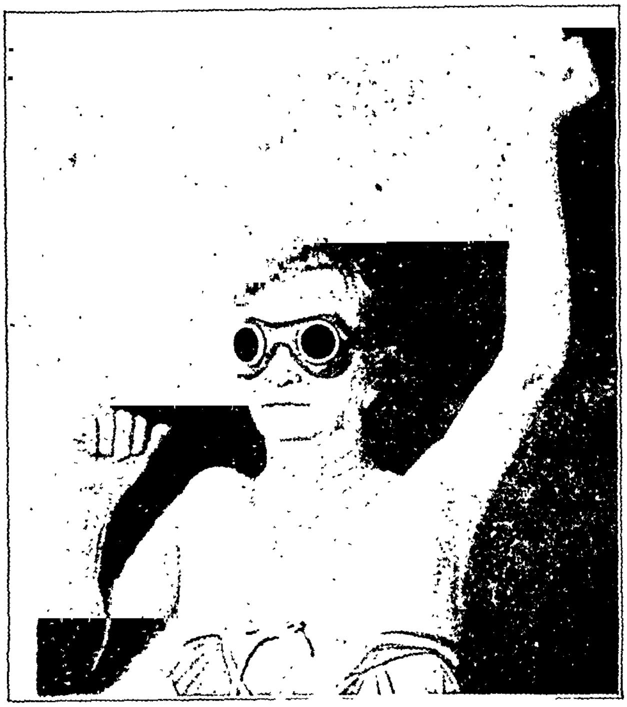

Fig. 3 (case 9).—Paralysis of the deltoid and weakness of the biceps and triceps of the right arm. Wasting of the deltoid and inability to abduct the arm are noticeable.

Roentgenograms demonstrated lipping of ostearthritis of the bodies of the fifth, sixth and seventh cervical vertebrae. There was no evidence of cervical rib.

The diagnosis was ostearthritis of the cervical spine with radiculitis.

Case 8.—E. A., a man, aged 66, seen, Oct. 16, 1931, had had "catarrh" and occasional sore throat for many years and pain from renal calculi until removal twelve years ago. Ten years before admission he twisted his neck severely but was not incapacitated.

For five years his neck had felt stiff and for two and one-half years there had been a constant dull and an occasional sharp pain in the right shoulder and arm. One and one-half years later, the same symptoms appeared in the left shoulder and arm, and diffuse numbness and weakness subsequently developed in both arms. These symptoms were exaggerated by cold and "changeable" weather, were worse in the morning, and were relieved by lying down.

There was some limitation of motion of the neck and tenderness on palpation of the cervical spine.

The blood, urine, Wassermann and Kahn tests were negative; the blood pressure was 128 systolic and 90 diastolic.

Roentgenograms demonstrated some loss of cartilage space (sixth) and lipping and fusion of the anterior margins of the bodies of the sixth and seventh cervical vertebrae.

The diagnosis was ostearthritis of the cervical spine with radiculitis.

It should be noted that an indefinite history of injury was given.

### V. EFFERENT (MOTOR) DISTURBANCES

Of the sixty cases, there were four with definite evidence of motor nerve involvement and a large group in which some disturbance could be assumed. Associated with the sensory symptoms in the majority of cases, there was a complaint of weakness or difficulty in coordination of certain muscle groups or of the entire extremity. Objective confirmations of these observations were not infrequent. Definite atrophy, generalized or localized to certain muscles, was noted in several cases, but obviously this is difficult to differentiate from atrophy of disuse resulting from the pain. Wasting of the thenar and hypothenar eminences was observed in several cases. Case 9 will serve to illustrate the paralytic phenomena:

Case 9 (fig. 3).—A. F., a woman, aged 51, seen, Oct. 30, 1931, had always been perfectly well until one year before admission, when she suddenly became aware of numbness and tingling in the fingers and hypothenar eminence of the right hand. This persisted for a week, and there were no further symptoms until three months before admission, when she noticed the development of a progressive weakness in the right arm and complete inability to abduct the arm. There was no associated pain or other sensory disturbance.

Examination revealed slight irregularity of the pupils but normal reflexes except for the right arm. The blood pressure was 102 systolic and 70 diastolic, and the arteries were not sclerosed.

The right arm showed some atrophy throughout with rather marked wasting of the deltoid. There was almost complete loss of function of the deltoid, marked weakness of the triceps and biceps, absence of right biceps and triceps reflexes, and a questionable hypalgesia in the right axillary nerve distribution. These observations were interpreted to be the result of involvement of the fifth and sixth cervical roots. No tenderness or limitation of motion could be demonstrated in the right shoulder or cervical spine.

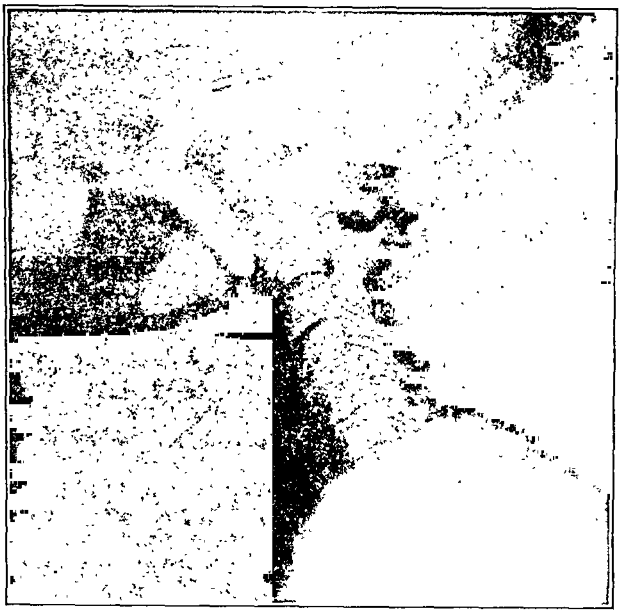

Fig. 4 (case 9).—Involvement of the bodies of the fifth, sixth and seventh cervical vertebrae. Radiculitis of the fifth and sixth cervical roots.

The laboratory examinations of the cerebrospinal fluid, the urine and the blood gave normal results, and the blood Wassermann and Kahn reactions were negative.

Roentgenograms of the chest and right shoulder were negative. There was no evidence of cervical rib. Those of the cervical spine showed narrowing of the fifth intervertebral space and lipping of the anterior margins of the bodies of the fifth and sixth cervical vertebrae.

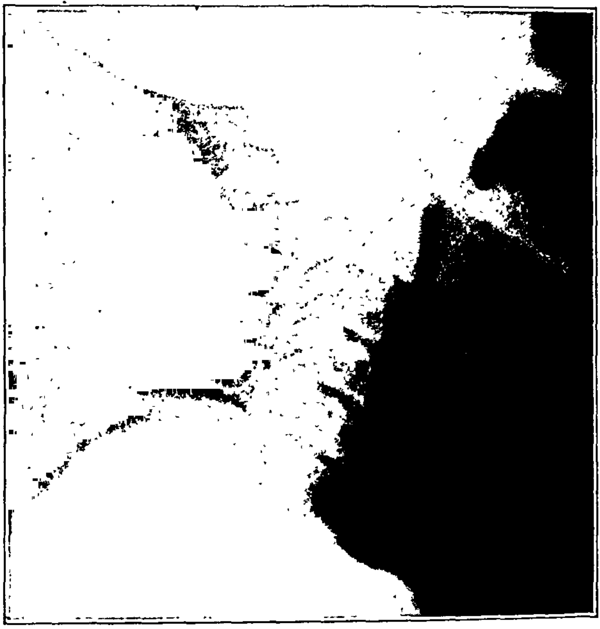

Fig. 5 (case 10).—Rather extensive ostearthritis of the entire cervical spine and calcification of the anterior group of ligaments.

The diagnosis was ostearthritis of the cervical spine with radiculitis (motor paralysis).

The motor symptoms may reflect evidence of irritation and stimulation of the root fibers, such as twitchings and continuous or spasmodic contractures. Case 10, a spasmodic torticollis, represents this type of disturbance. One patient in the series had flexion contractures of the third and fourth fingers, and three patients gave vague histories of cramps and transitory twitchings, one of the shoulder and two of the forearm and fingers. Lasserre[8] reported a case of cervical arthritis with spastic torticollis which was irreducible and persisted for three weeks.

Radiculitis from cervical arthritis may reflect involvement of the cervical sympathetic nerve fibers. Wagenhals[9] reported a case with Horner's syndrome on one side.

One case of this series gave a history of hiccups of six weeks' duration coming on simultaneously with other symptoms of arthritis of the cervical spine. It is possible that it resulted from radiculitis of roots from which the phrenic nerve derives its fibers (case 6).

Case 10.—B. T., a housewife, aged 56, seen, Sept. 22, 1930, had had attacks for ten years of acute pain in the precordium that would last for only a few minutes and came on several times each day. For five years she had had "rheumatism" in both arms and in the back of the neck, characterized by dull and shooting pain and limitation of motion. The pain in the neck radiated down between the shoulder blades and into the chest.

Five years before admission there developed periodic attacks of spasmodic jerking of the face to the right and the head toward the left shoulder, exaggerated with excitement and quieted with rest.

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[8] Lasserre, C.: Cervical Arthritis in Rheumatism, Arch. franco-belges de chir. 32: 604 (July) 1930.

[9] Wagenhals, F. S.: Neurological Disturbances Associated with Hypertrophic Arthritis of the Spine, Ohio State M. J. 25: 31 (Jan.) 1929.

The patient, a slender woman, was made conspicuous by frequent spasmodic contractures of the left sternocleidomastoid muscle drawing the head toward the left shoulder and pointing the chin to the right. With each spasm the left shoulder rose, and contracture of muscles of the left shoulder girdle and of the left sternocleidomastoid muscles could be palpated. No tenderness or limitation of motion in the cervical spine could be elicited. Pressure over the third, fourth and fifth thoracic vertebrae caused discomfort.

The blood pressure was 190 systolic and 110 diastolic. The Wassermann and Kahn tests and the urine and routine blood examinations were negative. Electrocardiography showed a slight tendency to left ventricular preponderance.

The roentgenograms revealed lipping of the anterior borders of the bodies of the fifth, sixth and seventh cervical vertebrae (fig. 5) and no evidence of cervical rib.

The diagnosis was (1) ostearthritis of the cervical and thoracic spine with radiculitis (spasmodic torticollis) and (2) hypertension.

The differential diagnosis of arthritis of the cervical spine involves a consideration of a large group of intrinsic lesions of the central and peripheral nervous system, certain general and visceral disease processes and such conditions as arthritis of the shoulder and other joints of the arm, subdeltoid bursitis, cervical rib, and various lesions of the cervical vertebrae. The latter group includes tuberculosis (cervical Pott's disease), fractures, dislocations, new growths (primary or metastatic), osteomalacia, osteomyelitis and actinomycosis. Added to other uncertain factors in diagnosis is the frequent occurrence of extensive vertebral arthritis without symptoms in persons past middle life.

The present methods of treatment of radiculitis resulting from cervical arthritis are generally conceded to be very unsatisfactory. The therapeutic measures that are applicable to arthritis in general are a benefit. Considerable relief of symptoms is obtained by immobilization of the cervical spine for several weeks in a Thomas collar with short periods of stretching (traction) each day. I [10] recently described a device which provides an effective method of applying these principles.

Roentgen irradiation of the spine in repeated small doses has proved definitely beneficial in many cases. Pfender [11] has reported some excellent results and attributes them to the decompression resulting from the action of the rays on the connective tissue surrounding the nerve roots in the intervertebral foramina.

Special indications arise which demand special forms of treatment, such as the prevention of overstretching of paralyzed muscles and of contracture deformation.

### CONCLUSIONS

1. Symptoms of sixty cases of arthritis of the cervical spine were analyzed. They represent 15 per cent of all cases (386) of arthritis of undetermined etiology studied over a period of four years at the University of Chicago Clinics.

2. Ten illustrative case histories emphasize the complete or relative silence of subjective and objective evidence of the primary lesions of vertebral arthritis as compared to the major rôles played by the nerve roots which are secondarily involved. In general, it may be said that arthritis of the cervical spine manifests itself by signs and symptoms remote in respect to the spine.

3. Radiculitis may involve any group of nerve fibers contained in a nerve root; that is, somatic and sympathetic motor and sensory, and the symptoms may reflect evidence of irritation or complete or partial loss of function.

4. The symptoms are frequently elusive and may simulate many visceral, cerebrospinal, local and general disease entities.

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# NONTUBERCULOUS ARTHRITIS

## A DESCRIPTIVE CLASSIFICATION

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In order to appreciate the classification of chronic arthritis proposed by the American Committee for the Control of Rheumatism, one has to be familiar with the work of Nichols and Richardson, on which the classification is based. Their treatise [1] on chronic joint disease, published over twenty years ago, is possibly the most extensive study of this topic ever made and is of fundamental importance in that it showed that all types of chronic nontuberculous arthritis tend to fall into two main groups. Richardson,[2] in 1905, reported on the clinical manifestations of seventy-five cases of arthritis. He divided these cases into two clinical groups which he labeled group I and group II. Nichols and Richardson, after spending eight years in histologic studies of sixty-five cases, found that the cases again fell into two main groups, which they called proliferative and degenerative, and that clinical group I corresponded to the proliferative and group II to the degenerative type. The authors stressed the point that the cases of the two groups were not necessarily of different etiology; from this point of view there was considerable overlapping. Nichols and Richardson emphasized that a certain pathologic alteration of a joint may be the result of a variety of irritants or agents, and a given irritant or agent may produce a variety of pathologic changes. Trauma, acute suppurative infection, gonorrhea, syphilis, probably faulty metabolism and probably also a variety of other factors may induce primary proliferation of the synovial membrane, while old age, trauma, dislocations, bone tumor, gout, diseases of the central nervous system and other causes may lead to primary degeneration of the cartilage. Nichols and Richardson thus included under proliferative arthritis various types of specific and nonspecific arthritides. That a variety of causes may produce the same gross and histologic changes and one etiologic factor result in a variety of pathologic pictures, this clear realization of Nichols and Richardson, is important to bear in mind. Many writers have adopted a different usage, applying the term "proliferative arthritis" to designate nonspecific disease only and describing all specific infections separately. Pathologically, Nichols and Richardson did not differentiate a gonorrheal, staphylococcic or streptococcic joint from a nonspecific infectious arthritis; all were proliferative arthritides. Nor were they able to differentiate between a degenerative arthritis secondary to trauma, syphilis or senile changes. The same excellent treatise also brought out the fact that a proliferative arthritis, if it continued sufficiently long, might develop changes characteristic of the degenerative type, particularly osseous hypertrophy. In one and the same patient, at the same time, one may find one joint with typical degenerative changes and another showing definite proliferative changes. Osgood,[3] as well as Strangeways,[4] who spent many years studying chronic arthritis, has pointed out this possibility.

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[10] Bisgard, J. D.: A Device for Simultaneous Fraction and Complete Immobilization of the Cervical Spine, J. Bone & Joint Surg. **14:** 190-191 (Jan.) 1932.

[11] Pfender, C. A.: Roentgen Treatment of Chronic Spondylitis Deformans, Am. J. Roentgenol. **13:** 551 (June) 1925.

From the Medical Service of the University Hospital and the Department of Medicine, University of Minnesota Medical School.

[1] Nichols, E. H., and Richardson, F. L.: Arthritis Deformans, J. M. Research **21:** 149 (Sept.) 1909.

[2] Richardson, F. L.: A Clinical Report of Seventy-Five Cases of Arthritis Deformans (Chronic Nontubercular Arthritis), Boston M. & S. J. **152:** 263, 1905.

The proliferative process, which was found to be of sufficient importance to form the basis for a classification, commonly begins in the synovial membrane, and it is necessary in the bizarre terminology of arthritis to remember that the term "proliferative" always does or at least always should refer to synovial proliferation. A pannus-like membrane of granulation tissue is the result of the proliferative process; this membrane spreads over the joint cartilage. Wherever the pannus comes in contact with the cartilage, it produces erosion and destruction. At the same time a reaction is stimulated in the perichondrium which starts to proliferate, developing new cartilage and even new bone. Thus several processes are in progress: synovial proliferation, destruction of cartilage, and formation of new cartilage and new bone. There may also be a proliferative process in the subcartilaginous endosteum invading the joint cartilage, which thus is being destroyed both from above and from below. The epiphyseal bone marrow shows an increase in connective tissue and increased vascularity. There may or may not be an epiphyseal diminution of the bone trabeculae. The decrease in epiphyseal bone tissue on the roentgen film gives an atrophic appearance and explains the x-ray name for this type of arthritis: atrophic arthritis. Fibrous adhesions occur early and often become extensive, producing a multiloculated joint cavity. These adhesions cause fixation of the joint, leading to further bone atrophy. In advanced cases the joint may be entirely destroyed and the adjacent bones fused together with a continuous marrow cavity. Subluxations and dislocations are frequent in proliferative arthritis. Effusion into the joint cavity together with articular and periarticular swelling produces the characteristic fusiform joint of this type of arthritis.

Degenerative arthritis is characterized by fibrillation and degeneration of the joint cartilage, especially in its central portion, together with an overgrowth of bone at the edges of the joint. Ankylosis due to adhesions does not occur, but there may be locking of the joint due to exostoses. As the name indicates, this is primarily a senile degenerative process with little evidence of inflammation.

Clinically these types may be differentiated in the manner shown in table 1.

The American Committee for the Control of Rheumatism accepted Nichols and Richardson's classification. The terms proliferative and degenerative are used synonymously with atrophic and hypertrophic and with the English rheumatoid arthritis and ostearthritis.

Proliferative = Atrophic = Rheumatoid
Degenerative = Hypertrophic = Ostearthritis

Against the background of the previous brief discussion the logic in this synonymous usage is easily seen; without it the terminology is confusing.

A review of recent literature indicates that the committee's classification is not being used by all workers in this field. On the contrary, the classifications in common use are as varied and confusing as if the committee had never existed. Most classifications are based on one aspect of the disease only: either the pathologic picture or the roentgenologic characteristics, or sometimes on presumed etiology. Hench,[5] among others, has proposed such an etiologic classification. The fallacy of an etiologic classification has been pointed out by Osgood, Assman[6] and others. While it is agreed that a considerable group of arthritides will prove to be infectious, it cannot be said that this question has been settled. It hardly seems possible at this time to state which types of arthritis are infectious and which are not. Some investigators, Clawson,[7] and Cecil and his co-workers,[8] find a high percentage of positive blood and joint cultures in chronic arthritis, while others, Swift,[9] and Dawson and his co-workers,[10] are unable to corroborate this work. It must not be forgotten that there are considerable data indicating that some arthritides are intimately related with constitutional inferiorities, metabolic disturbances and gastro-intestinal malfunctions, factors the exact importance of which is difficult to determine. By picking out

Table 1.—*Characterization of Proliferative and Degenerative Arthritis*

| | Proliferative | Degenerative |
|---|---|---|
| Etiology ........ | 1. Foci of infection<br>2. Disturbed metabolism<br>3. Environment<br>4. Hereditary constitutional defects<br>5. Vascular instability<br>6. Gastro-intestinal malfunction | 1. Senility<br>2. Vasomotor disturbance<br>3. Trauma<br>4. Infection |
| Onset ........... | Acute or subacute | Insidious, chronic |
| Age group....... | Younger; 20-40 | Older; 40-60 |
| Type of joint.... | Increased fluid with fusiform swelling | Usually dry with general diffuse enlargement; crepitus often occurs |
| Sex ............. | Three times as common in females | Slightly more common in males |
| Joints affected.... | Smaller joints of hands and feet first<br>Often symmetrical involvement of joints: wrists, knees, ankles<br>Spine and jaw joint often involved | More commonly monarticular<br>Hip joint<br>Shoulder<br>Not symmetrical |
| Muscular wasting. | Marked | Not prominent |
| Pain ........... | Usually marked | Usually not marked, although very variable |
| Limitation of motion and deformity | Early and marked<br>Ankylosis early, fibrous or osseous | Usually comes on after years<br>Not real ankylosis; limitation often due to exostosis |
| Vasomotor phenomena | Often precedes actual development of arthritis<br>Raynaud's: cold hands, increased sweating | Arteriosclerosis common |
| Constitutional symptoms | May be marked | Usually not marked |

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3. Osgood, R. B.: The Classification and Etiology of Chronic Rheumatism or Arthritis, Acta chir. Scandinav. **67**: 634, 1930.

4. Strangeways, T. P. S.: Morbid Anatomy and Histology of Rheumatoid Arthritis, Brit. M. J. **2**: 623 (Dec. 7) 1918.

5. Henderson, M. S., and Hench, P. S.: Types and Treatment of Chronic Arthritis, Minnesota Med. **12**: 202 (April) 1929.

6. Assman, H.: Wesen und Einteilung der chronischen Gelenkserkrankungen, Wien. med. Wchnschr. **80**: 197 (Feb. 1) 1930.

7. Clawson, B. J.: Personal communication to the author.

8. Cecil, R. L.; Nichols, Edith E., and Stainsby, W. J.: Bacteriology of Blood and Joints in Chronic Infectious Arthritis, Arch. Int. Med. **43**: 571 (May) 1929.

9. Swift, H. F., and Kinsella, R. A.: Bacteriologic Studies in Rheumatic Fever, Arch. Int. Med. **19**: 381 (March) 1917.

10. Dawson, M. H.; Olmstead, Miriam, and Boots, R. H.: Studies on Etiology of Rheumatoid Arthritis: Bacteriological Investigations on Blood, Synovial Fluid and Subcutaneous Nodules in Rheumatoid Arthritis, Proc. Soc. Exper. Biol. & Med. **28**: 419 (Jan.) 1931.

certain of the arthritides as infectious, one is apt to infer that the others are noninfectious. Such a conclusion again is unwarranted, since other data may be produced indicating that all types of arthritis are infectious, beginning with rheumatic fever, leading through so-called atrophic arthritis and including also ostearthritis. McCrae[11] expresses such an opinion, and other workers in the field are inclined toward this view. Thus it appears that at present any attempt to classify the arthritides on an etiologic basis alone is premature and apt to confuse the subject rather than to do the opposite. It is, however, important to present what etiologic data one may possess in any individual case and to use these data along with other information more fully to describe any given type of arthritis. With the recent interest in chronic arthritis, it is important that the cases be fully and accurately described. The use of the term chronic infectious arthritis (nonspecific)[5] does not offer such a description. In a recent paper on the value of prostatic treatment in arthritis,[12] simply the general term "chronic arthritis" is used without further differentiation, making it impossible to extract from this comprehensive study any information as to the type of arthritis in which prostatic massage might be of benefit.

The lack of logic in an old classification[13] of arthritis into (1) infectious, (2) atrophic and (3) hypertrophic has been pointed out by a number of writers, among them Osgood. Yet the classification was recently used anew.[14] The use of the term infectious arthritis in this classification is unfortunate, as it easily implies that the other two groups are noninfectious. This classification is commonly used by roentgenologists and has led to a great deal of confusion. It is common to receive an x-ray report of infectious arthritis in one patient and of atrophic arthritis in another and find the two patients identical from every clinical point of view. Roentgenologists wish to name such cases infectious arthritis when there has been a rapid destruction of the joint structure with marked erosion of the cartilage, abundant effusion into the joint and but little bone atrophy. In their experience, arthritis caused by a specific infection often presents such a picture. However, if one studies a series of cases of atrophic arthritis over a period of years, one will observe in the roentgenograms any one of the changes designated as specific for "infectious arthritis." Some joints are destroyed rather rapidly while others reach the same end-result only after a period of years. Surely the roentgenologist is not able to differentiate an infectious from a noninfectious joint process from the study of his film alone when many years of bacteriologic and clinical studies have failed to give such much needed information. It would result in less confusion if the roentgenologist simply described the pathologic process as revealed in the film rather than attempting to label the specific type of arthritis.

A few remarks might be appropriate in regard to some other phases of roentgen diagnosis in chronic arthritis. Not uncommonly a diagnosis of gonorrheal arthritis is made merely on a roentgen report. It is doubtful whether there are any specific roentgen indications in gonorrheal arthritis. It is certain that any of the roentgen changes found in a known case of gonorrheal arthritis may be present in ordinary atrophic arthritis. Clinicians too often are led to make the diagnosis gonorrheal arthritis when before the roentgen examination gonorrhea was not considered. Having received a roentgen diagnosis of gonorrheal arthritis, one searches and often obtains a history of gonorrheal urethritis years previously, with some persisting evidence of urethral disease; from then on the case becomes one of chronic gonorrheal arthritis. It is doubtful whether chronic gonorrhea produces chronic arthritis. The arthritis associated with gonorrhea usually comes on as an acute process a few days or weeks after the onset of a urethritis. A roentgen diagnosis of chronic gonorrheal arthritis is insufficient evidence on which to make the clinical diagnosis of this type of specific arthritis. It is necessary in most instances to obtain a history of the inception of the articular process soon after the onset of the gonorrheal infection.

The situation in regard to the roentgen diagnosis of gout is similar to that of gonorrheal arthritis. The roentgenologist makes the diagnosis of gout on punched out areas seen in the bones at the margins of the joint surfaces. Such so-called characteristic punched out areas are commonly seen in atrophic arthritis, as was pointed out many years ago by Strangeways,[4] by Henry Christian and by McClure and McCarty.[15] Only when the punched out areas are localized to the great toe joint can one be fairly certain that gout is present.

Umber's classification[6] into (1) infectious, (2) endocrine and (3) ostearthritis may be questioned from the same point of view as other etiologic classifications. As pointed out by Assman,[6] our knowledge of endocrine disease and arthritis is so fragmentary that a classification based on this limited information is apt to lead to further misrepresentation. Beneke's classification[6] into (1) physical and (2) chemical would seem to add little or nothing to the clarity and understanding of the subject. Assman's[6] groups (1) inflammatory, (2) noninflammatory correspond closely to Nichols and Richardson's (1) proliferative, (2) degenerative, different terms being used to designate the same pathologic processes.

In regard to the classification proposed by the American committee, investigators are finding that they are unable to describe adequately certain joints in a way sufficiently clear to exclude mistakes. The classification gives only one phase of the disease. It is too fixed and does not permit the free incorporation of new information.

The present paper is entirely eclectic. I wish to enlarge on the classification proposed by the committee, making it less archaic, more descriptive and at the same time, be it freely admitted, more cumbersome. The classification of chronic arthritis here proposed is not based on any one particular phase but tries to consider the phases of the subject that seem important: the clinical, etiologic, pathologic, anatomic and roentgenologic aspects. Such a compound classification has recently been suggested by Fisher.[16] It is hoped that the use of this type of classification will give a complete unmistakable picture of any type of arthritis. It allows for addition or subtraction as experience warrants, without destroying the general structure. It is true that the resulting terminology is cumbersome, but until one is able to formulate a classification based on known etiology, lengthy descriptive terms seem necessary.

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[12] Nickel, A. C., and Stuhler, L. G.: Prostate Gland as Focus of Infection in Arthritis, M. Clin. North America **13**: 1519 (May) 1930.

[13] Goldthwait, J. E.: Infections Arthritis, Boston M. & S. J. **150**: 363, 1904.

[14] Vrtiak, E. G., and Jordon, E. P.: Clinical Study of Chronic Arthritis, J. A. M. A. **94**: 863 (March 22) 1930.

[15] McClure, C. W., and McCarthy, E. D.: Roentgenographic Studies in Gout, Arch. Int. Med. **24**: 563 (Nov.) 1919.

[16] Fisher, A. G. T.: Chronic (Nontuberculous) Arthritis, New York, Macmillan Company, 1929.

It is evident from table 2 that three different aspects are presented. Of these, the pathologic is the most general and is further specified and determined by the additional use of the anatomic and the roentgenologic terminology. Another independent aspect is the clinical one, simple in concept but fundamental in importance. The third aspect is the etiologic, independent of the other two. Particularly in reporting the results of different types of treatment it seems paramount clearly to indicate what kind of process has been treated and which symptoms have been relieved. A treatment leading to objective improvement must be considered differently from one giving chiefly subjective relief. An analytic presentation is needed as much in the evaluation of the therapeutic results as in the description of the patients subjected to the treatment.

Great interest at present centers around the possibility of further development of the etiologic diagnosis. A brief discussion seems indicated. In spite of the amount of evidence in favor of the streptococcus as a causative agent in chronic arthritis, there is no unanimity of opinion in this matter. The streptococcic theory has gained ground in English speaking countries, while German investigators are less convinced that the streptococcus is the specific organism; they still hold out the possibility of an undiscovered filtrable virus.

Table 2.—*Facts to Be Considered in Classification of Arthritis*

| Clinical | Etiologic | Pathologic | Anatomic | Roentgenologic |
|---|---|---|---|---|
| Acute<br>Subacute<br>Chronic<br>Recurrent<br>———<br>Monarthritis<br>Polyarthritis | Specific infections<br>Gonorrhea<br>Staphylococcus<br>Streptococcus<br>Traumatic<br>Metabolic (gout)<br>Arthropathic<br>Charcot<br>Syringomyelia | Proliferative<br>Degenerative | Periarticular (synovial)<br>Chondro-osseous<br>Mixed | Atrophic<br>Hypertrophic |

Examples:
Subacute periarticular atrophic arthritis
Chronic proliferative (chondro-osseous atrophic) arthritis
Acute staphylococcic proliferative (periarticular) arthritis
Subacute gonorrheal proliferative (mixed) arthritis
Chronic streptococcal proliferative (periarticular atrophic) arthritis
Chronic degenerative (chondro-osseous hypertrophic) (mon)arthritis

The enthusiasm over the rôle of the streptococcus in acute rheumatic fever has led some investigators to conclude that all types of arthritis are manifestations of the same infection. Streptococci have been found in the blood and joints not only in rheumatic fever and rheumatoid arthritis but also in ostearthritis. These workers are inclined to believe that the variations in the clinical picture are due simply to age differences in reaction to one and the same infecting organism. That is, when a child is afflicted with rheumatic disease he develops rheumatic fever; a young adult gets rheumatoid arthritis, while an older adult gets ostearthritis. Thus there has been some tendency to disregard all previous clinical classifications and to throw all types of rheumatic and joint infection into one undifferentiated group. While there is some evidence in favor of this point of view, it would lead to confusion if the well recognized clinical types of arthritis were disregarded. It is difficult to conceive that rheumatic fever and rheumatoid arthritis are manifestations of the same disease. There are too many and too marked differences between them; rheumatic fever is a disease of childhood having its peak of incidence at about 9 years of age. Rheumatoid arthritis occurs most commonly between 20 and 30 years of age. Rheumatic fever is ordinarily more acute but practically never leads to permanent joint changes, as is usually the case in rheumatoid arthritis. Rheumatic fever causes permanent damage of the heart in 60 per cent of the cases, while valvular heart disease is a rare complication in the rheumatoid type. If these two diseases were different manifestations of the same infection, one would expect to find at least a small number of patients who showed definite progress from the state of rheumatic fever to that of rheumatoid arthritis. I have had the opportunity of observing several hundred cases of juvenile rheumatism during the past eleven years. The children have been followed through the high school period into young adulthood and in not a single case has the transition from rheumatic fever to rheumatoid arthritis been observed. Occasionally a child shows some persistent swelling and stiffness of the joints after the acute stage of the rheumatic fever has passed, but in no instance has this condition led to rheumatoid arthritis and in no case have there been roentgen changes characteristic of the rheumatoid type. If these two types of rheumatism are due to the same infecting agent, it is strange that cases of mitral stenosis accompanying rheumatoid arthritis are not observed. On the other hand, when rheumatoid arthritis occurs in childhood, as it occasionally does, it presents the same picture as in the adult. Still's disease appears to be nothing but rheumatoid arthritis in childhood.

The study of rheumatism in Holland[17] has shown that, while rheumatoid arthritis is common, rheumatic fever is rare. A more nearly identical occurrence of these rheumatic conditions might be expected if the causative agents were the same. It seems evident that there are fundamental differences between rheumatic fever and rheumatoid arthritis.

As already indicated, there are also fundamental differences between rheumatoid arthritis and ostearthritis. The rheumatoid type appears to be an infectious disease, while ostearthritis possesses none of the characteristics of an infectious process. While there is some overlapping between the groups, ordinarily they can be differentiated clinically.

Until the etiology of the various types of rheumatic disease is determined, it is important to maintain a clear clinical classification. Starting with the fundamental differentiation given by Nichols and Richardson and adding other significant phases, it is possible to describe clearly any particular case. It would seem a distinct advantage if attempts at classification based exclusively on presumptive etiology were discontinued.

## SUMMARY

The classification of chronic arthritis recently proposed by the American Committee for the Control of Rheumatism has not been universally accepted.

A brief review of the recent literature on chronic arthritis shows a number of classifications which are controversial.

The composite classification of arthritis introduced in the present article permits the use of descriptive terms the meanings of which are unmistakable.

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[17] Bach, Francis: On the Incidence of Rheumatic Fever, Brit. J. Child. Dis. **28**: 198 (July-Sept.) 1931.

# PULMONARY SYPHILIS

## A REPORT OF THREE CASES OF ACQUIRED LUNG SYPHILIS IN ADULTS, WITH PARTICULAR REFERENCE TO ROENTGEN ASPECTS

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AND
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CHICAGO

A diagnosis of pulmonary syphilis is generally regarded with a good deal of skepticism. A brief survey of the literature reveals marked variations of opinion as to incidence, character of the lesion and anatomic criteria essential for the establishment of an authentic diagnosis. Carrera,[1] in a very careful postmortem study of the lungs of 152 known syphilitic patients, found 12 cases of undoubted syphilis of the lungs from the anatomic standpoint. In 29,680 routine postmortem examinations collected by Erickson, syphilis of the lung was found in but 19 instances (0.06 per cent) in 240 autopsies on known patients with syphilis, the disease occurred in 23 cases (9.6 per cent).

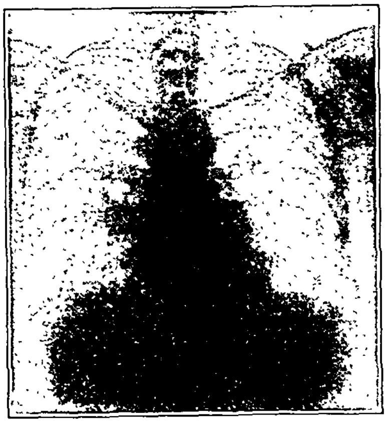

Fig. 1 (case 1).—Appearance March 12, 1930, just before antisyphilitic treatment was begun. A slight extension had occurred since the previous roentgen examination.

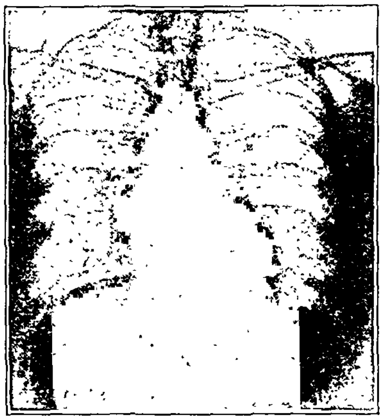

Fig. 2 (case 1).—Appearance about six and one-half months after antisyphilitic therapy: evidence of retrogression; Wassermann reaction still strongly positive.

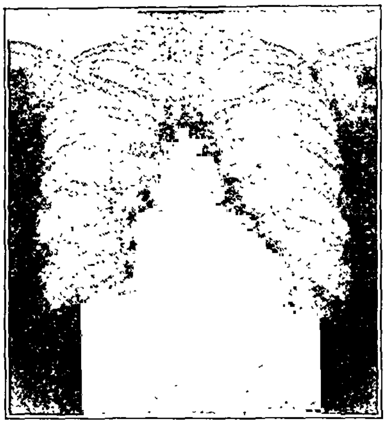

Fig. 3 (case 1).—One year after syphilitic treatment: almost complete regression; Wassermann reaction negative.

In the present article we record three cases and discuss the salient features of the condition.

Case 1.—G. M., a Negress, aged 25, married several times, never pregnant, was well until May, 1928, when she was acutely ill with cough, chills, fever, mucous expectoration, and pain in the right chest. A diagnosis of pneumonia was made from which she did not recover entirely. She was admitted to the hospital for observation, Sept. 30, 1929. She did not look or feel acutely ill. There was a persistent morning cough with thick mucous expectoration, at times blood streaked. She had lost 65 pounds (29.5 Kg.) and had had gnawing pains across the back of the chest since the illness in May. A tentative diagnosis of unresolved pneumonia was made. Physical examination disclosed some râles in the bases of both lungs. Eight sputum examinations both before and after antiformin treatment were invariably negative for tubercle bacilli. Repeated Kahn and Wassermann tests were 4 plus. Up to time of antisyphilitic treatment there was little change in her condition. Following this she improved rapidly and when last seen she was symptom free.

The first roentgen examination, Sept. 25, 1929, showed multiple small nodular infiltrations scattered through the parenchyma of both lungs, especially the right one. The right hilar shadow was markedly increased and there was some fibrosis of the interlobar pleura between the upper and the middle lobe. On the left side most of the lesions were located in the base. The conditions found were interpreted as consistent with a pulmonary tuberculosis of a disseminated or miliary type. The possibility of a bronchiectasis or pneumonoconiosis was given consideration. A clinical diagnosis of pulmonary tuberculosis was made at the time of her first discharge from the hospital. However, the striking disproportion between the roentgen changes and the clinical observations, especially in view of the repeated negative sputum examinations, subsequently caused doubt as to the correctness of such a diagnosis. A second roentgen examination, March 12, 1930 (fig. 1), showed a slight increase of the infiltrations, particularly on the left side. Clinically, there had been little change in the patient's condition since first seen. Because of positive serologic reactions for syphilis, antisyphilitic therapy was instituted, April 2. A third roentgen examination, Oct. 15, 1930 (fig. 2) showed very definite evidence of regression, especially in the upper lobes. Serologic tests at this time were still positive. A roentgen examination, April 1, 1931 (fig. 3), showed almost complete disappearance of the original nodular infiltrations except for a few at the bases of both lungs. Increase of the right hilar shadow and of the linear markings in the lower lobes was still present, undoubtedly the result of an interstitial fibrosis. Serologic examinations, April 2, 1931, were negative. The patient at this time was symptom free.

Case 2.—O. A., a white man, aged 35, single, a Scandinavian, who registered at the clinic Aug. 19, 1930, had had epigastric pain shortly after meals, of two months' duration. He had had a persistent cough for years. He had lost 25 pounds (11 Kg.) in the past four or five months. Examination revealed palpable epitrochlear glands and some physical signs in the left base. Repeated sputum examinations were negative for tubercle bacilli. Repeated serologic examinations at intervals were 4 plus. Antisyphilitic treatment was begun September 27, following which there was marked general clinical improvement and gain in weight. When last seen the patient was symptom free but his Wassermann reaction was still 4 plus.

The roentgen examination of the gastro-intestinal tract, for which the patient was originally referred, was essentially negative. During the routine preliminary fluoroscopic examination of the chest in connection with it, a tumor-like mass was noted in the base of the left lung. Films made Nov. 10, 1930, showed this as a circumscribed shadow of uniformly increased density, about the size and shape of a hen's egg in the sixth intercostal space on the left side near the lateral chest wall. Some increase of the hilar shadows and linear markings was present on the left side and a few small localized infiltrations with calcification were noted in the right lower lobe. The latter changes were interpreted as the remains of an old and probably healed hilar tuberculosis and were thought to have no relation to the present condition. The solitary soft mass which apparently was in the left lower lobe was thought to be a tumor, possibly of metastatic origin. In view of the absence of a demonstrable primary

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From the Department of Radiology, University of Illinois College of Medicine.

[1] Carrera, J. L.: A Pathologic Study of the Lungs in One Hundred and Fifty-Two Autopsy Cases of Syphilis, Am. J. Syph. 4: 1-33 (Jan.) 1920.

malignant tumor of which this might be a metastasis and the improbability of its being malignant from its clinical manifestations, the possibility of its being a gumma was given consideration, especially in view of the positive results shown on serologic examination. Antisyphilitic treatment was instituted, Sept. 27, 1930. A roentgen examination, April 7, 1931, showed definite evidence of regression of the tumor mass. It was less sharply localized and decidedly smaller. The other lung changes showed no appreciable difference from the previous examination. A roentgen examination, Jan. 19, 1932, showed practically complete disappearance of the lesion. Serologic tests at this time were still positive, indicating a Wassermann-fast condition.

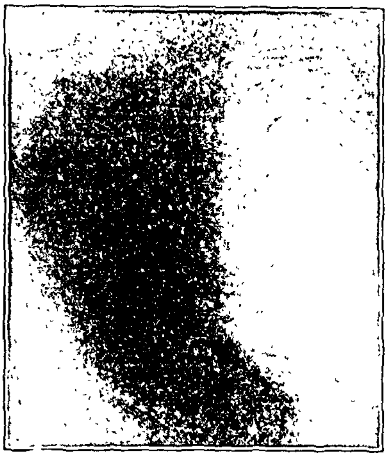

Fig. 4 (case 3).—Marked pleural thickening; atelectasis of right lung; Wassermann reaction strongly positive.

A review of these two cases, which showed clinical and serologic evidences of syphilis with pulmonary lesions compatible with known pathologic processes of that disease and the disappearance of these lesions as observed roentgenologically with antisyphilitic treatment, together with clinical improvement, seems to justify a diagnosis of pulmonary syphilis in the form of miliary gummas in case 1 and a solitary giant gumma in case 2.

Case 3.—M. C. R., a white man, aged 55, married, Irish, a conductor, registered at the clinic, Oct. 4, 1929, having had irregular periodic attacks of chills and fever (104 F.) lasting about an hour at intervals usually from four to seven days apart for about four years. He also had a persistent cough, particularly in the morning, with a blood-streaked expectoration of from 6 to 8 ounces. He showed dyspnea on exertion. He had lost about 15 pounds (6.8 Kg.) in the last two years. He had had recurrent attacks of bronchitis for ten or fifteen years. He had been married twenty-two years. There were no children. His wife had had two miscarriages. He had had gonorrhea thirty years before. Examination revealed a slight retraction of the right chest wall below the clavicle, increased tactile fremitus, dulness, crackling râles and impaired sounds on auscultation over the entire right lung. The left lung showed hyperresonance. The heart was displaced toward the right. About fifty or more sputum examinations with and without antiformin treatment, made at intervals for about three years, were negative for tubercle bacilli and elastic fibers. A thoracentesis of the right chest, Nov. 11, 1929, was dry. Serologic tests, Nov. 6, 1929, were 4 plus. Following antisyphilitic treatment the reaction was less marked, but shortly before death it again showed 4 plus. A right phrenic exeresis was done June 5, 1930, with slight, if any, improvement. The patient died with signs of cardiac decompensation. The clinical diagnosis was atelectasis of the right lung with chronic pleuritis and bronchiectasis, and emphysema of the left lung. Syphilis, but not syphilis of the lung, was considered a coincident condition.

Roentgen examination of the chest, Oct. 7, 1929 (fig. 4) showed a diffuse increased density of the right chest extending to about the level of the sternal end of the second rib and irregular density above this. The heart and other mediastinal structures were displaced toward the right. Increased radiolucency of the left lung indicated a probable compensatory emphysema. Some increase of the linear markings was noted, suggesting an interstitial fibrosis. The conditions on the right side were interpreted as consistent with an atelectasis possibly associated with a bronchogenic carcinoma and bronchostenosis of some of the larger bronchi. The possibility of a marked pleural fibrosis in connection with a fibroid phthisis or following an acute or unresolved pulmonary lesion was considered. The probability of an associated bronchiectasis was suggested. November 11, another roentgen examination was made following the injection of iodized oil (fig. 5). Because of the extreme density of the right chest the oil accumulations in the lung showed up poorly, but bronchial dilatation was clearly demonstrable in the larger bronchi. In view of the prolonged course and absence of demonstrable progressive changes during a lengthy period of observation, the probability of bronchogenic carcinoma was ruled out. Another roentgen examination, May 28, 1930 (fig. 6), about six months after antisyphilitic treatment was instituted, showed practically no change roentgenographically. Some iodized oil residues were still present. A final roentgen examination, Jan. 16, 1932 (fig. 7), shortly before death, showed almost identically the same condition noted on the first examination.

The lung changes found at autopsy by Dr. George Milles were as follows: The right pleural cavity was completely obliterated by dense fibrous adhesions. The pleura averaged 5 mm. in thickness and was pale gray. The underlying lung was firm and noncrepitant, and on section the parenchyma was dense and varied from dark gray to black. The bronchi even to the minor subdivisions were widely dilated. The interlobar septum was pearly gray, dense and sclerotic, averaging 8 mm. in thickness. Microscopically the alveoli were almost entirely obliterated or completely compressed, being replaced in a large portion of the section by dense hyalinized fibrous tissue. Scattered through this were seen focal collections of round cells, about the fine bronchioles and blood vessels. These round cell collections were made up of lymphoid cells, many plasma cells and an occasional macrophage. The blood vessels present were the seat of marked intimal proliferation with hyaline changes. Many newly formed capillaries were seen scattered through the tissue. A single large artery present in the sections displayed the same intimal proliferation. The bronchioles were dilated and surrounded by a zone of granulation tissue, in which plasma cells were especially numerous.

The left lung showed essentially the changes of an emphysema and a rather marked proliferation of interstitial fibrous tissue. Other organs examined showed nothing relevant to the subject under discussion.

Dr. Milles expressed the opinion that the pulmonary and pleural changes were not characteristic of pulmonary syphilis but some of them might have been of syphilitic origin and others might be in the nature of sequelae. Dr. R. H. Jaffe, to whom the gross specimen and sections of the right lung were also shown, concurred in this opinion.

Reconstructing this case in view of the clinical course, positive serologic examination and autopsy observations, the inference that it was a case of lung syphilis in a very late stage with accompanying sequelae seems justified.

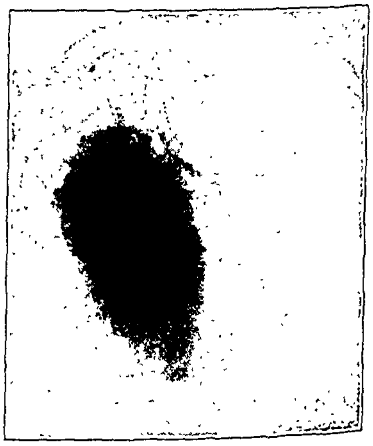

Fig. 5 (case 3).—Bronchogram showing patency of primary bronchi, atelectasis of right lung, and bronchiectasis.

## COMMENT

Lung syphilis, when it occurs, is never primary and is only an incidental location of attack in the widespread ravage of the disease throughout the body. The early cases under adequate antisyphilitic treatment clear up, apparently. The unrecognized neglected cases are slowly progressive. The syphilitic lesion or lesions are slowly absorbed, leaving connective tissue and massive scars. The densely thickened pleura and interlobar septums contract, producing considerable compression of lung substance with secondary atelectasis and bronchiectasis. The pulmonary circulation suffers obstruction; the work of the right ventricle is overloaded; cardiac hypertrophy and decompensation follow; as a result of the chronic passive congestion there is an increase of the lung fibrosis; general circulatory failure ultimately ushers in death.

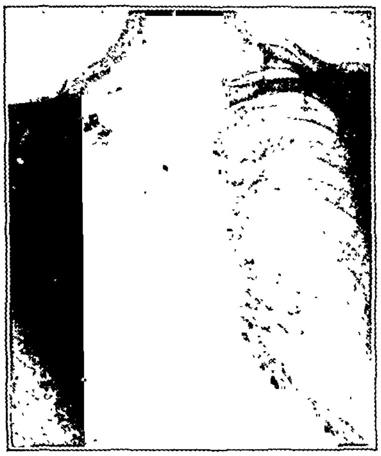

Fig. 6 (case 3).—Condition after five months of antisyphilitic treatment: no progress nor retrogression; some residual iodized oil present.

Clinically, the diagnosis is made more frequently than it is confirmed anatomically. The reason is obvious. In a great majority of the reported cases the diagnosis has been based on clinical evidence and many of the cases have resulted in an apparent cure. Therefore, the ultimate proof is, as a rule, wanting. The diagnosis is a matter of exclusion, and an attempt should be made to satisfy the following criteria:

1. History of syphilis—chancre, mucocutaneous lesions, cardiovascular syphilis, syphilis of the larynx, stigmas of syphilis anywhere—miscarriages and stillbirths.

2. Signs and symptoms of a chronic stubborn progressive pulmonary lesion. In syphilis of the lungs there is a disproportion of symptoms to signs. The signs are marked and the symptoms mild.

3. Repeated examinations of the sputum to rule out tuberculosis, mycotic infections and other spirochetal infections such as Vincent's infection of the lungs. Since the discovery of the tubercle bacillus, case reports of lung syphilis have become increasingly rarer.

4. Demonstration of Spirochaeta pallida—dark field or specific tissue stain. It is only rarely that spirochetes have been demonstrated in unquestionable tertiary syphilitic lesions in general. It is not to be expected, therefore, that spirochetes will be found in gummas of the lungs.

5. Serologic examinations. When positive, they indicate the presence of syphilis but do not mean that a pulmonary lesion is necessarily syphilitic.

6. Roentgen examinations. When these show evidence of chronic pulmonary disease involving the root, middle lobe or base of the lung in a patient with unquestionable evidence of syphilis and in whom tuberculosis has been ruled out by every available means, the possibility of syphilis of the lung should be given consideration either alone, as a complication, or as a coexistent condition.

7. Therapeutic test. Improvement under antisyphilitic treatment is contributory evidence in its favor but is by no means absolute. This is the deciding factor in the clinical diagnosis. There is general clinical improvement—disappearance of symptoms—as well as a local clearing up of the lesion. Spirochetal infection of the lungs other than syphilis yield to treatment with ease; syphilis, with difficulty. It is, however, as a rule very difficult to secure permanently negative serologic reactions in any form of late syphilis, and this has been true of some pulmonary cases.

8. Anatomic confirmation wherever possible—syphilitic changes about the nature of which there can be no doubt. This is the court of last appeal.

The finding of Spirochaeta pallida in the sputum of acquired syphilis of the lung is extremely difficult, so that confirmation depends entirely on the specific anatomic changes produced by the organism. It is very probable that many more lungs are syphilitic than is generally believed, but the syphilitic changes are not found and it is only on these that a positive diagnosis can be made; hence the relative infrequency of the condition.

The physical signs and symptoms are variable and not distinctive. They give no inkling as to the nature of the lesion present. They are usually those of the secondary conditions—thickened pleura, fibrosis, bronchiectasis, or any other chronic progressive lung condition—and cannot be differentiated from any of these clinically.

Syphilis attacks chiefly the lower part of the lung, rarely the apexes, the process being more marked around the hilus and progressing along the bronchi toward the periphery. It tends to develop unilaterally and may completely destroy the function of one lung with little or no involvement of the other. Syphilis also involves the pleura extensively and causes a connective tissue reactio [illegible] ating or stellate scars but rarely, if [illegible]. In the early untreated cases one may see single or multiple gummas varying in size from a pea to a hen's egg, surrounded by syphilitic infiltration—lymphocytes and plasma cells—perivascular with obliterating endarteritis. Fibrosis, scarring, is the late phase or sequel of the syphilitic process. Regarded as of probable syphilitic origin is the puckered, indurated, dense, radiating scar formation sometimes found on the lung surface or about the larger bronchi within the lung substance and in the interlobar and interlobular septums producing the so-called pulmo lobatum of Virchow. This tissue consists of dense massive connective tissue, which by its contraction has more or less distorted the lung. One can only surmise that in some cases this may represent the healed result of a preexisting gumma. However, as the lung is susceptible to many injurious agents—both bacterial and foreign bodies—such puckered, radiating scars cannot with any certainty be regarded as of syphilitic origin. Virchow advised great caution in making such a diagnosis. Unless syphilitic infiltration is shown, a positive anatomic diagnosis of syphilis cannot be made.

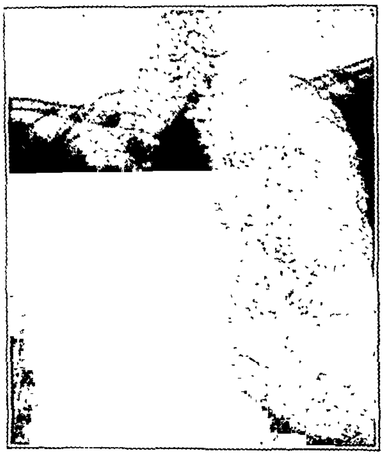

Fig. 7 (case 3).—Appearance shortly before death, practically the same as on the first examination; Wassermann reaction strongly positive.

No dogmatic statements in regard to the roentgenologic appearance of pulmonary syphilis can as yet be accepted. There are no pathognomonic or characteristic signs. Gummas with syphilitic peribronchial infiltration show increased linear markings in the early stages with small "knobby" enlargements. There may be diffuse miliary gummas simulating tuberculosis. Giant gummas vary in size, shape and number, and the roentgen images they produce may simulate lung tumors or localized pneumonitis. In the late stage the syphilitic fibrosis shows extensive increase in bronchial shadows without gummatous enlargements. The fibrosis, which is so common, is the same as might result from any nonspecific inflammation. In the very late neglected cases there may be a bronchostenosis with collapse of the lung resulting from syphilitic ulceration and scarring, and the resulting atelectasis is invariably associated with dilatation of the bronchi, producing the picture of bronchiectasis. A diffused increased density involving an entire half chest may be present, produced by a combination of factors such as markedly thickened pleura and interlobar septums with atelectasis from compression, scar contraction of lung substances with marked retraction of the heart, trachea and other mediastinal structures to the affected side, elevation of the diaphragm on the affected side, and compensatory emphysema of the opposite lung. Syphilitic lesions rarely undergo cavity formation; they are slowly absorbed, leaving massive scars with absence of calcification as compared to tuberculous scars.

The roentgen examination is of the utmost importance in the differential diagnosis, especially in eliminating certain other conditions. Regressive changes of lesions in the lung consistent with syphilis, demonstrable roentgenologically and occurring simultaneously with antisyphilitic treatment, are of the greatest importance in establishing a clinical diagnosis of pulmonary syphilis. In cases measuring up to the other criteria, such roentgen observations would seem to clinch a positive diagnosis as far as this can be done clinically.

### CONCLUSIONS

1. Clinical diagnoses of lung syphilis with certainty are extremely difficult and fraught with danger in compiling statistics.
2. Working clinical diagnoses are justifiable for treatment and observation.
3. Anatomic confirmation is essential for acceptance of authentic cases.
4. Clinically, the diagnosis is made by exclusion and therapeutic test, and certain requirements must be fulfilled.
5. Roentgen observations as shown by successive examinations in connection with antisyphilitic treatment are of prime importance in establishing a clinical diagnosis.

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**The Tonsils.**—The contention that normal tonsils are an aid in resisting disease is not strongly defended by contrasting the histories of disease of those with normal and those with pathologic tonsils. The argument that the removal of tonsils closes a portal of entry for infectious and respiratory diseases is not sustained by a comparative study of the histories of those who have had their tonsils removed and of those whose tonsils are present. The effect of the tonsils as a focus of infection does not find much support when histories and physical measurements of those with pathologic tonsils are contrasted with either those with normal or those with absent tonsils.—Cunningham, R. L.: Normal, Absent and Pathologic Tonsils in Young Women, *Arch. Int. Med.* **49**:453 (March) 1932.

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# DIVERTICULUM OF THE EPIGLOTTIC VALLECULAE

## REPORT OF TWO CASES

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NEW YORK

The epiglottic valleculae are two depressions situated between the base of the tongue and the epiglottis, one on each side of the median glosso-epiglottic ligament.

The space underneath the valleculae, between the lower part of the epiglottis and the membrana hyothyroidea, is occupied by a mass of loose fatty and connective tissue and the bursa mucosa subhyoidea.

One would imagine that during the first act of deglutition, when the food is conveyed from the oral cavity into the opening of the esophagus, particles of food would be held back by the epiglottis and become lodged in the vallecular depressions. Roentgenologic studies of the act of swallowing, however, have shown that under normal conditions this does not occur. It has been definitely demonstrated that the mechanism of deglutition—consisting of lifting, constricting, propelling movements and a simultaneous bending backward of the epiglottis—conveys each bolus of food in its entirety into the relaxing opening of the esophagus within a fraction of a second.

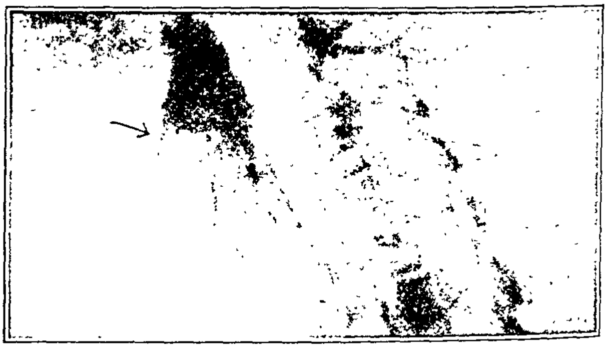

Fig. 1.—Complete filling and marked enlargement of the pre-epiglottic space, thirty seconds after swallowing of the contrast mixture.

However, as soon as some interference with the swallowing apparatus arises, as in instances of paralysis, the physiologic action becomes altered. Thus in vagus or recurrens paralysis, after the main portion of the swallowed bolus has passed into the esophagus, one sees appreciable remnants of food still remaining in the valleculae or occasionally also farther down in the sinus pyriformes.

Roentgenologically, such cases present a characteristic appearance. Retention of the contrast mixture in the valleculae shows a small, well defined shadow slightly below and posterior to the body of the thyroid bone, while on the other hand stagnation within the pyriform sinuses is recognized by striplike vertical shadows, one on each side of the thyroid cartilage.

Several such cases have been recorded in the literature. Thus, Assmann[1] describes a case of mediastinal tumor with secondary bilateral recurrens paralysis in which marked stagnation of food in the valleculae was found. A similar condition was observed by him in a case of tabes with secondary paralysis of the vagus. In a third case, in which botulism had caused an injury to the vagus nerve, roentgen examination revealed retention of the contrast food in the valleculae and the sinus pyriformes associated with widening of the esophagus. Reiche[2] reports an instance of pre-epiglottic food retention in diphtheritic paralysis. Weingaertner[3] mentions a case of carcinoma of the upper part of the esophagus with secondary paralysis of the recurrens nerve. In this case within the epiglottic region was a marked stagnation of contrast fluid, which overflowed into the trachea and bronchi. A very similar case was described by Desseker.[4]

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[1] Assmann, H.: Die klinische Roentgendiagnostik, Leipzig, F. C. W. Vogel, 1929, p. 210.

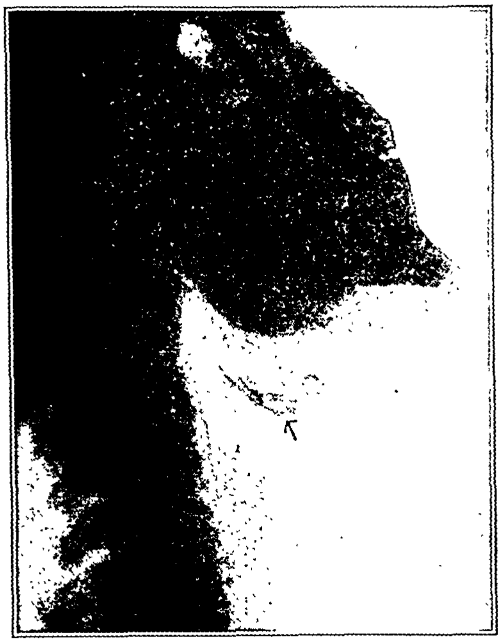

Fig. 2.—The same patient as in figure 1 two hours later. The pre-epiglottic space still shows a small amount of barium mixture.

Another explanation for the pre-epiglottic retention of food was brought forward by Holzknecht and Olbert.[5] In certain evidently neuropathic persons in whom fluoroscopy revealed marked stagnation of food along the anterior surface of the epiglottis and in the valleculae, they found an unusual relaxation of the entire esophagus. The retention was explained on the basis of atony. This theory, which apparently had remained unnoticed, was recently strengthened by the studies made by Paluguay.[6] He showed that esophageal atony may cause more or less marked stagnation in any part of the path of deglutition.

To the foregoing causes of food retention within the valleculae, we add that of pre-epiglottic diverticulum which apparently has not yet been described. The characteristic clinical and roentgenologic observations in two cases seem to justify their publication in view of the rareness of the condition.

## REPORT OF CASES

Case 1.—M. K., a physician, aged 60, had been complaining for the past five years, but especially during the past five months, of irritation in the throat, which was most evident some time after meals. He had the feeling as if particles of food "got stuck somewhere in the upper part of his throat." This condition was occasionally associated with pain on swallowing, swelling in the submaxillary regions, and local tenderness. Laryngoscopy failed to give any positive results.

Fluoroscopy of the esophagus with the aid of thin and moderately thick barium mixtures showed complete and permanent filling of the pre-epiglottic space. The latter was greatly widened and deepened, its floor reaching far below the body of the hyoid bone (fig. 1). Prolonged fluoroscopic observation revealed intermittent contractions of the epiglottic region with resultant emptying of some of the fluid from the pre-epiglottic sac. After two hours only a small amount of the contrast medium could be seen (fig. 2). The passage through the esophagus was normal. There was no evidence of spasticity or atony. Lungs, heart, aorta and mediastinum also presented a normal appearance.

The patient was reexamined repeatedly during the following two years. The roentgen appearance remained the same. All therapeutic suggestions proved unsuccessful. The patient, however, had gradually learned to lessen the discomfort by the repeated drinking of small amounts of water after each meal.

Case 2.—Mrs. W. S., aged 62, complained quite suddenly during the night of a fulness in the left side of her throat associated with a stitching pain and difficulty in swallowing. The most distressing part to the patient was the feeling of a lump in the throat which she could not dislodge. When she was seen the following morning the attack had subsided, but a slight local tenderness on the left side of the neck persisted. There was no glandular enlargement. Examination of the throat and larynx was negative with the exception of an elongated uvula touching the epiglottis.

The further history, which was obtained with difficulty on account of the insignificance of the symptoms, revealed that for the past three or four months there had been peculiar sensations in the throat, especially after meals. Occasionally some foul material would be expectorated. Vomiting occurred at times during the past four years without apparent cause or effort. (It is interesting to note that this effortless vomiting without apparent exciting cause is present in other members of the family. No opportunity has presented itself to study these other cases.) Other facts in her history are irrelevant as far as the matter in hand is concerned. With a tentative diagnosis of diverticulum of the upper part of the esophagus, the patient was referred for roentgen examination.

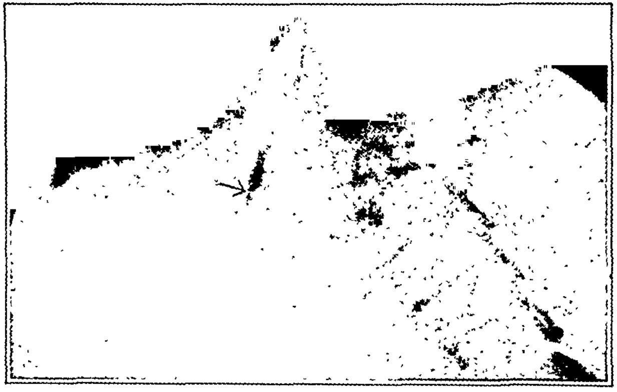

Fig. 3.—Small amount of barium mixture within the epiglottic valleculae one and a half hours after swallowing.

Fluoroscopic examination revealed an unusually large amount of barium within the pre-epiglottic space, which was definitely and markedly enlarged. Though it seemed that the pre-epiglottic region emptied readily enough, it was found on prolonged observation that appreciable remnants of the barium were still visible in the vallecular region, one and a half hours later, as seen in figure 3.

## THEORY OF THE FORMATION OF PRE-EPIGLOTTIC DIVERTICULA

There can be no doubt that the ability of the epiglottis to bend backward sufficiently during the act of deglutition forms one of the prerequisites for the prevention of food stagnation in the pre-epiglottic space. In other words, the epiglottis must always possess a certain amount of elasticity. The importance of this point may be considered stressed by the fact that calcification never takes place in the epiglottis.

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[2] Reiche, F.: Eine diphtherische Schlinglaehmung im Roentgenbilde, Fortschr. a. d. Geb. d. Roentgenstrahlen **25:** 353-355, 1918.

[3] Weingaertner, M.: Wismut im Bronchialbaum bei Oesophaguskarzinom ohne Perforation nach den Luftwegen, Fortschr. a. d. Geb. d. Roentgenstrahlen **22:** 397-400, 1915.

[4] Desseker, C.: Beitrag zur pathologischen Physiologie des Schluckakts und zur Fuellung des Bronchialbaums mit Roentgenbrei, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **37:** 41-50, 1924.

[5] Holzknecht, G., and Olbert, D.: Die Atonie der Speiseroehre, Ztschr. f. klin. Med. **71:** 91-115, 1910.

[6] Paluguay, J.: Zur Roentgendiagnose der Speiseroehrenatonie, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **37:** 107-127, 1924.

It is fair to assume that with advancing age the elasticity of the epiglottis may occasionally decrease below the required minimum. In such an event, particles of food will accummulate in front of the epiglottis and may gradually lead to the formation of a pre-epiglottic diverticulum. This probably explains why our observations were made in elderly people.

### CONCLUSIONS

1. Pre-epiglottic diverticula are rare.
2. They seem to occur at an advanced age and may possibly be due to a loss of elasticity of the epiglottis.
3. Clinically they are characterized by a feeling of a lump in the throat after eating, with discomfort on swallowing, occasional regurgitation of foul material, swelling in the submaxillary region, and local tenderness, with no laryngologic changes.
4. Fluoroscopically the condition can be definitely diagnosed, especially if the observation is prolonged. The roentgen examination reveals enlargement of the pre-epiglottic space as outlined by the barium mixture, unusual spastic contractions of the epiglottic region, and persistence of the pre-epiglottic shadow for several hours.
5. We have no therapeutic suggestion to offer. The discomfort may be alleviated by frequent gargling with plain water after meals.

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# INTRAVENOUS STREPTOCOCCIC VACCINE THERAPY IN CHRONIC ARTHRITIS

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Subcutaneous injections of a streptococcic vaccine have been used extensively for many years in the treatment of arthritis. Both autogenous and stock vaccines have been tried. Some of the larger series of vaccinated patients have been those of Billings, Coleman and Hibbs,[1] Crowe[2] and Burbank.[3] Crowe and Burbank have reported favorable results. Billings, Coleman and Hibbs compared results of a large series of vaccinated patients with a series of unvaccinated patients. In a follow-up study they found no significant differences in the incidence of improvement in the treated and untreated groups.

There are few reports on intravenous streptococcic vaccination in the literature. Clawson and Fahr[4] reported the use of intravenous streptococcic injections in the treatment of rheumatic fever. Swift and his co-workers,[5] injected Streptococcus hemolyticus intravenously in the treatment of rheumatic fever. We[6] have used the intravenous method in administering a streptococcic vaccine in chronic arthritis. Gray and Gowen[7] vaccinated patients having chronic arthritis by combining subcutaneous and intravenous injections. It is of interest that they obtained more rapid and satisfactory results by the intravenous method.

Intravenous streptococcic vaccination of patients having chronic arthritis has for its basis the following observations derived from our previous experiments and observations by others:

1. Nonspecific chronic arthritis in most cases appears to be due to streptococcic infection. Streptococci have been recovered in a higher percentage by a greater number of workers from the blood,[8] joints,[9] lymph nodes[10] and subcutaneous nodules[11] in cases of chronic arthritis than any other organism.

2. Subcutaneous streptococcic vaccination does not desensitize the hypersensitive chronic arthritic patient but tends to increase the hypersensitiveness. The subcutaneous method of giving a streptococcic vaccine increases protective immunity only slightly.[12]

3. Intravenous streptococcic vaccination desensitizes the hypersensitive patient and also brings about a high degree of protective immunity.[13]

4. The desensitizing and protective phenomena do not seem to be strictly type specific but are species specific. They are not in the category of a reaction to nonspecific protein.[13]

5. The height of the streptococcic agglutinating titer furnishes a reliable indicator of the progress in the development of protective immunity during the course of treatment.[14]

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[1] Billings, Frank; Coleman, G. H., and Hibbs, W. G.: Chronic Infectious Arthritis, J. A. M. A. **78:** 1097 (April 15) 1922.

[2] Crowe, H. W.: Handbook of the Treatment of Chronic Rheumatic Diseases, Humphrey Milford, Oxford University Press, 1930.

[3] Burbank, R., and Christensen, B. E.: Vaccine Treatment of One Thousand Cases of Chronic Arthritis with Results and Clinical Observations, J. Bone & Joint Surg. **13:** 246 (April) 1931.

[4] Clawson, B. J., and Fahr, G. E.: Experiments Leading to a Possible Basis for Vaccine Therapy in Acute Rheumatic Fever, Proc. Soc. Exper. Biol. & Med. **27:** 964, 1930.

[5] Swift, H. F.; Hitchcock, C. H.; Derick, C. L., and McEwen, C.: Intravenous Vaccination with Streptococci in Rheumatic Fever, Am. J. M. Sc. **181:** 1 (Jan.) 1931. Wilson, M. G., and Swift, H. F.: Intravenous Vaccination with Hemolytic Streptococci: Its Influence on the Incidence of Recurrence of Rheumatic Fever in Children, Am. J. Dis. Child. **42:** 42 (July) 1931.

[6] Wetherby, Macnider, and Clawson, B. J.: A Study of Chronic Arthritis with Special Reference to Intravenous Vaccine Therapy, Arch. Int. Med. **49:** 303 (Feb.) 1932. The work is discussed in Streptococcus Vaccination in Chronic Arthritis, editorial, Minnesota Med. **14:** 559 (June) 1931.

[7] Gray, J. W., and Gowen, C. H.: The Rôle of Streptococci in Arthritis Deformans, Am. J. M. Sc. **182:** 682 (Nov.) 1931.

[8] Gray and Gowen (footnote 7). Wetherby and Clawson (footnote 6). Moon, V. H., and Edwards, S. H.: Results of Blood Cultures in Rheumatoid Arthritis, J. Infect. Dis. **21:** 154 (Aug.) 1917. Richards, J. H.: Bacteriologic Studies in Chronic Arthritis and Chorea, J. Bacteriol. **5:** 511 (Sept.) 1920. Hadjopoulos, L. G., and Burbank, R.: A Preliminary Study Bearing on the Causative Factors of Multiple Infectious Arthritis, J. Bone & Joint Surg. **9:** 278, 1927. Cecil, R. L.; Nicholls, E. E., and Stainsby, W. J.: The Bacteriology of the Blood and Joints in Chronic Infectious Arthritis, Arch. Int. Med. **43:** 571 (May) 1929; The Etiology of Rheumatoid Arthritis, Am. J. M. Sc. **181:** 12 (Jan.) 1931. Klugh, G. F.: Streptococci from Blood Cultures in Arthritis, South. M. J. **24:** 706 (Aug.) 1931. Dawson, M. H.; Olmstead, M., and Boots, R. H.: Bacteriological Investigation on Blood, Synovial Fluid and Subcutaneous Nodules in Rheumatoid Arthritis, Proc. Soc. Exper. Biol. & Med. **28:** 419 (Jan.) 1931.

[9] Billings, Coleman and Hibbs (footnote 1). Gray and Gowen (footnote 7). Richards (footnote 8). Cecil, Nicholls and Stainsby (footnote 8). Forkner, C. E.; Shands, A. R., Jr., and Poston, M. A.: Synovial Fluids in Chronic Arthritis, Arch. Int. Med. **42:** 675 (Nov.) 1928. Shands, A. R., cited by Forkner, C. E.: The Synovial Fluid in Health and Disease, with Special Reference to Arthritis, J. Lab. & Clin. Med. **15:** 1199 (Sept. 30) 1930. Cecil, R. L.; Nicholls, E. E., and Stainsby, W. J.: Bacteriology of Blood and Joints in Chronic Infectious Arthritis, Proc. Soc. Exper. Biol. & Med. **24:** 6, 1928. Margolis, H. M., and Dorsey, A. H. E.: Chronic Arthritis: Bacteriology of Affected Tissues, Arch. Int. Med. **46:** 121 (July) 1930.

[10] Billings, Coleman and Hibbs (footnote 1). Forkner, Shands and Poston (footnote 9). Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, J. A. M. A. **63:** 903 (Sept.) 1914. Poston, M. A.: Gland Cultures in Infectious Arthritis, J. A. M. A. **93:** 692 (Aug. 31) 1929. Baer, W. S., in discussion on Gibson, A. J. Bone & Joint Surg. **10:** 753 (Oct.) 1928.

[11] Billings, Coleman and Hibbs (footnote 1). Clawson, B. J., and Wetherby, Macnider: Subcutaneous Nodules in Chronic Arthritis, Am. J. Path. **8:** 283 (May) 1932.

[12] Clawson, B. J.: Experimental Streptococcic Inflammation in Normal Immune and Hypersensitive Animals, Arch. Path. **9:** 1141 (June) 1930.

[13] Clawson, B. J.: Experiments Relative to a Possible Basis for Vaccine Therapy in Acute Rheumatic Fever, J. Infect. Dis. **49:** 90 (July) 1931.

[14] Clawson, B. J., and Wetherby, Macnider: A Comparison of the Bactericidal Power for Streptococci and the Height of the Streptococcic Agglutination Titers in Treated and Untreated Patients with Chronic Arthritis, *to be published*.

With these considerations in mind, the experiments in intravenous vaccine therapy in chronic arthritis reported in this paper were begun.

### MATERIAL

The patients in our series were from the outpatient department of the University of Minnesota Hospital and have been treated during the past fifteen months. We have not grouped the cases into such distinct classes as "rheumatoid arthritis" (atrophic, proliferative) and "osteo-arthritis" (hypertrophic, degenerative). Most patients had multiple joint involvement and all had the common complaint of joint pain. Rigler, roentgenologist of the University Hospital, in a series of sixty-two consecutive cases, roentgenographed every joint in which there had ever been pain. In this group there was a high percentage of mixed types from the point of view of accepted roentgen diagnosis. The age of the patient may possibly modify the type of tissue reaction to streptococcic infection. Table 1 shows by decades the age range of the patients in our series.

TABLE 1.—*Age Distribution by Decades of Arthritic Patients*

| Age Group | Number of Patients |
|---|---|
| 0 to 9 | 1 |
| 10 to 19 | 9 |
| 20 to 29 | 32 |
| 30 to 39 | 51 |
| 40 to 49 | 103 |
| 50 to 59 | 92 |
| 60 to 69 | 58 |
| 70 and over | 10 |

Some people have the opinion that in many cases arthritis in older people is noninfectious. There are a number of older patients without symptoms in whom hypertrophic changes are noticed by roentgen examination. Such cases may not be of infectious nature. In our group of older patients complaining of joint pains the joint lesion was probably infectious in most instances. Evidence for this is that the incidence of subcutaneous nodules was greater in the older than in the younger patients in a series of 200 consecutive cases (table 2).

TABLE 2.—*Age Distribution by Decades of Patients with Subcutaneous Nodules*

| Decade | Number of Cases | Number with Nodules | Percentage of Nodules |
|---|---|---|---|
| 0 to 9 | 1 | 0 | 0 |
| 10 to 19 | 9 | 0 | 0 |
| 20 to 29 | 20 | 5 | 25.0 |
| 30 to 39 | 27 | 6 | 22.2 |
| 40 to 49 | 50 | 13 | 26.0 |
| 50 to 59 | 55 | 24 | 43.6 |
| 60 to 69 | 32 | 8 | 25.0 |
| 70 to 79 | 6 | 3 | 50.0 |

It is probable that some of our cases were not true examples of nonspecific chronic arthritis. Other forms of arthritis may simulate streptococcic arthritis. Gonorrheal and tuberculous arthritis are known to present a similar picture in some instances. Possibly the staphylococcus may be responsible for occasional cases, although there is little definite evidence that this is so.

### METHOD

Intravenous injections of a streptococcic vaccine were given. The organism used was isolated from the blood of a patient with rheumatic fever and pericarditis. This strain had been under cultivation for nine years and had been repeatedly used in previous animal experiments. It had been shown to cross agglutinate in high dilutions (1 : 50,000 and more) with a large percentage of strains of streptococci of rheumatic and chronic arthritic origin. This cross agglutination extends to strains of beta hemolytic streptococci as well as to viridans strains. This organism does not agglutinate spontaneously, is of low virulence, and is safe for intravenous injection.

The injections were given at weekly intervals for at least eight weeks in the average case, though there were some variations from this routine. After eight injections the interval was usually extended to two weeks for several more injections, and later extended to three or four week intervals, or treatment suspended for months. The extension of treatment was guided largely by clinical improvement and the height of the agglutination titer. The agglutinating titer appears to be a valuable indicator of the immunizing effect of vaccine therapy. An attempt was made to raise the streptococcic agglutinating titer to at least 1 : 6,400.

The initial dose used was 100 million killed organisms. This was increased by 100 million at each weekly injection, if no marked reaction had been experienced. If a disagreeable reaction followed the previous injection, the dose was usually kept at the same level in the following injection. The maximum did not usually exceed 800 million killed organisms, though this was exceeded in some cases in which reactions were minimal and the agglutination titer difficult to bring up to 1 : 6,400 or more. In some of the earlier cases treated, a maximum dose of 5 billion was given. The reactions were apt to be more severe with such a dosage, and there seemed to be no better clinical results, though possibly more prompt response. We have been careful to avoid other therapy in connection with vaccine treatment so that we might determine our results more fairly. The only medication advised has been 10 grains (0.65 Gm.) of acetylsalicylic acid following the injections to lessen or to avoid a reaction.

TABLE 3.—*Results of Therapy in Three Hundred and One Patients*

|  | Number of Cases | Per Cent |
|---|---|---|
| Definite clinical improvement | 233 | 77.4 |
| Questionable improvement | 19 | 6.3 |
| No improvement | 49 | 16.3 |

Reactions of some sort were experienced following about 50 per cent of the injections. There seemed to be a considerable amount of variation in the reaction in different individuals. A person might have reactions at one time and not at another. In more than 8,000 injections we have seen immediate symptoms suggestive of anaphylaxis (as seen following horse serum) in but one instance. In that case the patient experienced a transitory dyspnea and chest pain that quickly passed over and has not been present following other treatments. In most instances when a reaction was present the onset was from two to ten hours following treatment. The reactions usually consisted of chills of varying degree and duration, followed by fever. The chills lasted usually from one to two hours, and the fever had about the same duration. The fever when present was most often 100 to 101, though occasionally higher. In a few instances there was some severe aching at the time of reaction, especially in the back, though this was present in only an occasional case. Nausea, vomiting and diarrhea were sometimes present.

Patients quite frequently felt tired and ached the day following the injection, but more often there were no ill after-effects. We were unable to see any correlation between the improvement and the reactions experienced. We have tried to avoid reactions as much as possible in order not to incapacitate patients or discourage them in proceding with therapy.

Table 4.—*Criteria of Improvement*

| | Number of Cases | Per Cent |
|---|---|---|
| Joint pain (282 cases): | | |
| Decreased pain | 233 | 82.6 |
| Unchanged | 49 | 17.4 |
| Joint swelling (197 cases): | | |
| Decreased swelling | 160 | 81.2 |
| Unchanged | 37 | 18.8 |
| Joint motion: | | |
| Increased motion | 206 | 84.7 |
| Unchanged | 37 | 15.3 |

### RESULTS

Three hundred and sixty-five patients have received treatment. Three hundred and one patients of this group have received treatment adequate to determine the result of the therapy. To be considered adequate for results, patients must have reported following at least five injections. The sixty-four patients without adequate treatment consisted of those who discontinued treatment and those now under treatment who have not yet received five injections.

Clinical improvement was based on three general criteria: (1) decrease in pain, (2) decrease in joint swelling, and (3) increase in joint movement. An attempt has been made to discount the psychologic factor as much as possible. The fact that most of these individuals were outpatients and not on any other therapy did away with the objectionable factor of increased rest and change in surroundings, such as is encountered with hospital patients under any type of therapy.

Results of the different criteria for improvement are given in table 4, excluding the small number of questionable cases. In considering joint motion, improvement implied such factors as the ability to close the fingers more completely, to raise the hand to the head when unable to do so previously, to be able to extend the leg at the knee more completely, to be able to step up stairs when unable to do so previously, and other similar experiences. The most impressive factor in improvement was the high incidence in the decrease in joint swelling, as this could not be explained on a psychologic basis.

Table 5.—*Time of Beginning Definite Improvement*

| Number of Treatments | Number Improved | Percentage Improved | Total Percentage Improved |
|---|---|---|---|
| 1 | 13 | 5.6 | 5.6 |
| 2 | 39 | 16.7 | 22.3 |
| 3 | 46 | 19.7 | 42.0 |
| 4 | 47 | 20.2 | 62.2 |
| 5 | 34 | 14.5 | 76.7 |
| 6 | 18 | 7.7 | 84.5 |
| 7 | 13 | 5.7 | 90.2 |
| 8 | 8 | 3.4 | 93.6 |
| 9 | 11 | 4.7 | 97.4 |
| 10 | 2 | 1.3 | 98.7 |
| Over 10 | 2 | 1.3 | 100.0 |

A study was made of the number of injections required before definite clinical improvement was manifested. In many cases, questionable improvement might precede definite improvement by several weeks and in some instances the designation of the time of improvement was somewhat arbitrary. It is again to be noted that the treatments were usually given at weekly intervals. Table 5 shows the time of the beginning of definite improvement during the treatment. Nearly two thirds of the patients experiencing clinical improvement did so after five injections; nine tenths did so after seven injections. Very few patients reported clinical improvement if it was not present after ten treatments. Some of the unimproved patients received as many as twenty-five treatments without any change in the clinical course. In some instances the clinical improvement was very striking, while in others it was more gradual and less pronounced.

Improvement, once manifested, was usually fairly well sustained and increased while the patient was under therapy. There were some exceptions to this, however, as will be discussed in the correlation of clinical improvement and agglutinating titer. It is impossible to predict improvement in any individual. In general, the results were better in earlier and less severe cases, although we have had some striking examples of improvement in severe cases of many years' standing. Some of these patients observed over a period of months have made a marked gain in weight and have shown definite hypertrophy in previously atrophied muscle groups. Contrary to the experience with subcutaneous vaccines, there has not been a definite aggravation of the arthritic process in any case.

Table 6.—*Initial Agglutination Titer in Chronic Arthritis (Three Hundred Cases)*

| Dilution | Number | Per Cent |
|---|---|---|
| 1:0 | 30 | 10 |
| 1:50 | 33 | 11 |
| 1:100 | 67 | 22 |
| 1:200 | 73 | 24 |
| 1:400 | 64 | 21 |
| 1:800 | 25 | 8.3 |
| 1:1,600 | 6 | 2 |
| 1:3,200 | 1 | 0.3 |
| 1:6,400 | 1 | 0.3 |

### AGGLUTINATING TITER AND VACCINE THERAPY

In correlation with the vaccine therapy, agglutinating titers were determined with the organism with which the chronic arthritic patients were treated. Agglutinating titers were obtained before therapy was instituted in 300 cases of chronic arthritis (table 6). The greatest percentage showed the highest agglutinating titer to be 1:200. There was no marked difference in the agglutinating titer of normal individuals and chronic arthritic patients except for the tendency of a small number of titers to be at a higher level in chronic arthritic patients. For the most part the slightly higher titers in the cases of chronic arthritis were obtained in those with a more active involvement. It must be borne in mind that streptococcic infections are common. Few individuals can be considered "normal" in relation to streptococcic infection. We did not observe any more favorable response to treatment in persons with high initial titers than in cases with initial titers of 1:0 or 1:50. Tables 7 and 8 show the relation of the heights of the agglutinating titers to clinical improvement.

Intravenous streptococcic vaccine therapy elicited a definite rise in the agglutinating titer of the serum of most treated patients. The maximum dilution in which agglutination occurred was 1:100,000. Such a titer was obtained in one patient. Several had titers of 1:50,000 and many of 1:25,000. A definite correlation has been observed between the height of [illegible] and the clinical improvement in [illegible] who have shown marked improvement after one or two injections have in most instances shown a corresponding elevation in the agglutinating titer. It is difficult to place any definite level of titer as that at which improvement should be manifested, though in general most patients felt definitely better when the titer was 1:6,400 or higher. Clinical improvement was found in some instances with an agglutinating titer as low as 1:3,200. In a few cases, individuals improved with a lower titer.

Once raised, the agglutinating titer tends to remain at a high level, but occasionally it may drop back unexpectedly. Acute respiratory infections and too large doses, or too frequent treatments may be factors in reducing the agglutination titer. If eight or ten injections have been given and the titer is 1:6,400 or greater and the patient clinically improved, it seems advisable to suspend treatment for several months or until there is a recurrence or aggravation of the joint symptoms. Agglutinating titers should be checked at monthly intervals, if possible, after suspending treatment. Titers will often remain at a high level for months. With recurrence or aggravation of symptoms, only a few small injections are usually sufficient to restore the titer to a high level with a corresponding clinical improvement. A number of patients in our series have been followed for from two to eight months without therapy and with observation of the agglutinating titer and clinical improvement (table 9).

Table 7.—*Distribution of Maximum Agglutination Titer in One Hundred and Eighty-Eight Improved Treated Arthritic Patients*

| Titer | Number | Percentage | Total Percentage |
|---|---|---|---|
| 1:800 | 4 | 2.1 | 2.1 |
| 1:1,600 | 9 | 4.7 | 6.8 |
| 1:3,200 | 27 | 14.3 | 21.1 |
| 1:6,400 | 54 | 28.8 | 49.9 |
| 1:12,800 | 71 | 37.8 | 87.7 |
| 1:25,000 | 20 | 10.6 | 98.3 |
| 1:50,000 | 3 | 1.7 | 100.0 |
| 1:100,000 | 0 | | |

The agglutination titer was considered in unimproved treated patients. Apparently two types of patients are seen in the unimproved group. The first type are those in whom it is difficult to bring up the agglutinating titer even though large repeated doses of vaccine are given. It is of interest that the maximum titer in the improved group was less than 1:6,400 in 21.1 per cent of the cases (tables 7 and 8), while in the unimproved group the titer was less than 1:6,400 in 40.5 per cent of the cases. Some of the unimproved patients, however, have had a high titer sustained over a period of several months.

As a further check on the significance of the agglutinating titer, the bactericidal power of the blood for streptococci was determined [14] by using the method of Sutliff and Rhoades,[15] who determined the bactericidal power of the blood for pneumococci in patients with lobar pneumonia. We tested the blood of normal individuals and of untreated and treated arthritic patients. The blood from treated patients, with an agglutination titer of 1:6,400 or more, was found to have a much higher bactericidal power against the streptococci used in the vaccine than did the blood of normal patients, untreated arthritic patients, or treated patients with low agglutinating titers.

### CONTRAINDICATIONS TO VACCINE THERAPY

We have not treated pregnant women because of the frequency with which abortion has been produced in pregnant hypersensitive rabbits receiving intravenous injections of streptococci. We considered it inadvisable to administer intravenous vaccine to patients with chronic arthritis who also had glomerulonephritis. In acute phases of arthritis with persistent fever the dosage has been reduced or therapy postponed until the acute febrile period has ended.

Table 8.—*Distribution of Maximum Agglutination Titer in Thirty-Seven Unimproved Treated Arthritic Patients*

| Titer | Number | Percentage | Total Percentage |
|---|---|---|---|
| 1:100 | 1 | 2.7 | 2.7 |
| 1:200 | 0 | 0.0 | 2.7 |
| 1:400 | 2 | 5.4 | 8.1 |
| 1:800 | 3 | 8.1 | 16.2 |
| 1:1,600 | 1 | 2.7 | 18.9 |
| 1:3,200 | 8 | 21.6 | 40.5 |
| 1:6,400 | 12 | 32.4 | 72.9 |
| 1:12,800 | 5 | 13.5 | 86.4 |
| 1:25,000 | 5 | 13.5 | 100.0 |

### COMMENT

The results of intravenous streptococcic vaccine treatment in 365 cases of chronic arthritis and important considerations developing during the course of the treatments are discussed in this paper.

In considering the clinical results, it has been borne in mind that arthritis is a disease frequently showing improvement and presenting exacerbations of symptoms without therapy. This factor has been considered in estimating clinical improvement in our patients. When improvement has been definitely manifested we have found that, almost without exception, no such degree of spontaneous improvement had been present in the past or with other types of therapy. Our previous experience with patients with well established chronic arthritis has been that, while occasionally definite spontaneous improvement might occur, there was rarely a degree of improvement comparable to that frequently shown by our patients receiving intravenous vaccine therapy. The degree of improvement that may be obtained in any given case varies with the degree of permanent damage of the joint. It is, of course, impos-

Table 9.—*Duration of Elevated Agglutination Titer and Clinical Improvement Following a Course of Therapy and Without Further Injections*

| Patient | Time Since Treatment | Titer After Course of Treatment | Titer After Interval | Improvement Sustained |
|---|---|---|---|---|
| 1 | 10 months | 1:100,000 | 1:6,400 | Never improved |
| 2 | 8 months | 1:6,400 | 1:6,400 | + |
| 3 | 7½ months | 1:6,400 | 1:3,200 | + |
| 4 | 7 months | 1:25,000 | 1:25,000 | + |
| 5 | 7 months | 1:12,800 | 1:6,400 | + |
| 6 | 6 months | 1:1,600 | 1:3,200 | + |
| 7 | 6 months | 1:25,000 | 1:6,400 | + |
| 8 | 6 months | 1:6,400 | 1:6,400 | + |
| 9 | 6 months | 1:12,800 | 1:6,400 | + |
| 10 | 5 months | 1:25,000 | 1:25,000 | + |
| 11 | 4 months | 1:6,400 | 1:12,800 | + |
| 12 | 3 months | 1:1,600 | 1:12,800 | + |
| 13 | 3 months | ...... | 1:3,200 | + |
| 14 | 3 months | 1:12,800 | 1:3,200 | — |
| 15 | 2½ months | 1:6,400 | 1:12,800 | + |
| 16 | 2 months | 1:25,000 | 1:800 | — |
| 17 | 2 months | 1:6,400 | 1:1,600 | + |
| 18 | 2 months | 1:12,800 | 1:6,400 | + |
| 19 | 2 months | 1:3,200 | 1:6,400 | + |
| 20 | 2 months | 1:6,400 | 1:6,400 | + |

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[15] Sutliff, W. D., and Rhoades, D. R.: The Pneumococcidal Power of Whole Blood, J. Clin. Investigation 9:55 (Aug.) 1930.

sible to have much effect on an ankylosed joint or to do away with preexisting fibrous adhesions. Patients with permanent crippling lesions may obtain relief from pain and subsidence of joint effusion when present, but cannot have replacement of a destroyed synovial membrane or absorption of fibrous scar tissues. Many patients, however, are crippled with only a moderate degree of permanent joint destruction and in such cases much practical benefit may be derived from therapy. A number of such patients have been able to resume work in a relatively short period of time when unable to do so previously.

The intravenous method was used because it met the demands found necessary by previous experiments and observations for the development of a protective immunity without the handicap of a hypersensitive state. Definite clinical improvement occurred in about 80 per cent of the adequately treated patients. This improvement was indicated by (1) decrease in pain, (2) decrease in swelling, and (3) increase in joint motion. The degree of improvement bore no relation to the degree of the reaction occurring at the time of injections. As a rule, several injections were necessary before improvement was observed.

The streptococcic agglutinating titer rose with the course of treatment. A titer of 1:6,400 or more bore a close correlation to clinical improvement observed in the patient. The whole blood of treated patients having such a titer was found by experiment to have a much greater bactericidal power against streptococci than the blood of untreated patients. The agglutinating titer proved to be a reliable laboratory indicator of the degree of protective immunity possessed by the treated patients.

These experiments have not been in effect long enough to draw definite conclusions concerning the duration of clinical improvement and a sustained high agglutination titer. In a few cases both the improvement and a high agglutination titer have been sustained for as long as eight months.

A control series has not been compared with the treated group. It is known that many arthritic patients, without therapy, show variable symptoms at different times. Our results do not justify a claim of a cure for chronic arthritis, but it seems that patients vaccinated intravenously with streptococci show improvement in a higher percentage than is seen in patients without therapy or in those receiving other forms of therapy.

### CONCLUSIONS

1. Eighty per cent of chronic arthritic patients treated intravenously with a streptococcic vaccine were clinically improved.
2. The degree of improvement bore no relation to the degree of reaction following the injection.
3. Improvement was manifested in most cases after five weekly injections.
4. The agglutinating titer of the patients' blood rose during the course of treatment. Improvement as a rule did not take place until the titer had risen to 1:6,400 or more.
5. Treated patients' serums which agglutinated streptococci in dilutions of 1:6,400 or more had a much higher bactericidal power for streptococci than the serums of untreated chronic arthritic patients.
6. The height of the agglutinating titer in most cases seems to be a reliable indicator of the degree of protective immunity to streptococci possessed by the treated patient.

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# TREATMENT OF RHEUMATIC FEVER PATIENTS WITH AND WITHOUT SALICYLATES

## A CLINICAL AND ELECTROCARDIOGRAPHIC STUDY

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Competent investigators[1] have shown that the salicylates are not specific in rheumatic fever but rather that they are merely extremely efficient analgesics and antipyretics for this disease. There is still, however, a belief that the salicylates prevent cardiac complications and shorten the duration of the illness. In a study of fifteen patients, Hanzlik[2] found that salicylates shortened the hospital stay and stated that the sequelae of pericarditis and effusions appear to be less and that the general circulatory result is better than without treatment. White[3] states that if the salicylates are used, much heart disease can be averted. Levy and Turner,[4] using the electrocardiogram, found that salicylates improved faulty conduction between the auricles and the ventricles. To such an extent has this feeling progressed that Kerley[5] advises its administration to children predisposed to heart disease, and Epstein[6] recommends its routine use in the form of salicylic acid fruit juices for all children, beginning in the second year of life.

Opposed to the foregoing group is Miller,[1] who culled the literature and found that 1,907 patients receiving salicylates had an average hospital stay of 33.28 days and that 1,600 patients not receiving salicylates remained in the hospital for an average of 33.6 days. Ehrström and Wahlberg[1] reviewed 51,811 cases and were of the opinion that heart failure, valve disorder and polyarthritic complications were not diminished by the administration of salicylates. Carr and Reddick,[7] on the basis of electrocardiographic tracings, concluded that salicylates were without effect in conduction disturbances, "neither causing them, nor tending to control them." Wyckoff, DeGraff and Parent[8] also found no evidence that salicylates affect the auriculoventricular conduction time.

Although a review of the work of the early investigators[9] covers thousands of cases, a close analysis shows

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From the Medical Service of Dr. Leo Kessel, and the Cardiographic Department, the Mount Sinai Hospital.

[1] Hanzlik, P. J.: Actions and Uses of the Salicylates and Cinchophen in Medicine, Baltimore, Williams & Wilkins Company, 1927. Miller, J. L.: The Specific Action of Salicylates in Acute Articular Rheumatism, J. A. M. A. **63:** 1107 (Sept. 26) 1914. Miller, J. L., and Lusk, F. B.: The Use of Foreign Protein in the Treatment of Arthritis, ibid. **67:** 2010 (Dec. 30) 1916. Ehrström, R., and Wahlberg, J.: Polyarthritis, Herzaffektionen und Salizyltherapie, Acta med. Scandinav. **58:** 350, 1923.

[2] Hanzlik, P. J.; Scott, R. W., and Gauchat, P. C.: The Specificity of Salicylates in Rheumatic Fever, J. Lab. & Clin. Med. **4:** 112 (Dec.) 1918. Hanzlik, P. J.: Antirheumatic Remedies, Northwest Med. **28:** 293 (July) 1929.

[3] White, P. D.: Heart in Infectious Disease, Am. J. M. Sc. **163:** 335 (March) 1922.

[4] Levy, R. L., and Turner, K. B.: Variations in Auriculoventricular Conduction Time in Rheumatic Carditis with Salicylate Therapy, Proc. Soc. Exper. Biol. & Med. **25:** 64 (Oct.) 1927. Levy, R. L., and Turner, K. B.: Impaired Auriculoventricular Conduction in Rheumatic Fever, Arch. Int. Med. **43:** 267 (Feb.) 1929.

[5] Kerley, C. G.: The Child with Potential Heart Disease, J. A. M. A. **92:** 517 (Feb. 16) 1929.

[6] Epstein, J.: *Salicylic Acid Fruit in the Prevention* and Treatment of Rheumatism in Children, Arch. Pediat. **48:** 73 (Feb.) 1931.

[7] Carr, J. G., and Reddick, W. G.: Conduction Disturbances in Acute Rheumatic Infections, J. A. M. A. **91:** 853 (Sept. 22) 1928.

[8] Wyckoff, John; DeGraff, A. C., and Parent, Solomon: The Relationship of Auriculoventricular Conduction Time in Rheumatic Fever to Salicylate Therapy, Am. Heart J. **5:** 568 (June) 1930.

[9] Miller (footnote 1). Ehrström and Waldberg (footnote 1). Pribram, Alfred: Der acute Gelenkrheumatismus, Vienna, Alfred Hölder, 1899, pp. 460-466.

of how little use most of it is. Murmurs, endocarditis and pericarditis were often considered complications, whereas we now know that a carditis is an essential part of rheumatic fever. Besides, clinicians differ on what constitutes a cardiac complication, and if statistics are to be of help, one must compare patients treated with and without salicylates by the same investigator. This was usually not the case.

In order to clarify the divergent views and because we feel that the practitioner of medicine still believes that the salicylates prevent cardiac complications and shorten the duration of hospital stay, we instituted the following investigation: Rheumatic fever patients were treated alternately with and without salicylates. Thirty of the patients served as controls and received no salicyl compounds whatever. To them was administered either one-half grain (0.03 Gm.) of codeine or one-fourth grain (0.015 Gm.) of morphine sulphate when the joint symptoms were severe or when the patients were restless or uncomfortable. The drugs were repeated whenever necessary, but never given in toxic doses. In the dosage prescribed by us, morphine [10] does not alter the electrocardiogram. Patients occasionally received bromides, acetphenetidin and acetanilid. The thirty-three rheumatic fever patients were given daily doses of salicyl compounds either orally, by rectum, or both. Adequate doses were always given, i. e., from 120 to 180 grains (from 8 to 12 Gm.) a day was the average minimum, and twice this amount was not unusual. Many of the patients of this group received thousands of grains of salicylates during their hospital stay. No one received digitalis or any other drug that produces changes in the electrical tracings. Electrocardiograms were taken daily with the patient always in bed. The same conditions prevailed for the two groups. They were chosen alternately and treated by the same physicians and nurses.

Table 1.—*Clinical Comparison*

| | Number of Patients | Average Age | Males | Females | Average Hospital Stay | Deaths |
|---|---|---|---|---|---|---|
| Control group.. | 30 | 25 | 18 | 12 | 46.2 days | 1 |
| Salicylate group | 33 | 26 | 18 | 15 | 42.0 days | 1 |

| | Control Group | Salicylate Group |
|---|---|---|
| Monocyclic type | 26 | 27 |
| Polycyclic type | 4 | 6 |
| Acute pericarditis | 11 | 9 |
| Pericarditis with effusion | 3 | 3 |
| Rheumatic aortitis | 1 | 0 |
| Pneumonic infiltration | 3 | 3 |
| Pleural effusion | 4 | 4 |
| Pulmonary infarction | 2 | 0 |
| Acute glomerulonephritis | 0 | 1 |
| Thrombophlebitis (left internal saphenous vein) | 0 | 1 |
| Chronic purulent otitis media | 0 | 1 |
| Jaundice | 0 | 1 |
| Visceral manifestations (diarrhea and abdominal pain) | 0 | 1 |
| Toxic psychosis | 0 | 1 |
| Erythema annulare | 0 | 1 |
| Urticaria | 2 | 0 |

Table 1 shows that there were thirty-six males and twenty-seven females, with an average age of 26 years, the youngest being 13 and the oldest 53. The average hospital stay for the control group was forty-six days and for the salicylate series forty-two days. This is as near an accord as one can possibly expect, for the average deviation of the number of days in the hospital is large, the time of hospitalization ranging from as short a time as 9 days to as long a period as 108 days. In each group one death occurred. A study of the monocyclic and polycyclic types of the disease discloses that the two groups were parallel. Acute pericarditis occurred in eleven patients in the control group and in nine in the salicylate series. In each division, three patients developed effusion in the pericardial sac. A rheumatic aortitis was diagnosed in one patient, pulmonary infarction in two, and urticaria in two patients of the control group. A "pneumonic infiltration" was proved by teleroentgenogram in six patients, and a pleural effusion in four, equally distributed between the two groups. Acute glomerulonephritis, a left internal saphenous vein thrombophlebitis, a chronic purulent otitis media, jaundice, diarrhea and abdominal pain, an erythema annulare, and a toxic psychosis were found once each in different patients of the salicylate group only.

Table 2.—*Changes in Rhythm and in Electrocardiographic Waves*

| | Control Group | Salicylate Group |
|---|---|---|
| Number of patients | 30 | 33 |
| Average age | 25 | 26 |
| Myocardial involvement (electrocardiograms) | 30 (100%) | 33 (100%) |
| Change in Rhythm | | |
| Tachycardia | 21 | 22 |
| Bradycardia | 6 | 7 |
| Sinus arrhythmia | 6 | 8 |
| Sino-auricular block | 3 | 2 |
| Auricular premature beats | 2 | 4 |
| Ventricular premature beats | 1 | 2 |
| Nodal tachycardia | 1 | 0 |
| Nodal rhythm | 0 | 1 |
| Interference sinus and nodal rhythm | 0 | 2 |
| *Paroxysmal auricular fibrillation* | 1 | 1 |
| Paroxysmal auricular flutter | 1 | 1 |
| Change in Electrocardiographic Waves | | |
| P-R (0.20 second) | 5 | 3 |
| P-R (0.21 second and more) | 16 | 17 |
| Total P-R | 21 | 20 |
| Dropped beats | 2 | 1 |
| R-S-T abnormalities | 26 | 27 |
| Flat T waves | 3 | 4 |
| Inversion T waves | 10 * | 8 † |
| Inversion $T_3$ only (transient) | 2 ‡ | 2 ‡ |
| Total T wave changes | 15 | 14 |
| Transient Q-R-S abnormalities | 1 | 3 |
| Change voltage Q-R-S | 5 | 4 |
| Transient large $Q_3$ | 4 | 2 |
| Transient R. A. D. | 1 | 1 |
| Transient L. A. D. | 3 | 4 |
| Change P waves | 5 | 3 |

* Nine cove-plane shape.
† Five cove-plane shape.
‡ One cove-plane shape.

It would be a difficult and useless matter to weigh one complication against another. It is clearly evident that the control group fares as well as the salicylate group in regard to cardiac and other visceral complications. It is only when one considers subjective relief of pain that the control group does not do as well perhaps as the patients who received large doses of salicylates. The defervescence in the latter group occurred somewhat earlier, and the joint immobility and pain seemed to disappear more promptly.

The electrocardiograph [11] is perhaps the most practical and accurate means one has for an investigation of myocardial involvement. Table 2 presents figures that are as decisive as those in the clinical summation.

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[10] Light, A. B., and Torrance, E. G.: Opium Addiction: The Circulation and Respiration of Human Addicts During the Administration of Morphine, Arch. Int. Med. **43**: 556 (April) 1929.

[11] Parkinson, J.; Gosse, A. H., and Gunson, E. B.: The Heart and Its Rhythm in Acute Rheumatism, Quart. J. Med. **13**: 363 (July) 1920. Cohn, A. E., and Swift, H. F.: Electrocardiographic Evidence of Myocardial Involvement in Rheumatic Fever, J. Exper. Med. **39**: 1 (Jan.) 1924. Rothschild, M. A.; Sacks, Bernard, and Libman, Emanuel: The Disturbances of the Cardiac Mechanism in Subacute Bacterial Endocarditis and Rheumatic Fever, Am. Heart J. **2**: 356 (April) 1927.

The electrocardiographic abnormalities are arranged according to (*a*) abnormal rhythms and (*b*) changes in the electrical waves; i. e., abnormalities of the auricular waves (P waves), of auriculoventricular conduction (P-R intervals) and of the ventricular portion of the electrocardiogram (Q-R-S, R-S-T and T waves).

There was a 100 per cent involvement of the heart in both the control and the salicylate group. Not a patient's myocardium escaped damage, no matter whether or not salicylates were administered. We have been conservative in our interpretation of what constitutes electrocardiographic evidence of myocardial involvement and have included only sino-auricular block, nodal rhythm, interference of sinus and auriculoventricular nodes, paroxysmal auricular fibrillation or flutter, auriculoventricular conduction time of 0.21 second or more, dropped beats, definite R-S-T deviations, inversions of T waves in leads I and II only, and transient but distinct widening, notching or slurring of the Q-R-S group.

Again, the comparison of the incidence of the electrocardiographic changes in the two groups is surprisingly equal. Although the figures vary here and there, the difference is very slight and well within limits of error. The totality of changes in each group is practically the same. The increased auriculoventricular conduction is twenty-one in the control group, twenty in the salicylate; the T wave changes fifteen in the control, and fourteen in the salicylate; the R-S-T changes twenty-six in the control, and twenty-seven in the salicylate. These are the changes commonly searched for with the electrocardiogram for evidence of myocardial involvement.

The auriculoventricular conduction time changes were as variable in the group receiving salicylate therapy as in the control group. The defective conduction (i. e., increased P-R interval) might return to normal and then become impaired again. Neither the extent nor the duration of the conduction defect was materially different. We do not wish to go into detail on this subject, as other authors[12] have already proved this point.

## SUMMARY

Thirty-three patients who received adequate salicylate therapy and thirty who served as controls were compared clinically and as to detailed electrocardiographic evidence of myocardial involvement. No essential difference was discovered.

In the rheumatic fever patients, whether or not salicylates were administered, a 100 per cent involvement of the myocardium was found. The duration of hospital stay in the control group was forty-six days; in the salicylate group, forty-two days. One death occurred in each group. Polycyclic course, occurrence of pericarditis with or without effusion, and involvement of the lungs and other viscera were practically the same in the two groups.

The electrocardiographic changes indicative of myocardial involvement revealed a surprising coincidence of changes in the two groups, qualitatively and quantitatively.

There is no evidence that salicylates prevent cardiac complications or shorten the duration of hospital stay, although they are at present the most efficient antipyretics and analgesics for the treatment of acute rheumatic fever.

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[12] Carr and Reddick (footnote 7). Wyckoff, De Graff and Parent (footnote 8).

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# *Clinical Notes, Suggestions and New Instruments*

## THE EFFECTIVENESS OF PENTOBARBITAL IN ANTIDOTING STRYCHNINE POISONING IN THE RABBIT

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Following the report of Dawson and Taft[1] in which several barbitals were shown to antagonize effectively the fatal reaction of the rabbit to from 1 to 1½ lethal doses of strychnine, an attempt was made to adapt the results of their study for inclusion in our course in pharmacodynamics. The observations of these authors in relation to pentobarbital were confirmed; the other members of the group were not tested. The ease with which the antagonism may be demonstrated and the remarkable protective effect of pentobarbital against strychnine poisoning (up to thirty-five times the minimum lethal dose) appeared to merit publication of a representative protocol and a summary of the results obtained with various dosages of the alkaloid simply as an extension of the studies of Dawson and Taft. Recently, and subsequent to completion of these observations, Swanson[2] observed that amytal antidotes approximately 10 lethal doses of strychnine in the rabbit; and Haggard and Greenberg[3] reported that apomorphine and phenobarbital

*Antagonism of Strychnine Poisoning by Pentobarbital Sodium*

| Number of Rabbits per Series | Weight in Kg. | Dosage of Strychnine Sulphate in Mg. per Kg. (Subcutaneously) | Lethal Doses of Strychnine | Pentobarbital Required for Antagonism | | Per Cent of Series Recovered | Average Time to Complete Recovery, Hours |
|---|---|---|---|---|---|---|---|
| | | | | Mg. per Kg. by Vein | Range of Dose | | |
| 3 | 2.30 | 0.9 | 1.5 | 25 | 18- 28 | 100 | 3 - 4½ |
| 3 | 2.2 | 1.8 | 3.0 | 30 | 22- 25 | 100 | 3 - 6 |
| 3 | 2.1 | 3.0 | 5.0 | 34 | 30- 38 | 100 | 6 - 9 |
| 2 | 2.5 | 6.0 | 10.0 | 38 | 34- 42 | 100 | 8½-15 |
| 1 | 2.45 | 9.0 | 15.0 | 57 | ...... | 100 | 9 |
| 3 | 2.3 | 12.0 | 20.0 | 85 | 80-112 | 66.6* | 8 -16 |
| 4 | 2.2 | 15.0 | 25.0 | 105 | 90-125 | 75† | 11 -16 |
| 4 | 2.25 | 18.0 | 30.0 | 112 | 90-125 | 50‡ | 12 -18 |
| 4 | 2.5 | 21.0 | 35.0 | 118 | 90-140 | 50§ | 15 -18 |
| 2 | 2.5 | 21.0 | 40.0 | 140 | ...... | 0‖ | |

* The one fatality was due to overdosage with pentobarbital.

† One animal killed with initial injection of pentobarbital.

‡ One died fifty-two and the other ninety minutes after the injection of strychnine. Overdosage with pentobarbital was considered the primary cause of death.

§ Animals receiving this dose are very difficult to control. The two surviving animals required artificial respiration for varying periods owing to overdosage with a barbital derivative.

‖ This dose is too depressant. Strychnine and pentobarbital produce an additive depression of respiration.

*Typical Protocol—Strychnine Antagonism by Pentobarbital Sodium*

Rabbit, albino; weight, 2 Kg.
9:14 a. m.: Injected 36 mg. of strychnine sulphate (as 2 per cent solution) subcutaneously, equivalent to 30 times the lethal dose.
9:16½: Moderate convulsive movements.
9:18: Very strong tetanic convulsion.
9:18½: Pentobarbital (0.5 cc., 5 per cent solution), 12.5 mg. per kilogram by vein produced complete relaxation.
9:22: Moderate tetanic convulsions; 12.5 mg. per kilogram by vein (pentobarbital).
9:35: Moderate tetanic convulsions; 12.5 mg. per kilogram by vein (pentobarbital).
9:53: Slight convulsive twitch; 12.5 mg. pentobarbital per kilogram intramuscularly; deep anesthesia.
11:00: Animal sneezes occasionally; slight convulsive movements.
11:05: Animal sneezes repeatedly; slight convulsive movements; injected 12.5 mg. pentobarbital per kilogram by vein.
12:07 p. m.: Animal sneezes; convulsive movements quieted by pentobarbital (12.5 mg. per kilogram) by vein.
1:25: Strong convulsions; same dose of pentobarbital by vein.
2:50: Sneezing results in [illegible]
2:55: Injected 12.5 mg. [illegible] by vein.
4:00: Reflex excitability [illegible] up.
5:15: Injected a unit dose of pentobarbital by vein.
8:00 a. m.: Drowsy; lies on side but is awake.
10:30: Apparently normal; hops about and eats.
This animal was in good condition thirty days later.

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[1] Dawson, W. T., and Taft, C. H., Jr.: Proc. Soc. Exper. Biol. & Med. **28:** 917 (June) 1931.

[2] Swanson, E. E.: J. Lab. & Clin. Med. **17:** 325 (Jan.) 1932.

[3] Haggard, H. W., and Greenberg, L. A.: Antidotes for Strychnine Poisoning, J. A. M. A. **98:** 1133 (April 2) 1932.

effectively antagonize several lethal doses of strychnine in the rat and dog. Pentobarbital from a practical standpoint offers certain advantages over amytal or phenobarbital in that, owing to its short duration of action, small effective doses may be repeated at intervals as required by the severity of the symptoms. This factor of safety is quite important following the administration of very large doses of strychnine.

The convulsant and lethal effects of strychnine administered subcutaneously to rabbits in doses of 12 mg. or less per kilogram are easily combated after the development of convulsions by means of pentobarbital by vein in doses of from 6 to 15 mg. per kilogram and repeated at intervals at first in from three to five minutes and later in from ten to thirty minutes, as required by the recurrence of convulsions. However, control of the convulsions following the administration of larger doses of the alkaloid, i. e., up to 21 mg. per kilogram (thirty-five times the minimum lethal dose taken as 0.6 mg. per kilogram) becomes increasingly difficult as the depressant effects of strychnine on the medullary centers are additive with those of effective doses of the hypnotic, and a slight overdose with pentobarbital tends to paralyze the respiratory center. Under such conditions the institution of artificial respiration was usually followed after a variable period by the resumption of spontaneous respiratory movements; but the maximal dose of strychnine that may be effectively antidoted with pentobarbital with a fair chance of success, i. e., the ultimate recovery of 50 per cent of the animals, is probably 21 mg. per kilogram.

Pentobarbital and strychnine within limits were mutually antagonistic in that from 1½ to 2 lethal doses of the barbiturate were effectively antidoted by small repeated doses of strychnine. A similar relationship between phenobarbital and strychnine has been observed by Haggard and Greenberg.

On the basis of these experiments, the suggested safe dose of pentobarbital for an adult man suffering from strychnine poisoning would be one-tenth grain (6 mg.) per pound for the first dose and if convulsions recur, one-half this amount (one-twentieth grain [3 mg.] per pound) for each succeeding dose. Caution should be used if more than four injections are given during the first two or three hours.

### CONCLUSIONS

1. Pentobarbital in small repeated doses by vein effectively antidotes up to thirty-five times the minimum (subcutaneous) lethal dose of strychnine in the rabbit.
2. Strychnine within limits is mutually antagonistic with pentobarbital and effectively antidotes from 1½ to 2 lethal doses of the barbiturate.

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## DR. BOOT'S NONSURGICAL TREATMENT FOR SWALLOWED FOREIGN BODIES

### (A POSTHUMOUS REPORT ON THE METHOD)

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On Sept. 1, 1927, Mary J., aged 7 years, accidentally swallowed a twenty-five cent piece (quarter-dollar). Its passage into the stomach was accompanied by much discomfort and pain. The pain was most intense below the sternum. After the coin passed the cardia, relief was instantaneous. Fluoroscopic examination about two hours later showed the coin in the fundus of the stomach. As there were no symptoms, I asked the mother to notify me if any distressing symptoms arose; otherwise, to report when the coin was passed. Three days later, fluoroscopic examination showed that the coin had not left the fundus. There were no symptoms. The child had eaten three hearty meals each day and had had a daily evacuation. Six days after the accident, the coin was still in the fundus. Nine days after the accident, fluoroscopic examination showed the coin still in the fundus. The mother was now quite concerned but, owing to the absence of symptoms, was willing to wait longer. On the following day I spoke to a noted abdominal surgeon about the case. He felt certain that the coin was too large to pass the pylorus. He recommended surgical removal. I then conferred with the late Dr. George W. Boot, who had on numerous occasions removed foreign bodies from the trachea, bronchi and lungs of children. He said: "Have the child eat a good-sized bowl of mixed vegetables—cabbage, green beans and celery. The vegetables should not be cooked soft, and should be swallowed without much if any mastication. Wash them down with a little water if necessary. Give no laxative." His orders were carried out without delay. Within twelve hours after the first bowlful of vegetables had been eaten, the coin was passed by rectum. Dr. Boot suggested, at the time, that the case be reported. In the interim, seven other children have been treated by the same method for swallowed foreign bodies—open safety pins (one rather large, two medium sized), three cases; five-cent piece (nickel), one case; small pocket knife, one case; tack, one case; penny, one case. Doubtless many small objects will pass through the intestine without resort to the coarse vegetable diet, but the prompt passage of the twenty-five cent piece, which had remained in the stomach for ten days, warrants a trial in any uncomplicated case of swallowed foreign body.

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# Special Article

NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.—ED.

## VITAMIN A

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The story of the discovery of the significance of the hitherto unidentified dietary essential at present designated as vitamin A is of unusual interest to students of medicine. It helped to implant more firmly the idea that diseases may be due to deficiencies. Thus, the "Report on the Present State of Knowledge Concerning Accessory Food Factors (Vitamines)" prepared for the British Medical Research Committee in 1919 points out that:

> Disease is so generally associated with positive agents—the parasite, the toxin, the *materies morbi*—that the thought of the pathologist turns naturally to such positive associations and seems to believe with difficulty in causation prefixed by a *minus* sign. Even in connection with deficiencies arising within the body there is or was a similar tendency. When the importance of internal secretions was first recognized there seemed to be much hesitation in believing that symptoms might be frankly due to their failure. When each fresh internal secretion was described there was always an effort to show that its function was to "neutralize" some, always hypothetical, toxic substance. Symptoms, on this view, were due to the unmasking of a deleterious agent rather than to simple deficiency in a normal and necessary agent. To distinguish between these two possibilities was of course a scientific duty; but, at any rate in the earlier literature of internal secretions, a bias against the simpler view interfered with the fair interpretation of experimental results. So in connection with the newer conception of disease as due to dietetic deficiencies.

One of the foremost investigators of nutrition of the past generation, Carl Voit, remarked that the ideal plan for studying the relative dietary values of the ingredients of our food intake would be to feed the

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pure foodstuffs—protein, fat, sugar, starch and inorganic compounds—and observe the effects thereof. He insisted that neither man nor experimental animals would be likely to tolerate such unpalatable rations for any length of time as they do the usual foods of daily life; but he added his belief that if the purified proximate principles were actually fed as proposed, the outcome would not be essentially different from our experience with naturally occurring food mixtures.

The ideal experiment that Voit had postulated was undertaken by various investigators, always without success. Milk, which was known to be an excellent food, contains protein, fat, carbohydrate and inorganic salts. The attempts to support animals on mixtures of isolated milk protein, plenty of fat and carbohydrate to supply the energy requirement, and the inorganic elements present in milk, invariably resulted in failure. As small additions of certain "natural" foods to such inadequate rations were effective in promoting nutrition, it gradually became apparent that substances other than the familiar "proximate principles" or foodstuffs also are indispensable. Such substances were presently designated "vitamins."

### DISCOVERY AND OCCURRENCE OF VITAMIN A

Many attempts have been made during the past two decades to track these "accessory food substances" to their origin. Part of the story is revealed in other papers in this series. In 1913, several American investigators discovered that the inadequate diets, composed of mixtures of isolated foodstuffs and simulating milk in their proximate composition but having the fat represented by lard, could be converted into wholesome mixtures by merely replacing the lard with milk fat. As one reviewer remarked:

> Lard, obtained from swine, is as much of a fat as butter fat or olive oil, or any other of the several varieties of fats and oils on the market. The differences among the fats are largely due to differences in quantity of the three fatty acids they usually contain. The differences can never be as profound as those between proteins, formed as the latter are from eighteen different amino-acids. When, therefore, our investigators found the substitution of lard for butter fat to produce loss of weight and general decline, they attributed the deficiency of lard not to the fat itself but to a *something* accompanying the butter fat and not the lard.

This unidentified "something" still bears the designation of vitamin A, though there can be little doubt that the chemical identity of the indispensable factor in nutrition represented thereby will sooner or later be ascertained, so that it can be labeled in accord with the dictates of modern chemical nomenclature. The prevailing air of mystery and magic about the subtle nutritive potencies of the vitamins will be dispelled when their exact chemical nature is clearly revealed. One may recall how the discovery of the composition of the thyroid hormone, its relation to iodine, and the actual synthesis of a potent product has clarified the atmosphere of uncertainty regarding many aspects of thyroid malfunction.

Vitamin A is widely distributed in nature in products of both animal and plant origin that are used as food by man and animals. In all these instances the potent constituent has been found to be associated with fats or fatlike substances. It is removed from its sources by extraction with fat solvents, such as ether, chloroform, hot alcohol and other commonly used organic solvents. This does not mean, however, that vitamin A is a true fat, that is, a glyceride of a fatty acid, or even a fatlike ester. Its association with fats in nature is presumably due to comparable solubilities, as is the case with many higher alcohols, sterols, and certain pigments in nature.

### DETECTION OF VITAMIN A

The detection and quantitative determination of vitamin A depends at the present time on biologic methods of examination. For such purposes the use of the albino rat (Mus norvegicus-albinus) or the "hooded" types has become the classic procedure, although other species of animals also are responsive to the tests. Direct chemical procedures have been suggested and will be referred to later. Their actual value and dependability are much debated and probably will remain so until more is known about the real chemical nature of vitamin A. Briefly outlined, the biologic tests depend on observing the nutritive behavior and any abnormal symptoms of animals subsisting on rations in which the presence or absence of some source of vitamin A is the only variable factor. This implies that the diet must contain *all* the other essentials—adequate protein and other energy-yielding nutrients, suitable inorganic components, other vitamins and water—without which nutritive disaster is bound to occur. Consequently, success or failure will depend primarily on the presence or lack, respectively, of vitamin A. An entirely adequate regimen will permit not only maintenance of the adult animal but also proper breeding, including healthy pregnancy, parturition, lactation and proper growth of the young. Ordinarily the biologic tests are twofold in character: preventive tests, in which the inclusion of the product under investigation with respect to vitamin A in the diet will prevent the onset of the symptoms of deficiency, and curative tests, in which the addition of the product may restore to physiologic well being animals that show the characteristic signs of nutritive decline on so-called otherwise adequate basal vitamin A-free rations.

### CHARACTERISTICS OF AVITAMINOSIS

Before referring to more specific details of such tests, it is desirable to describe the evidences of a deficiency of vitamin A in the diet. In young animals the interruption of growth is one of the earliest signs. This is, however, a manifestation of practically every type of deficiency. The "law of the minimum" has become so firmly established for nutrition that one expects that the need of any essential will impede growth in animals as well as in plants, in cases in which the power is lacking to synthesize de novo the missing factor. Consequently it has been fortunate for the investigator that other, more specific evidences of deficiency of vitamin A have been discovered.

The first outstanding sign that "all is not going well" in the bodily functions was described in 1913 by Osborne and Mendel. They noticed occasional cases of eye disease that they were at first inclined to attribute to accidental infection. Attempts that were made to relieve such conditions by the local application of antiseptics, notably silver-protein combinations, were not successful. Presently, however, it became apparent that, despite the ready possibility of infection throughout a large colony of animals kept under the same hygienic conditions, the eye disorders did not occur when good nutritive conditions were secured by suitable diets. The views of ophthalmologists in regard to the etiology of the type of eye disease, designated among other names by the terms keratomalacia and xerophthalmia, have changed from time to time under the influence of the prevailing tendencies in the study of pathology. Thus, Goldschmidt has pointed out that long ago a relationship between nutritive disturbances and ophthalmia seemed to be established. With the progress of modern bacteriology, this aspect of the subject became overshadowed by the assumption that the ophthalmia is primarily an infection for which various micro-organisms have been held responsible.

A characteristic ophthalmia is an almost unfailing manifestation of a diet lacking in vitamin A; it is promptly cured if some source of this food factor is included in the diet before bacterial invasion of the diseased ocular tissues leads to irreparable damage. In the case of the rat an excellent description of the common sequence of symptoms in A-avitaminosis has been given by Gudjónsson:

> The first sign of this condition to be noticed by a trained eye is that the hairy coat is no longer as smooth as it should be in a normal animal. At the same time the rat begins to become emaciated; it grows lean and wastes away in flesh. Its lines are no longer soft and curved as they are normally in a healthy rat. The rat is no more as agile as it used to be; its movements are no longer marked by the creeping suppleness that is so characteristic of the rat. Its movements begin to be incoordinate. The silky feet with the pink soles become rough and scaly, skinny and bony. The tail is thinner and the caudal vertebrae are felt as sharp edges under a paper cover. The rat begins to be negligent of cleanliness. There are remnants of food smeared about its mouth and sticking between its teeth; there are crumbs between its toes. Its eyes begin to be less protruding and apparently smaller. The voice becomes hoarse; complete aphonia is not infrequent. Other particular signs are rare in the first stage of A-avitaminosis. By this time the rat has grown accustomed to the diet, and intestinal irregularities are extremely rare. Then comes the clinical manifestation of xerophthalmia. Often this lesion progresses at a surprising rate. One day, perhaps, there may be noticed a little bit of sanguinolent secretion in the inner canthus, and it looks as if there are fewer cilia in the eyelashes (the cilia are sticking together). The next day one may find copious secretion, serous, purulent or sanguinolent; the eyes are almost shut, and the cornea is beginning to become opaque. The conjunctiva is injected and inflamed. In two or three days there may thus have developed a suppurative panophthalmia. The eyelids are swollen and almost glued together with purulent matter.
>
> By this time the rat has ceased to gain in weight and has perhaps even begun to lose weight. Not infrequently, rhinitis comes on. There is a profuse discharge from the nose, and the respiration is accompanied by râles; the nasal secretion is sometimes blood tinged. The sense of smell, which seems particularly well developed in the normal rat, now appears to be less acute. For these animals have some difficulty in finding their food; but this may perhaps also be due to their loss of vision.
>
> In the last part of the foreperiod and in the severe stages of A-avitaminosis, about one third of the males are suffering from priapism. By this time the lymph glands of the neck are enlarged and can be made out on palpation. These inflamed lymph glands, in which abscess formation often takes place, may become as large as peas, or larger. The abscesses do not infrequently perforate, and they rarely heal, unless the rat is supplied with vitamin A, but persist as fistulas. At this time, too, the rats often have hematuria. In the last stage of the disease, diarrhea is encountered in a few cases; but, apart from these, digestive disturbances are rarely observed.

In full grown animals placed on diets poor in vitamin A, xerophthalmia is not liable to develop as promptly as in younger rats, but it appears in a considerable number of instances if the deficient dietary is continued long enough.

The characteristic ophthalmia just described is not limited to the albino rat. It has been observed to occur in a variety of other species, including man, when there is a shortage of vitamin A in the rations. For some time, mice were supposed to be somewhat immune to xerophthalmia due to dietary deficiency, but this species also has recently been shown to succumb with characteristic symptoms of eye disorder to lack of vitamin A.

Particular interest has been centered latterly in the evidences of respiratory infections consequent on a dietary deficient in vitamin A. Thus, observers have reported "a nasal or bronchial catarrh or even pulmonary infection with mucous or purulent exudate, at times even resulting in hemorrhage. Animals thus afflicted in the early stages of the disease sneeze and cough violently but later, as the inflammation becomes confined more to the lungs, the cough subsides, and dyspnea becomes very pronounced with the slightest activity." In addition to this it is common, in rats at least, to find abscesses near the base of the tongue and in the pharynx, pus in the middle ear, and sometimes sinusitis. Sherman and Storms believe that when rats of the same stock and previous nutritional history are placed on the same vitamin A-free diet at different ages, the ophthalmia develops in a larger proportion of the younger, and respiratory disease in a larger proportion of the older, animals. Another experimental clinical feature early discovered by Osborne and Mendel is the large incidence of calculi and calcareous deposits at various regions in the renal passages and urinary bladder in rats long deprived of vitamin A. The cells of the renal tubules seem to become "calcified" in some instances. There is a high incidence of urolithiasis in rats deprived of vitamin A. These manifold disorders and distortions of structure make clearer why it often becomes difficult if not impossible to induce restoration of health by suitable changes in diet. The parts affected, like the ocular tissues or the kidneys, may have become so extensively deranged that repair is interfered with or the harm becomes irreparable. In children, blindness has often ensued.

## PATHOLOGY

The pathologic changes evident on microscopic examination in cases of A-avitaminosis have already been studied by several investigators. Wolbach and Howe concluded that the outstanding change is a substitution of stratified keratinizing epithelium for normal epithelium in various parts of the respiratory tract, alimentary tract, eyes and the para-ocular glands and the genito-urinary tract. The histologic change characterized by a transformation of cuboidal into keratinized cells seems to be due directly to the nutritional deficiency; infection then readily attacks the weakened tissues. According to Tyson and Smith the principal changes associated with vitamin A deficiency in rats are a metaplasia of cuboidal or columnar epithelium in certain parts of the body, epithelial hyperplasia in various structures, and infection. The metaplastic changes involve the following structures in order: the sublingual glands, the submaxillary glands, and the epithelium of the renal pelvis and of the trachea and bronchi. The tongue is regularly involved before xerophthalmia appears. The serous type of sublingual gland is the first to be affected. The lesion in the tongue and submaxillary gland begins with a dilatation of the ducts and a metaplasia of the lining epithelium accompanied by infection. In late cases the glandular tissue may be entirely destroyed by pressure from the dilated ducts and by necrosis due to infection. The submaxillary gland is not involved as constantly as the tongue. The epithelium of the renal pelvis may be involved quite early. Metaplasia and infection are always present in the advanced cases. Renal calculi are prone to occur, and when obstruction to the urinary outflow is present pyonephrosis develops, which is sometimes followed by perinephric abscess. Epithelial metaplasia of the trachea and bronchi is not common. The most usual condition is an atrophy of the lining cells.

Closely related to the epithelial changes just described is a characteristic test for deficiency in vitamin A described in 1922 by Evans and Bishop. This is the constant appearance of cornified cells either predominantly or exclusively in the vaginal smear. During the estrous cycle of the female rat it is easy to demonstrate a succession of recurring types of cells obtainable from the vaginal surfaces. During impoverishment of vitamin A, the cornified cells persist. According to some observers this manifestation is earlier and, since invariable, more constant in its appearance than xerophthalmia or abscesses of the glands at the base of the tongue and, while perhaps not earlier than growth decline, as pathognomonic of vitamin A deficiency as growth decline is not. An inadequate supply of vitamin A injures the female reproductive system so that fertilization and implantation often fail. In this respect it differs radically from the reproductive impairment due to low vitamin E content, in which, typically, the eggs are always healthy and implantation takes place but resorption follows. Lack of vitamin A leads to sterility in the male rat.

### VITAMIN A ASSAYS

The prevalent method of estimating the content of vitamin A in a food or preparation thereof is the curative biologic procedure already referred to. It is based on the principle of depleting young albino rats of their reserves of vitamin A by an otherwise suitable diet devoid of this factor and then determining the minimum amount of the product under examination that is required to produce a standard response. The details vary widely according to the preferences of the assayers. In the case of cod liver oil the U. S. Pharmacopeia X adopted the following routine:

> Vitamin A Assay for Cod Liver Oil.—Cod liver oil may be assayed by the following process. When so assayed the oil should contain at least 50 units per gram and must be labeled "This unit is not a measure of the antirachitic activity of cod liver oil."
>
> This assay is based upon the estimation of the minimum amount of cod liver oil necessary to meet specific growth-promoting requirements in a standard test animal. The test animals shall be albino rats from a constant source and bred preferably under the control of the experimenter.
>
> The vitamin A potency of cod liver oil shall be expressed in units per gram of oil, the unit to be the minimum daily amount of cod liver oil required to cure induced symptoms of vitamin A starvation in young albino rats, and to cause a gain in weight of from 10 to 20 Gm. within a period of thirty-five days under the conditions of growth and diet specified in this assay.
>
> Place on a vitamin A-free diet, rats not less than twenty-five days and not more than twenty-nine days old, and weighing not less than 35 Gm., and not more than 45 Gm.
>
> The basal diet is to be composed as follows: Casein, or desiccated fresh meat, rendered free from vitamin A, 18 per cent; salt mixture, such as that of Osborne and Mendel or McCollum and Davis, 4 per cent; starch, sufficient to make, 100 per cent.
>
> Use sufficient dried brewers' yeast to meet the vitamin B requirements of the animal, mixing it with the basal diet during the vitamin A-free period.
>
> The rats shall begin receiving the cod liver oil to be tested after not less than seven days of stationary or declining weight, and from the time of feeding the test oil, they shall be kept in separate cages.
>
> The test period shall continue for thirty-five days and the potency of the oil shall be judged from the rat or rats showing a gain on the thirty-fifth day of between 10 and 20 Gm. over the weight at the beginning of the test, and the cure of the induced symptoms of vitamin A starvation.
>
> Each test shall be controlled by at least two standard rats which have received no cod liver oil. These animals may serve as controls for any number of concurrent tests on which the same basal diet is used.
>
> No oil shall be labeled as assayed by the U. S. P. method unless it contains at least 50 units per gram of oil.
>
> The diet for rats used as breeders shall be composed as follows: Finely ground whole wheat, 66 per cent; whole milk powder, 33 per cent; sodium chloride, 1 per cent.
>
> The antirachitic requirements of the breeders shall be assured.

This "official procedure" has been the subject of widespread criticism for many reasons that need not be detailed here. At present a committee of experts has been organized to devise a revised assay outline for the next edition (XI) of the U. S. Pharmacopeia. Improvements in technic have been introduced into current food assay practice, notably by Sherman and his co-workers.[1] Attention has been given to the development of a basal diet that shall be free from vitamin A but fully adequate in all other respects and that can be duplicated with certainty. The basal vitamin A-free diet now used consists of purified casein 18, salt mixture 4, dried brewers' yeast 10, sodium chloride 1 and cornstarch 67 parts, with the addition of 0.5 Gm. of irradiated commercial cholesterol per kilogram of the basal ration or some equivalent form of irradiated ergosterol. A unit of vitamin A is defined by Sherman as

> that amount which when fed daily to a standard test animal, prepared as described, will suffice to support an average gain in body weight of 3 grams per week during the test period of 4 to 8 weeks. (Obviously one may always express vitamin A values in terms of this standard unit, and yet may state the number of such units contained in one gram, or one kilogram, one ounce, one pound, or in a 100-calory portion of the food, or in whatever other amount of food may be regarded as convenient—as for example, the number of units of vitamin A in a dozen eggs.)

It should be added that, unfortunately, considerable difference of opinion still exists among both American and European biochemists regarding the most suitable technic and the appropriate "unit" to be adopted. Although it has become possible to express the results of feeding tests in terms that are, broadly speaking, quantitative in character, there is not as yet sufficient uniformity of practice to satisfy the needs of a dependable standard that is internationally acceptable. Hence it is important in every instance to know something about the assay method that has been employed in the examination of a product quantitatively for vitamin A. An international vitamin A unit equivalent to $1\gamma$ (0.001 mg.) of pure carotene has recently been proposed.

For a time it appeared as though a strictly chemical method might become available. Liver oils that are rich in vitamin A, as determined by biologic methods, give striking color reactions under certain conditions. Often a parallelism between the intensity of the developed color and the richness in vitamin A seemed to exist. It was suggested, therefore, that the reactions might be due to vitamin A or to some related substance.

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[1] Sherman, H. C., and Smith, S. L.: The Vitamins, ed. 2, New York, Chemical Catalog Company, Inc., 1931.

In the case of colored foods and natural products the fat-soluble vitamin is removed by means of organic solvents; interfering pigments can usually be separated by suitable adsorbents. When a solution of antimony trichloride in chloroform, for example, is added to cod liver oil, a blue color appears. The conditions of one procedure are as follows: Antimony trichloride washed with chloroform and dried is dissolved in chloroform to make a 30 per cent solution (weight in volume). After standing, the clear solution is decanted and used from a buret. The oil to be tested is dissolved in chloroform (20 per cent solution) and to 0.2 cc. delivered from a 1 cc. buret, 2 cc. of the antimony trichloride solution is added. The liquid is at once transferred to a cell and the blue color intensity measured against standard glasses in a Lovibond tintometer. The earlier literature on color tests for vitamin A is reviewed by Willimott and Wokes.[2] The lack of dependable correspondence between the chromogenic values for vitamin A-bearing fats and the biologic assays has thrown doubt on the value of the simpler methods. At the present time the value of the colorimetric methods—and there have been many suggestions—is *sub judice*. As a recent reviewer has pointed out, thus far the chemical reactions appear merely to be suggestive of the vitamin A content of some fatty compounds, particularly cod liver oil. They are not serviceable as sole indicators in quantitative determinations of vitamin A. As previously, such estimates have still to be made by means of animal experiments. For this, the rat is the most suitable animal.

### CHEMISTRY OF VITAMIN A

As might be expected, the chemical nature of vitamin A has from the outset been the subject of intense scientific curiosity. It would also be of immense practical importance if the potent substance could be isolated in pure form. Its solubilities were early found to correspond to that of fats, with which it seems to be associated quite often in nature. It can be extracted along with fats and lipoid substances from natural products by means of organic solvents like ether. Vitamin A is, however, not a fat, that is, an ester of a familiar fatty acid; for when vitamin-bearing fat mixtures like cod liver oil are saponified, vitamin A appears in the nonsaponifiable portion of the reaction mixture. It can thus be removed from fats by saponifying the latter. Manifold concentration can thereby be effected. This process is employed in the preparation of the vitamin A concentrates of cod liver oil that are available in commerce and employed as therapeutic agents.[3] Long ago, Drummond succeeded in effecting a thousandfold concentration of the vitamin A of cod liver oil, but he regarded the product as still grossly contaminated with adherent impurities. In criticizing earlier reports on the alleged isolation of the potent principle, Drummond expressed the belief in 1929 that "the active substance is present in liver oil concentrates in amounts so minute that direct attempts at its isolation by the ordinary chemical methods are of little use." He adds that

> the color reactions believed by many to be specific for vitamin A recall so strongly those given by certain types of sterol derivatives, that it is probable that more progress in elucidating the nature of the active substance will be made by studying the properties of sterols than by continuing to employ such methods as we have used during the last ten years. It is encouraging to recall the brilliant success which has followed the studies of the sterols in relation to Vitamin D, and to remember that the concentrated preparations of the antirachitic vitamin that are now available would probably never have been obtained by employing such methods as we have used in attempting the isolation of vitamin A.

Drummond reported that a sample of Japanese shark liver oil possessing a vitamin activity of the same order as a good cod liver oil yielded an unsaponifiable fraction of which from 90 to 95 per cent was accounted for in the form of reasonably pure preparations of alcohols, together with small amounts of cholesterol and a hydrocarbon resembling squalene. The remainder appeared to consist to a large extent of the same substances. This would indicate that the vitamin A forms a very small proportion of the unsaponifiable matter, probably less than 1 per cent. About 5 per cent of the oil consists of unsaponifiable matter. As less than 5 mg. of good liver oil suffices to supply the daily requirement of a 100 Gm. rat, it is readily calculated that the vitamin A in the daily intake represents at most a magnitude of approximately one part in a million parts of body weight. Such are the amazingly small concentrations of certain chemical substances that spell well being versus the nutritive failure that ensues without them. The story furnishes an added illustration of the large importance of "little things" in nutrition.

Vitamin A can readily be destroyed by oxygen or oxidizing agents at high temperatures. It appears, however, that in the forms of the chemical "environment" in which it exists in many of its natural sources the vitamin is somewhat more resistant to destruction than was formerly assumed. The reaction and the presence of antitoxidants may play a part in this protection. The attempts to regenerate vitamin A in products in which it has been destroyed have not been successful thus far. Vitamin A appears to be less resistant to destruction when it is separated from the products with which it is associated in nature. It possesses sufficient stability, as it exists in most of the common foods in which it is found, to undergo the modern processes of food conservation, notably food preservation by present-day commercial canning operations, without serious destruction. Recent studies of Kohmann and Eddy indicate that neither fruits nor vegetables lose appreciable amounts of vitamin A in the home cooking or canning process. The vitamin A assay of cod liver oil preserved in the absence of air remains quite constant over periods of many months.

### CAROTENE AND VITAMIN A

During the early progress in the study of the distribution of vitamin A in natural products, a possible relationship between this food factor and certain carotinoid pigments suggested itself. Some of the familiar foods, such as butter and carrots, that were rated as comparatively rich in vitamin A exhibit a pronounced yellow color. The comparison is notable in the case of maize, the yellow kernels being decidedly more effective than the white ones as sources of vitamin A. Comparable differences have been reported between the yellow and the white varieties of yautia. Many green food products carry carotinoid pigments masked by the green color. There appears to be a relationship between the green products and vitamin A potency. It has been clearly established, for example, by comparisons of bleached and of green asparagus and by the differences between pale head lettuce and green leaf lettuce. The parallelism though striking in many instances does not hold, however, for a considerable number of well tested substances. Cod liver oil, rich in vitamin A, is devoid of the yellow pigment; hence the assumption that fats [illegible] are richest in vitamin A cannot be [illegible]

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[2] Willimott, S. G., and Wokes, Frank: Lancet 2:8 (July 2) 1927.

[3] Cod Liver Oil and Cod Liver Oil Preparations: New and Nonofficial Remedies, 1931, p. 259.

The pigments responsible for the comparative "yellowness" of the products referred to are carotene and xanthophyll. The latter has been excluded from any responsibility for vitamin A potency. The early tests with purified carotene gave negative results for the most part. Subsequently, however, von Euler in Sweden and Moore in England furnished striking evidence that very small doses of the highly purified yellow pigment carotene (sometimes spelled carotin) suffice to cure rats that exhibit the symptoms of avitaminosis due to lack of vitamin A. A daily intake of not more than 0.003 mg. of carotene has been found effective. This forms the basis for the proposed use of carotene as a standard for vitamin A assay, already referred to. The failure of earlier investigators has been explained by the destructive nature of the pigment solvents used in their tests; for carotene is very sensitive to oxidizing reagents and loses color readily when in contact with certain chemicals.

Vitamin A cannot well be regarded as identical with carotene. There are numerous indications that the classic material having biologic properties designated as vitamin A is a colorless substance. It has therefore been assumed, as might be expected, that carotene has been found potent because of contaminating traces of vitamin A in the products thus far tested. Such an assumption applied to highly purified—and highly potent—carotene would endow the minute amounts of contaminant thus postulated with almost unbelievable potency from a purely quantitative standpoint. Other objections also can be raised. They deal with the unlike spectrographic properties of the two substances.

The confusion and uncertainty regarding the possible relationships between vitamin A and carotene, and perhaps other organic compounds (dihydro-α-crocetin) have been dispelled latterly by the discovery that the pigment apparently can be converted into vitamin A in the animal body. When rats are deprived of vitamin A in their diet, the liver soon becomes depleted of the stored vitamin. Administration of carotene at this stage relieves the symptoms of avitaminosis and may bring about fresh storage of pigment-free vitamin A. It thus appears that carotene can function in the body as a precursor of vitamin A. The researches of Moore and others afford a complete picture of the conversion of carotene in vivo to the familiar vitamin A of liver oils, as defined by all the chromogenic and spectroscopic properties that have been found to run parallel to this factor. The details of the conversion are summarized in table 1. A new chapter in the story of the vitamins has been begun.

TABLE 1.—*Conversion of Carotene to Vitamin A*

| Carotene ⟶ | Vitamin A |
|---|---|
| Synthesis in plant | Stored in animal |
| Intensely yellow | Almost colorless |
| 328 millimicron absorption band absent | 328 millimicron absorption band developed |
| Greenish blue antimony trichloride reaction at 590 millimicrons | Vivid blue antimony trichloride reaction at 610-630 millimicrons |

### ORIGIN OF VITAMIN A

As in the case of the other recognized vitamins, the animal is dependent on exogenous sources for its requisite supply of the indispensable vitamin A. It cannot be synthesized de novo by the animal organism, but the latter can store considerable quantities in certain tissues. The content of vitamin A depends largely on the diet of the animal. Vitamins do not form any exception to other types of "essentials" for growth and physiologic well being, in that they must be supplied preformed or practically so to the individual. This is true of indispensable amino-acids, such as lysine, tryptophan and histidine, for instance. The essentials are synthesized by plants; and from them the animals of both land and water derive their supplies either directly or indirectly by preying on other animals. Bodansky has thus summarized his conclusions concerning vitamin A:

TABLE 2.—*Relative Distribution of Vitamin A in a Few Common Foods*

- Minimal or Unappreciable Amounts
  - Beets
  - Celery
  - Egg white
  - Flour (white)
  - Honey
  - Hydrogenated fats
  - Lard
  - Onions
  - Radishes
  - Rice
  - Starch
  - Sugar
- Fair Amounts
  - Apples
  - Beans (navy or soy)
  - Bread
  - Cabbage (cooked)
  - Cauliflower
  - Fish
  - Oatmeal
  - Parsnips
  - Potato (white)
  - Rye
  - Wheat (whole)
- Good Sources
  - Asparagus (green)
- Good Sources—Continued
  - Beans (green)
  - Bread (whole wheat, milk)
  - Cabbage (raw, green)
  - Carrots (cooked)
  - Cheese
  - Corn (yellow)
  - Dandelion greens
  - Lettuce
  - Liver (beef)
  - Milk (human)
  - Orange juice
  - Oysters
  - Peaches
  - Peas
  - Potato (sweet)
  - Pumpkin
  - Tomato
- Excellent Sources
  - Butter (high grade)
  - Carrots (raw)
  - Cod liver oil
  - Cream
  - Eggs
  - Milk (cow's, fresh, dried, evaporated)
  - Spinach
  - Watercress

> There is no reason to doubt that the green plants of the water as well as those of the land synthesize this vitamin under the influence of sunlight. Many of these diatoms, minute algae, and other tiny aquatic plants become food for the group of small sea organisms known as plankton and this in turn for larger species up to the crustaceans and small fishes on which codfish feed. In such ways the synthesis of vitamin A in the small green plants of the sea presumably becomes the source of the abundant supplies of this substance which we find in cod liver oil; the cod, it will be remembered, having very little fat elsewhere in its body.

### FUNCTION OF VITAMIN A

Existing knowledge permits little more than vague speculation respecting the mode of action of vitamin A. The description of the dire consequences of a deprivation of this food essential gives little insight into precisely how it functions in the tissues. One may ask whether it is a necessary integral part of structures like the epithelial cells or whether it acts as a catalyst or as a "regulator" of certain cellular functions. There is some debate as to whether vitamin A can properly be designated as an anti-infective vitamin, as has been done. It is quite likely that its influence is felt indirectly in that the vitamin helps to preserve the physiologic integrity of various epithelial structures and thus to maintain the "first line of defense" against the invasion of bacteria. Evidence for direct bactericidal action or for a relation to the development of "immune substance" has not been easy to secure. For the present it may be wiser to stress the indefinite function of the vitamin in preserving "health and vigor" rather than to herald any specific action against definite microbiotic enemies. Deficiencies of any sort tend to decrease the ability of the body to resist disease.

There is no reason to assume that "digestion" is a requisite for the absorption and utilization of vitamin A. It has the solubilities of fats and usually accompanies them. Fats normally require bile for their absorption. Using the vaginal smear picture as a criterion, Schmidt has demonstrated, however, that vitamin A can be absorbed from the gastro-enteric tract even when bile is excluded therefrom. It has been shown, furthermore, that vitamin A can be utilized when it is administered parenterally; that is, without introduction by way of the alimentary canal. Carotene likewise functions effectively when injected parenterally in A-avitaminosis. These facts have paved the way for the parenteral therapeutic use of vitamin A-bearing products in cases in which a defect or disease of the alimentary tract has interfered with the oral administration of the essentials.

### DISTRIBUTION OF VITAMIN A

Our knowledge of the distribution and content of vitamin A in food products and in certain medicinal products has been greatly increased of late. Each month brings new details. Space does not permit the presentation here of a catalogue of vitamin A in foods. A few common articles of diet are listed in table 2, classified according to their relative richness in vitamin A. The data represent no more than crude approximations. As has already been intimated, much depends on the mode of preparation (heat, oxidation), the state or stage of maturity in plant foods, and other factors subject to local or individual variation.

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## *Council on Physical Therapy*

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
H. A. CARTER, Secretary.

# MEDICAL DIATHERMY

JOHN S. COULTER, M.D.
CHICAGO

Medical diathermy is the production of heat for therapeutic purposes in the body tissues, insufficient in amount, however, to produce temperatures high enough to destroy the tissues or impair their vitality. The heat is produced by the passage of alternating currents of high frequency through the tissues between two electrodes. The therapeutic effects are limited to the heat produced. The physics of these currents has been considered in another article. Only the clinical uses of local medical diathermy will be considered in this article.

The use of diathermy in pneumonia caused Binger and Christie[1] to undertake a number of experimental investigations on dogs to determine the action and physiologic effects of medical diathermy. These investigations showed that the efficiency or nonefficiency of the local circulation determines whether the heat produced by the passage of high frequency currents through the living body remains localized or is disseminated throughout the body. The prevention of access of air to one lung, while its circulation was intact, resulted in little if any change in the rate of heating of the lung by the diathermy current.[2] Occlusion of a main branch of the pulmonary artery during the flow of the current resulted in a sudden rise in temperature in the lung to which the artery had been occluded, with subsequent heating, however, at the original rate. Death of the animal is accompanied by a precipitous rise in the temperature of both lungs. When the pulmonary veins as well as the artery to one lung are ligated, the circulation through the bronchial vessels also is stopped. Diathermy then results in a local rise in temperature in the lung, equivalent to that seen in the other lung after death.

The temperature of the right heart blood normally exceeds that of the left heart blood by from 0.05 to 0.2 C. degree.[3] During the application of high frequency currents to the thorax, this relationship is reversed. This indicates that the lungs are being heated but that the blood passing through the pulmonary vessels is removing the heat at approximately the rate of production.

From experiments[4] performed on anesthetized dogs, the following conclusions may be derived: 1. The heat gradient of the body is reversed during diathermy, and heating occurs from without inward. 2. Deep heating during diathermy is greater than that which results from the application of local heat to the skin. 3. The lung can be heated by diathermy in spite of simultaneous cooling of the chest wall. 4. These experiments were regarded as satisfactory evidence of the passage of the current through the interior of the body.

In an experimental pneumonia[5] with more or less lobar distribution produced in dogs, measurements of lung temperature made by means of thermocouples before and during diathermy show that the final excess in temperature in the pathologic lobes over the normal lobes amounted to slightly more than 1 degree C.

Binger and Christie,[6] in another series of experiments, found that the behavior in human cases of pneumonia in respect to local heating of the lung during diathermy differed from that of the experimental animals. In the three patients studied by them there was no appreciable rise in lung temperature as compared with the rectal temperature. This difference is possibly due to the fact that the animals were under an anesthetic; their heat regulating mechanism was paralyzed, and therefore a far greater rise in systemic temperature occurred in them than in the patients. Secondly, the human lung is considerably larger than that of the dog, and the chances are correspondingly less of lodging the thermocouple in an ischemic area. Thirdly, for obvious reasons it was impossible to use as great a current in patients as in dogs. These authors state that this negative evidence does not necessarily imply that it will be impossible to demonstrate the occurrence of a slight degree of local heating.

The authors, in considering the disappearance of cyanosis so commonly recorded by those who use diathermy in pneumonia, examined the arterial blood for its oxygen content and capacity and found no significant changes. They therefore conclude that, if there is no increase in the percentage of the oxygen content of the arterial blood, the improvement in the patient's color must be explained on the grounds of a peripheral capillary effect—perhaps an accelerated rate of blood flow through the skin.

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[6] Binger, C. A. L., and Christie, R. V.: Diathermy in Pneumonia, J. A. M. A. **91**: 367 (Aug. 11) 1928.

Diathermy does appear to have some value in the treatment of pneumonia. There is one fairly constant response to diathermy and that is the relief of pain.[7] The degree and duration of this relief vary in different patients.

Diathermy cannot be considered a specific cure for pneumonia.[8] It has proved a helpful therapeutic adjunct. It has not been proved that the duration of the disease has been affected by the use of diathermy, but symptomatically the results have been good. Its exact action is still unknown and further investigation is urgently needed.

Diathermy has been used in essential hypertension and has been recommended for a number of years, but, as is so often the case, the subjective improvement is without any appreciable change in the blood pressure,[9] at least for any extended period of time.

Diathermy has been advocated by some as having value in improving the circulation in peripheral vascular occlusions.[10] It may be used locally or to induce an artificial increase of temperature. Great care should be exercised to avoid burns. It should be used as an adjunct to other forms of treatment and usually combined with circulatory exercises, continuous heat with an electric baker and hot and cold alternate baths. Early cases of circulatory impairment may be definitely benefited and the progress of the disease may be arrested. It is clear, however, that in a complete vascular occlusion, with adequate collateral circulation, such measures can only fail and do no good.[11]

In diabetic gangrene, the essential feature is an insufficient arterial supply, and therefore the application of diathermy in the treatment of this condition is logical. In 1924, Chevalier and Chezet of France reported results. Barbash[12] reported a series of cases of successful treatment of gangrene of the diabetic type by medical diathermy. He believed that the effect of diathermy on the collateral circulation was lasting and appeared to be permanent and sufficient to maintain a good blood supply to the affected parts. De Takáts[13] uses medical diathermy as a test for this condition. When a diathermy current of from 1,000 to 1,500 milliamperes was applied to the lumbosacral region for thirty minutes with one large electrode in front and another in the back, individuals with normal peripheral circulation showed a marked rise in surface temperature. Patients with organic vascular obstruction show no alternation of temperature or just a perceptible rise. Patients with obstruction and some spasm show some change, but the temperature does not rise to the normal level of vasodilatation.

Hyperthermia by means of diathermy can be used for the treatment of these conditions. The effect of local heat in arterial spastic disease is not as lasting in relieving the pain and spasm as the application of heat to raise body temperature. Scott and Morton[14] produced this hyperthermia by two methods: diathermy and hot baths. In all cases both procedures caused a relaxation from arterial spasm which outlasted the hyperthermia produced, and pain was temporarily alleviated. They have not yet followed these patients long enough to determine how effective these measures will prove in permanently keeping the spasm under control. They believe, however, that diathermy and hot baths produce a much more desirable form of hyperthermia than that following the injection of foreign protein.

The use of diathermy in acute gonorrhea has been discounted by recent textbooks of urology. If one remembers that the gonococcus in culture will survive thirty minutes at a temperature of 113 F., little promise of cure by the heating of the gonococci in the tissues will be expected.[15] Jeck[16] says that the results of diathermy in the complications of gonorrhea in patients at the Bellevue Hospital have been disappointing.

In acute epididymitis the elevation of temperature by diathermy is distinctly beneficial for the relief of pain and the hastening of the subsidence of the infection. It has been questioned whether it should be used, because the great heat may destroy temporarily or permanently the spermatogenic function of the testicle; but it is doubtful that degree of heat is significant, especially when the disease itself destroys spermatogenic function.

In benign enlargement of the prostate in a series of cases[17] it was believed that local diathermy with a rectal electrode did not produce more benefit than the usual routine treatments.

Kelly[18] says that medical diathermy is used in salpingitis as an adjunct to the usual methods of treatment. The customary medical procedures are carried out with the addition of the use of diathermy with the electrodes, 6 by 6 inches, one on the suprapublic area and one over the sacrum. The first treatment is given for forty minutes with a maximum of 750 milliamperes. Any increase in pelvic pain or immediate elevation of more than 1 degree in temperature contraindicates diathermy for a time. Gellhorn[19] advocates the use of diathermy in pelvic infections by the use of a belt electrode encircling the waist of the patient and a vaginal electrode which surrounds the cervix, or a rectal electrode, giving a treatment of from twenty to thirty minutes daily. In pelvic inflammatory diseases the good that diathermy accomplishes is in all probability due to the increase in circulation brought about by the local application of heat rather than from any heat generated in the tissues themselves, and surely not from any destruction of bacteria by heat.[20] It is best employed in women experiencing their first attack, in whom the acute symptoms and fever have subsided. It is of much less value in recurrent cases. Its use is contraindicated in the presence of complicating pelvic conditions such as myoma uteri and ovarian cysts or tumors; neither should it be employed during menstruation or in the presence of profuse bleeding of inflammatory origin. The use of diathermy in pelvic infections is not accepted as a method of procedure by many gynecologists. The whole subject needs further research along the lines investigated by Royston and his associates.[21] With the Zener cervicovaginal electrode these authors were able to secure temperatures averaging 111 F. in the cervical canal and 108 in the urethra and the rectum, but it was impossible to maintain such degrees of heat for a period of more than five to eight minutes owing to the dissipation of heat by the blood stream. In their series of cases, all patients were symptomatically improved. When temperatures above 113 were used, the patient invariably complained of an increase in pelvic pain and tenderness following treatment. It would therefore seem unwise to employ this treatment unless it is possible to check carefully the temperature produced.

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In considering the reported results[22] of diathermy in calcified subdeltoid bursitis, it is wise to remember that in some cases these deposits disappear without any treatment whatever. If the deposit of a calcium salt reacts like any other calcium deposit, in that it may form without an apparent cause, it is often fragmented and may disappear spontaneously as well as under the influence of such treatment as diathermy. In the sharply localized and tender deposits, Osgood believes that it is simpler and quicker to remove the calcified deposit by a small incision and a curet.[*]

Treatment of bursitis by means of diathermy has many advocates. Deering[23] asserts that in 1916 he made the first recorded attempt to treat subdeltoid bursitis "by means other than drugs, surgery or orthopedic measures" and states that there is rarely if ever a case in which deposits are present that cannot be made to recover by conservative measures in which diathermy plays a large part. Cooperman,[24] Harris,[25] Resnik[26] and Titus[27] believe that the deposit can be dissipated under the influence of diathermy. In sixteen cases reported by Mumford and Martin,[28] the electrodes used were of block tin, which is pliable and can be made to conform to the contour of the part. A treatment of from thirty to forty minutes was given. In this series of sixteen patients with bursitis, all secured complete relief from symptoms. The average number of treatments was twenty-one, given daily for the first two weeks and then twice a week.

In experimental work on the influence of local diathermy on kidney secretion, in three animals that tolerated 600, 825 and 900 milliamperes, respectively, the results obtained were consistently negative in sixteen diathermy and twenty-four control experiments on the first dog, eight diathermy and eight control experiments on the second dog, and twelve diathermy and twelve control experiments on the third dog, and Friedman[29] was unable to demonstrate any effect of diathermy on the rate of the secretion of urine. His results on the rate of the secretion of urine are quite in accord with those obtained by Bronner and Schüller[30] on the normal human being, but not with those of Ewig, which will be noted later.

Results opposite to the foregoing were observed by several European observers who recommend diathermy in the treatment of nephritis. Eppinger[31] recommends diathermy for the treatment of acute nephritis. Ewig[32] reports the influence of diathermy on the healthy and the diseased kidney. He found that diathermy of the healthy kidney causes increased diuresis. Not only the elimination of water is increased, but to a lesser degree also that of sodium chloride and of the nitrogen-containing substances. Kolischer and Jones[33] have also recommended diathermy for the benefits resulting from the heat produced within the perirenal and the renal structures by the resistance which these parts offer to the high frequency current forced through them. They state that the efficiency of any antinephritic treatment depends to a great extent on its early administration, and the same holds good for diathermy. Medical diathermy is by no means a cure-all or a specific for nephritis. It is simply an aid and will furnish results only in combination with the other therapeutic measures indicated, such as removal of the etiologic infectious foci, the proper dietary regimen, adequate cardiac treatment, the administration of diuretics and, if suggested by the prevailing conditions, nephrolysis and decapsulation.

Diathermy has been recommended[34] as a valuable means of controlling pain, spasm and swelling in the earlier stages of fractures and joint injuries. These results were not borne out in a series of experiments by Benson[35] to determine the relative influence of diathermy and other physical therapeutic measures on stiffened joints. On trying to restore normal motility in joints after "athletic injuries," he found that hot air is the most efficient medium; whirlpool treatments are somewhat less efficient than hot air, but if not preceded by other heat treatments, diathermy gives only a slight increase in motility. When used after other forms of heat, it produces a distinct decrease in motility. In either case, movements are apt to be more painful for some time after diathermy than before. He attributes the negative influence of diathermy to muscular rigidity induced by the high frequency current. Whether or not such rigidity is muscular or neuromuscular in character, direct or reflex, it is impossible to state. The rigidity tends to increase with the intensity of current applied and with the duration of treatment. Whenever the aim is to relax tissues or reduce stiffness of joints, the most effective method is hot air; the most rapid is hot water or the whirlpool bath. Diathermy, if applied, should be used alone or should be followed by the whirlpool bath or by applica-

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tions of hot air. In either case it should be applied briefly and with a current of small intensity.

In arthritis, diathermy is contraindicated in the active joint and has proved disappointing in many chronic cases.[36] At times medical diathermy in arthritis causes an aggravation of the local symptoms.[37]

The effectiveness of diathermy in the treatment of deafness has not yet been proved. Guttman and Kulvin[38] subjected to treatment with diathermy forty-two persons who complained of being hard of hearing. In nine cases of otosclerosis, two cases of tubal occlusion and one case of serous otitis, benefit was not observed, as indicated by carefully controlled voice and audiometric tests. Only three of thirty-two patients with chronic otitis media were improved; whether the improvement reported was actually due to the treatment is open to question. This form of therapy was also ineffectual against tinnitus in otosclerosis. Thirty-three of the forty-two patients believed that they were benefited by the treatment and thought they could hear better. Yet actual tests showed that this was true in only three instances. The improvement therefore was only apparent. This method of treatment makes a decided impression on the patient's mind and any benefit must be of psychic or suggestive nature.

McKenzie[39] has used diathermy in deafness with fairly satisfactory results. By this method two electrodes, 1 by 1½ inches (2.5 by 3.7 cm.), thickly padded with lint soaked in 10 per cent salt solution are used. One is placed over the mastoid and the other over the cheek on the other side. Sessions of thirty minutes are given, and these are repeated every day or every second day at least six times. If there is no improvement, they are discontinued; if there is improvement, they are stopped for some weeks and then repeated. There is often an increase in the tinnitus at first, but this ceases later. McKenzie treated forty-six patients, most of whom had chronic dry catarrh. In five patients the deafness and tinnitus disappeared entirely after from two to six treatments. There was great improvement in five cases. The greatest improvement was obtained in cases of short duration. Of the remaining thirty-six cases, thirteen showed temporary improvement, twenty-one no improvement, and in two the tinnitus was made worse. Altogether, the condition was improved in 20 per cent of the cases.

The indications for medical diathermy in diseases of the eye are by no means well established, according to Gifford.[40] Medical diathermy may relieve pain in the neuralgia of herpes zoster. Monbrun and Casteran[41] report good results in certain corneal ulcers, especially those following facial paralysis. These authors advise against the employment of medical diathermy in intraocular diseases and consider it especially contraindicated in glaucoma.

Medical diathermy is now being extensively used to produce general hyperpyrexia. Neymann and Osborne[42] report a series of twenty-five patients with dementia paralytica treated by this method with clinical remissions in 66 per cent, marked improvement in 8 per cent, and no serious harm resulting to any patient from this treatment. In a comparative study of therapeutic results obtained in a series of clinically similar cases of dementia paralytica treated by this method compared with treatment by malaria and sodoku, the remission and improvement rate of the diathermy cases exceeded that of the other two.[43] Diathermy has also been used in the treatment of arthritis[44] and allergic disease.[45] These studies need extension and confirmation.

The following are some of the special safety rules given by Kovacs[37] for medical diathermy:

> Before applying electrodes inspect carefully the parts to be treated to make sure that the continuity of the skin is nowhere broken and that the heat sensation of the patient is normal. In case of scar tissue, peripheral nerve injuries, hysterical anesthesia, be extremely careful in the application of diathermy.
>
> Before turning on the current from the main inlet inform the patient that all the sensation he or she can expect is that of mild heat. Instruct the patient to report any uncomfortable faradic sensation, *pricking or burning, at once.*
>
> Do not try to push the current up to the maximum amount of toleration during the first few treatments. Patients often are burned in their endeavor to show how much current they can stand. Remember the principle that a moderate amount of heat applied for a longer period is more effective than pushing up to the limit of tolerance for a shorter period.
>
> If at any time during the treatment the patient complains of an uncomfortable sensation anywhere, turn off the controls, shutting off the main current inlet in case of emergency and, if necessary, take off, inspect and reapply the electrodes. When inspecting or adjusting electrodes, be sure that the current is turned off and increased gradually again after such a procedure.
>
> Do not leave the patient alone during treatment unless you have arranged that by the simple pulling of a cord or the turning of a switch the patient himself can turn off the current at any time. Watch the milliampere meter during the entire treatment for an even flow of the current.

Medical diathermy is contraindicated (1) in acute inflammatory processes such as acute nondraining cellulitis, acute infectious arthritis, and acute pelvic infection; (2) in any condition in which there is a tendency to hemorrhage, such as a gastric ulcer,[37] and (3) in those areas in which the appreciation of heat has been impaired or lost, as in certain peripheral nerve injuries. It is also contraindicated in diseases or injuries in which simpler methods of applying external heat give satisfactory results.

## CONCLUSIONS

This brief survey of some of the applications of medical diathermy shows the divergent views of its use. It is recognized that further laboratory and clinical research will doubtless establish many other therapeutic applications of diathermy. Of necessity, this article has dealt only with the present available evidence of the clinical application of medical diathermy. The urgent necessity for further research on the clinical use of this agent is obvious. It is possible to produce deeper heat with this agent than with any other form of heat. The circulation of the blood prevents the temperature of the body tissues traversed by the current from becoming very high. However, the active hyperemia resulting from medical diathermy causes beneficial physiologic effects, concerning which further scientific investigation is needed. Some recent uses in vascular disturbances of the extremities and in the production of artificial fever promise valuable therapeutic results.

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122 South Michigan Avenue.

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# *Committee on Foods*

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## COCOMALT

### (Sucrose, Skim Milk, Cocoa, Malt Extract, Egg and Added Vitamin D)

*Manufacturer.*—R. B. Davis Company, Hoboken, N. J.

*Description.*—A powdered food for the preparation of table beverages; contains sucrose, skim milk, cocoa, malt extract, whole egg, vanillin flavoring and added vitamin D (irradiated ergosterol).

*Manufacture.*—Cocoa (including added irradiated ergosterol), sucrose, and skim milk and egg powders are thoroughly mixed with malt syrup and vanillin flavoring. The mixture is dried at a relatively low temperature to avoid destruction of the vitamin and diastatic values. The finished product is ground, bolted and automatically packed in an atmosphere of carbon dioxide in hermetically sealed containers. The carbon dioxide composes about 75 per cent of the gas mixture in the container.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 0.8 |
| Ash | 3.2 |
| Fat (ether extract) | 2.9 |
| Protein (noncaffeine and nontheobromine N × 6.25) | 14.1 |
| Caffeine | 0.09 |
| Theobromine | 0.21 |
| Crude fiber | 1.4 |
| Carbohydrates other than crude fiber (by difference) | 77.0 |
| Calcium (Ca) | 0.34 |
| Phosphorus (P) | 0.43 |
| Lintner value | 6.3 |

*Calories.*—3.9 per gram; 111 per ounce.

*Vitamins.*—Vitamin D is incorporated in Cocomalt (under license by the Wisconsin Alumni Research Foundation) to the extent of approximately 39 Steenbock units per ounce. Biologic assay shows the presence of from 40 to 45 Steenbock D units per ounce.

*Claims of Manufacturer.*—Especially intended for the preparation of table beverages with milk. Cocomalt enhances the food value and flavor of milk. Many who dislike plain milk, especially children, invalids, convalescents and the aged, enjoy Cocomalt-milk beverage. One ounce of Cocomalt, which is recommended for each glass of beverage, contains from 40 to 45 vitamin D units (Steenbock) and richly contributes to the vitamin D dietary needs of the body. A hot beverage promotes relaxation. "A hot Cocomalt" before retiring is an aid to restful sleep.

## CHILOCCO BRAND CORN SYRUP WITH CANE FLAVOR

*Packer.*—D. B. Scully Syrup Company, Chicago.

*Distributor.*—Frank C. Schilling Company, Green Bay, Wis.

*Description.*—A table syrup; a corn syrup base (85 per cent) with refiners' syrup (15 per cent).

*Manufacture, Analysis, Calories, Claims of Manufacturer.*—See these sections for Banner Blue Corn Syrup with Cane Flavor (The Journal, March 5, 1932, p. 817).

## PORTOLA SARDINES (PILCHARDS).

### Steam Grilled—In Tomato Sauce and Olive Oil
### Steam Grilled—In Curry Sauce and Olive Oil

*Manufacturer.*—K. Hovden Company, Monterey, Calif.

*Description.*—Canned steam grilled sardines (Clupea caerulius, blue sardines) with tomato sauce, salt and olive oil or curry sauce, salt and olive oil.

*Manufacture.*—Pilchard Sardines (Clupea caerulius, or blue sardines) adult type, over 4 years old and of mature size are caught in the open sea off the coast of California during definite seasons four months after and three months before spawning. The sardines are delivered fresh each day. The catch is not iced in that the period before packing is very short, sometimes only a few hours. The fish are sluiced through water and kept in cold salt water to prevent bruising during handling.

The fish are pumped or hoisted from the boats into receiving tanks. Clean salt water is pumped over the fish and kept circulating during the short period of storage (two hours). They are sluiced into small boxes, in which the heads and tails are cut off and the entrails extracted by machine. They are conveyed by water into rinsing tanks, where scales, blood and excess slime are washed off with salt water. When the wash water becomes clear, the fish are conveyed on belts to the packers, who pack them into cans. The fish in cans are passed through cooking apparatus on grills. The grill travels with the cans spread right side up for eight minutes. The cans are automatically turned over on the belt so that the contents rest on the iron perforated grill, permitting the moisture, blood or other materials cooked out of the fish to escape and fall into a trap below. This process is repeated four times during the cooking. The fish in this process become solid and firm, take on an excellent flavor and do not come in contact with air. The fish are discharged on a belt conveyor. Tomato sauce, salt and olive oil, or curry sauce, salt and olive oil are added to each can. The cans are sealed while hot, which procedure produces a low pressure or "vacuum" after sealing. The sealed cans are placed in baskets and processed under the control of the California State Board of Health as to temperature and time.

*Analysis* (submitted by manufacturer).—

| (analysis of entire can) | per cent |
|---|---|
| Moisture | 60.4 |
| Ash | 2.8 |
| Chlorides as sodium chloride | 1.3 |
| Fat (ether extract) | 18.4 |
| Protein (N × 6.25) | 17.5 |
| Crude fiber | 0.1 |
| Glycogen | 0.2 |
| Carbohydrates other than crude fiber and glycogen (by difference) | 0.6 |
| Iodine (I) | 0.0006 |

*Calories.*—2.4 per gram; 68 per ounce.

*Claims of Manufacturer.*—These California steam grilled sardines are for all table uses. A dietary source of iodine.

## MARY JANE BREAD

*Manufacturer.*—Lowenberg Bakery, Ottumwa, Iowa.

*Description.*—A white bread made by the sponge dough method.

*Manufacture.*—The sponge dough ingredients, short patent flours of northwest and southwest wheats, water, yeast, malt syrup, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose or dextrose, shortening and dry skim milk to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms for the materials used are kept in strictly sanitary condition.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 34.7 |
| Ash | 0.9 |
| Fat (ether extraction method) | 0.8 |
| Protein (N × 6.25) | 8.8 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 54.5 |

*Calories.*—2.6 per gram; 74 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 4, 1932

## NUTRITION AND MILK PRODUCTION

Reproduction in the mammal presents special problems in nutrition. Not only must the requirements of the maternal organism be met, but the development of the fetus makes added demands on the supply of those substances from which the new tissue is formed. Whereas, at 28 weeks, the fetal content of calcium is approximately 5.4 Gm., at 40 weeks it has increased to almost 31 Gm. In spite of this storage of material, studies on various experimental animals and on man indicate that a positive balance of calcium, phosphorus and nitrogen is likely to be found during pregnancy. In other words, the usually observed augmented intake of food provides for the added demand of the fetus. After parturition, however, when vigorous flow of milk sets in, a considerable loss of certain essential materials in the milk occurs. This applies especially to calcium and phosphorus. The magnitude of this loss through the mammary glands and the extent to which it is covered by the food intake is of practical significance.

In a recent investigation, Macy and her co-workers[1] considered this general theme, paying particular attention to the energy, fat, protein, carbohydrate, calcium and phosphorus. Three human subjects were studied; the diets were not unusual but were adequate in quantity and, apparently, in quality. The breast milk was expressed at four-hour intervals and the average volumes were 3,134, 2,366 and 1,419 cc. With a daily energy intake of 4,300, 4,600 and 3,800 calories, it was observed that there was contained in the milk secreted energy equivalent to 50, 33 and 30 per cent of that taken in as food. Despite this relatively large proportion of ingested energy appearing in the milk, it is pointed out that together with the loss in excreta and the requirement for maintenance under the conditions imposed, it is covered by the calories of the food. The relations of the fat of the diet to that secreted in the milk for the three subjects were 74, 50 and 43 per cent, respectively; for the carbohydrate 47, 28 and 24 per cent, and for the protein 21, 15 and 12 per cent. The relatively low value for protein together with the known ability of the organism to transform protein to carbohydrate and the latter to fat leads to the conclusion that the production of the main organic constituents of milk does not ordinarily present a problem.

The situation as concerns the inorganic components, however, is different. The subjects consumed diets containing liberal amounts of calcium and phosphorus; 41, 27 and 15 per cent, respectively, of the calcium and 11, 11 and 6 per cent of the phosphorus of the food appeared in the milk. Although, according to current standards, the ingested calcium and phosphorus exceeded that required for the milk by a liberal margin, there was a persistent negative balance of these two elements. The subjects of this investigation "were unable adequately to absorb or utilize calcium and phosphorus while maintaining a high level of milk flow." Furthermore, other studies have emphasized the difficulty of improving the retention of these essential inorganic elements during lactation by such devices as are known to be effective under other circumstances.

These observations give cogent evidence for the considerable portion of ingested nutrients commonly lost to the maternal organism by way of the milk. In general, the food, when reasonably augmented, provides fairly adequately for this added requirement for lactation. However, improvement is needed in those processes involved in absorption and retention of certain of the food materials if the end result of the complete reproductive cycle is not to represent a loss to the body.

## THE TREATMENT OF STRYCHNINE POISONING

Strychnine poisoning is rather frequent, and its occurrence is rendered dramatic by the dreadful agony of its course and the commonly fatal termination. Most of the sources of poisoning could be easily avoided especially in the tragic cases of infants. Moreover, the agony of the developed poisoning can be completely eliminated and nearly all fatalities could probably be prevented by proper treatment.

Strychnine poisoning is sometimes suicidal or homicidal; occasionally it occurs from eating poisoned vermin bait;[1] but the most prolific source of strychnine poisoning is chocolate or sugar coated household laxative or "tonic" pills, which are left carelessly around the home and which look so much like candy that young children swallow them by the handful. The sweet and alcoholic "tonic" elixirs may also be a source of danger. The frequency of accidental strychnine poisoning has been reviewed by Aikman.[2] In the death registration area of the United States, in the three years 1926-1928, strychnine was reported as a cause of 546 deaths, or more than 3 a week. In the same period, the statistical bureau of the Metropolitan Life Insurance Company[3] reports that strychnine was responsible for about a third of the accidental poison deaths in children under 5 years of age insured in the company. This dreadful slaughter is the more regrettable since it has not been proved that the strychnine in these pills serves any useful purpose whatever in most patients. Generally the strychnine is merely a concession to the polypharmacal shotgun era. It has been retained on the easy-going assumption that, if it did no good, it could do no harm —to those who take the pills according to directions. Unfortunately, this is a good deal to expect of a child who cannot read and who takes the pills because they look like candy. Some restriction of the promiscuous sale of this violent poison in the guise of supposedly harmless household remedies is necessary. The trustees of the American Medical Association are considering the advisability of urging action along this line on pharmaceutic manufacturers.

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[1] Shukers, Carroll F.; Macy, Icie G.; Nims, Betty; Donelson, Eva, and Hunscher, Helen A.: J. Nutrition 5: 127, 1932.

[1] Hesse, E.: Sammlung von Vergiftungsfällen, 1, B. 2. 9, 1930.

[2] Aikman, John: Strychnine Poisoning in Children, J. A. M. A. 95: 1661 (Nov. 29) 1930.

The treatment of strychnine poisoning includes chemical antidotes, evacuation of the stomach, and sedatives. Since the strychnine spasms are provoked by anything that would startle a normal person, all sudden stimuli, however slight, must be strictly avoided. Gradual, steady movements for which the patient is prepared are harmless, and gently soothing handling and reassurance of the patient are fairly effective in mitigating even the established spasms, if these are not too violent.

Chemical antidotes are useful only against the unabsorbed poison, and chiefly against that which has not yet passed the pylorus. Either potassium permanganate solution or animal charcoal is quite effective in animal experiments. The charcoal does not destroy the poison but slows its absorption so much that it can be effectively destroyed in the tissues. Diluted iodine tincture or solution, and tannin, are useful chiefly as temporary measures preceding evacuation. Gastric lavage may be used early, before the patient has become hypersensitive, or later, when the sedatives have taken effect. If the patient is hypersensitive, evacuation should be secured by apomorphine, hypodermically (⅕ grain, or 0.013 Gm., for adults, ⅒ grain, or 0.006 Gm., for infants), since this tends actually to quiet and prevent convulsions.[4]

If the patient already has spasms or is even hypersensitive, sedatives should be administered freely. They ease the anxiety of the patient and suppress the painful spasms, and if they are used with intelligence and courage they diminish the fatality to a greater degree than is commonly realized, chiefly by preventing asphyxia from tetanization of the respiratory muscles. All sedatives are good, but some are much better than others. Quick action is imperative, and gastric administration is therefore undesirable, especially if the stomach has been upset by antidotes or lavage. Inhalation of chloroform is quite effective and may be used temporarily for immediate relief, although it is somewhat dangerous in view of the strain on the heart and the difficulty of controlling the vapor concentration during spasms. It should not be prolonged for fear of postanesthetic toxicosis. Ether inhalation is safer but less effective, and it is also inadvisable to prolong its administration. Nitrous oxide should not be used, since it exaggerates the reflex excitability and the asphyxia. Chloral hydrate, by rectum if necessary, was formerly esteemed as one of the most effective sedative antidotes, but the large doses required came to be considered unsafe. Other earlier aliphatic hypnotics also were unsatisfactory, since their action after oral administration was too slow and the effective dose, in many instances, too dangerous.

The barbituric acid derivatives have now opened a new chapter in the treatment of strychnine poisoning. They do not differ from the older hypnotics in principle but rather in the combination of high efficiency with relatively high safety, and especially by the fact that they may be administered intravenously in emergencies and therefore secure an effect that is immediate and the duration of which may be timed by the dose, by the repetition of the injections, and by the selection of the barbiturate. In such emergencies, intravenous injections are justified, not only by the need of immediate relief but also because the immediate effect permits the adjustment of the dosage to the desired response.

The anticonvulsant efficiency of the barbiturates first came into prominence in connection with cocaine poisoning.[5] In 1929, Soma Weiss[6] reviewed the successful use of subcutaneous, intramuscular and intravenous injections of sodium phenobarbital against the convulsions of eclampsia, epilepsy, procaine and traumatic tetanus. Zerfas and McCallum,[7] summarizing their experience with intravenous injections of sodium amytal, state that "it is practically specific for the treatment of strychnine poisoning. . . . Experimental animal work has shown that rabbits may be protected against several times the fatal dose of strychnine sulphate." No data are given. These authors also mention three clinical cases, all successful:

> A patient entered the hospital, in a series of continuous convulsions, after having swallowed two hundred one-thirtieth grain tablets of strychnine sulphate. He was cyanotic and was having great difficulty in breathing; 0.8 Gm. (12 grains) of sodium isoamylethyl barbiturate, given intravenously, checked the convulsions almost instantly, and the following day he was released from the hospital. Two other patients in a similar condition owe their lives to this treatment.

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[3] Statistical Bull. Metropolitan Life Insurance Company **11:** 11, 1930.

[4] Martin, J. S., cited by Haggard and Greenberg (footnote 11).

[5] Hofvendahl, A.: Biochem. Ztschr. **117:** 55, 1921. Tatum, A. L.; Atkinson, A. J., and Collins, K. H.: J. Pharmacol. & Exper. Therap. **26:** 325 (Dec.) 1926. The Prophylaxis of Cocaine and Allied Intoxicants, Current Comment, J. A. M. A. **95:** 1839 (Dec. 13) 1930.

[6] Weiss, Soma: Am. J. M. Sc. **178:** 390 (Sept.) 1929.

[7] Zerfas, L. G., and McCallum, J. T. C.: Anesth. & Analg. **8:** 349 (Nov.-Dec.) 1929.

The amount of strychnine sulphate in the first of these cases was equivalent to 400 mg., or about four times the ordinary fatal dose, by mouth. However, recovery from doses of this magnitude have been reported by the older methods of treatment.[8] Dawson and Taft[9] found that this antagonism is shared by other barbiturates. With subcutaneous injection, strychnine sulphate is generally fatal to rabbits in the dosage of 0.6 mg. per kilogram. Administering double this fatal dosage, they then injected various barbiturates by vein "immediately with the onset of convulsions, and repeated as judged necessary to control their recurrence." All the treated animals survived, the necessary dosage of the barbiturate being, for pentobarbital, 14 mg.; for amytal, 15 mg.; for phenobarbital, 30 mg.; for pernocton, 40 mg.; for sodium barbital, 150 mg.; and for chloral, 220 mg.

Swanson[10] has found that the intravenous injection of sodium amytal, 50 mg. per kilogram in a single dose, given simultaneously with the strychnine, saved rabbits from seven times the fatal dose (4 mg.) of strychnine sulphate, hypodermically.

A little more recently, Haggard and Greenberg[11] compared the antidotal potency of magnesium sulphate, apomorphine and sodium phenobarbital, administered intraperitoneally, chiefly on rats. Magnesium, with the doses used, did not diminish the fatality; apomorphine antagonized only slightly more than twice the fatal dose, but phenobarbital saved from five times the fatal dose of strychnine. The required dosage of the barbital would have been fatal to normal animals, so that the strychnine is also somewhat antagonistic to barbital poisoning. The phenobarbital also saved dogs from four times the fatal dose of strychnine.

In the meantime, Barlow,[12] as reported in this issue of The Journal, had started to extend the observations of Dawson and Taft to higher dosages of strychnine, as a demonstration experiment on antagonism. By rendering the dosage flexible, injecting pentobarbital intravenously, in rather moderate dose, 10 to 12 mg. (about one fifth of the minimum fatal dose) with the first convulsion and repeating this injection whenever strong convulsions recurred, rabbits could be saved from as much as thirty-five times the fatal hypodermic dose of strychnine; above twenty fatal doses of strychnine, however, the required quantity of pentobarbital, which increases with the dose of strychnine and reaches seven to ten doses of the barbital at that point, becomes so high that half or so of the animals, above this dosage, are killed by the barbital, the antagonism of strychnine against barbital being much less effective than that of barbital against strychnine.

The fractional intravenous injection of pentobarbital has not been tried in clinical poisoning. Barlow suggests the dosage of one-tenth grain (0.006 Gm.) of sodium pentobarbital per pound of body weight, for the first injection, and one half of this dosage (one-twentieth grain per pound) whenever convulsions recur. Caution should be used if more than four injections are given during the first two or three hours. This dosage is within safe limits and could probably be increased with little risk, if necessary.

## Current Comment

### SPERMINE

When a drop of fresh semen is mounted on a microscope slide and allowed to stand, characteristic crystals appear in due time. These are now known to be the phosphate of spermine, a long known base, which can itself be obtained in crystalline form. The phosphate crystals were first noticed by the father of modern microscopy, Leeuwenhoek, in 1678. About a century later, in 1791, Vauquelin assumed that they were calcium phosphate. Toward the end of the last century, Poehl reported that he had isolated spermine phosphate from the testis and other organs. He believed that spermine is an essential hormone of the testis and endeavored to exploit his theory commercially, but without any long continued success. Meanwhile, the base spermine has been isolated from many organs of both the male and the female, so that it cannot be regarded as essentially specific to the male gonads.[1] This was further accentuated when spermine was found to be absent from bull's semen.[2] Investigations by Harrison[3] at St. Bartholomew's Hospital, in London, present additional evidence that spermine is not essential to the process of fertilization. It confirms the widespread distribution of the base in all sorts of tissues; but the noteworthy observation is that it is more abundant in the prostate than in any other parts examined. The prostate consists approximately of two parts of muscle and one part of glandular tissue. If it may be assumed that most of the spermine is derived from the glandular portion of the gland, the yield of 130 mg. per hundred grams of whole gland found by Harrison represents a yield of from 300 to 400 mg. per hundred grams of glandular tissue; in other words, it makes it likely that the main part, if not the whole, of the spermine of human semen is derived from the prostatic secretion. The bull does not possess a true functional prostate but only a rudimentary collection of compound acinous glands, which are regarded as the equivalent of the human prostate. This may account for the absence of spermine from the semen of that species. Incidentally, it now seems likely that some of the heterogeneous nitrogenous substances isolated from various tissues by biochemists in the course of the years are identical with spermine. This is true of "musculamine," prepared by Etard and Vila from muscle in 1902; "neuridine," obtained by Brieger from fresh human brain in 1885, and "gerontine," described in liver by Grandis in 1889. The so-called Charcot-Leyden crystals in feces are probably spermine phosphate.

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[8] Sollmann, T. H.: Manual of Pharmacology, ed. 3, 1926, p. 260.

[9] Dawson, W. T., and Taft, C. H., Jr.: Proc. Soc. Exper. Biol. & Med. **28:** 917 (June) 1931.

[10] Swanson, E. E.: J. Lab. & Clin. Med. **17:** 325, 1932.

[11] Haggard, H. W., and Greenberg, L. A.: Antidotes for Strychnine Poisoning, J. A. M. A. **98:** 1133 (April 2) 1932.

[12] Barlow, O. W.: The Effectiveness of Pentobarbital in Antidoting Strychnine Poisoning in the Rabbit, this issue, p. 1980.

[1] Dudley, H. W.; Rosenheim, M. C., and Rosenheim, O.: Biochem. J. **18:** 1263, 1924.

[2] Dudley, H. W., and Rosenheim, O.: Notes on Spermine, Biochem. J. **19:** 1034, 1925.

[3] Harrison, G. A.: Spermine in Human Tissues, Biochem. J. **25:** 1885, 1931.

### FADS IN SCIENCE

In his address as retiring president of the Botanical Society of Washington, D. C., Dr. Neil E. Stevens [1] recently discussed fads as a factor in botanical publications. The Journal has repeatedly emphasized the manner in which a new note struck in the medical field becomes a stimulus to the publication of vast numbers of articles along that line. Typical examples are, of course, the discussions on medical versus surgical treatment of peptic ulcer, focal infection, parasitology, and the vaccine treatment of disease. Every one knows that medicine has passed through epochs of major interest in physiology, in the pathology of the cell, in bacteriologic investigation, in biochemistry, in hydrogen ion concentration, and at the present moment in colloids and in allergy. Associated with the development of any such major interest comes a new vocabulary in which words are developed and frequently used even by men of science almost as magical symbols rather than as scientific terms. The analysis by Dr. Stevens of the fads in the field of botany has many analogies in medical thought. He refers, for instance, to the keywords of 1906 and 1908, such as "physiologically balanced solutions" and "antagonism." In botany also the hydrogen ion concentration has been having its day. "Just as a man in good general health who consulted a physician between 1910 and 1920 was predestined to be diagnosed as having appendicitis," says Dr. Stevens, "so a plant which showed any unusual abnormality between 1915 and 1925 was sure to be under suspicion of having some mosaic disease." Fashions have their advantages exactly as they have their disadvantages. No doubt, both men and women are better off with cigarets than with chewing tobacco. What would have happened had the cigaret failed to appear and had womankind taken up the masculine prerogative of chewing? The idea makes one aghast. The fad disappears almost invariably through two causes: First, the plethora of literature swamps the reader and forces him into new lines of thought. As Prof. S. W. Williston says, "It is easier to pick up a new line than to master the literature of an old one." Second, out of each of the fads that is developed there remains some residue of actual knowledge and progress for mankind without which, no doubt, progress would stop. A philosophical consideration of this kind offers stimulus to medical reason and explains many great trends in medical practice.

## *Association News*

### MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 1:30 to 1:35 p. m. over Station WBBM (770 kilocycles, or 389.4 meters) of the Columbia Broadcasting System. The Columbia chain program has been discontinued for the present.

The program for the week is as follows:

June 6. Food and Food Advertising.
June 8. Looking Ahead to Hay Fever Time.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM.

The program for the week is as follows:

June 11. Infantile Paralysis.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

## *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

### ARIZONA

**Medical Library Opened.**—The Maricopa County Medical Society has recently opened a library in a new professional office building in Phoenix. Medical journals and books have been lent by members of the society and by *Southwestern Medicine* and a part time librarian has been engaged. The society has invested about $1,000 in library equipment.

### CALIFORNIA

**Study of Heredity in Twins.**—Samuel J. Holmes, Ph.D., professor of zoology, University of California, Berkeley, is directing a study of the manifestations of tuberculosis, cancer, mental defect and insanity in twins, and especially identical twins, as a possible means of throwing light on the rôle of heredity in causing such diseases and defects. Professor Holmes would appreciate information from physicians concerning patients or acquaintances who suffer from any of these afflictions.

**Personal.**—Dr. Wilfred H. Kellogg has been made chief of the bureau of food and drugs, in addition to his duties as chief of the division of laboratories, California Department of Public Health.——The following three appointments to the state board of medical examiners were announced, May 3: Drs. William R. Molony, Los Angeles, to succeed Harry V. Brown, Glendale; Fred R. De Lappe, Modesto, to succeed George Dock, Pasadena, and Charles T. Sturgeon, Los Angeles, to succeed Herbert M. Robertson, Santa Ana.——Dr. Herbert M. Evans, director of the Institute of Experimental Biology of the University of California, has recently been elected to membership in the Kaiserlich-Leopoldinischen Deutschen Akademie der Naturforscher, in recognition of his outstanding investigations in the field of vitamins.

### COLORADO

**Society News.**—Dr. Charles J. Singer, professor of the history of medicine, University of London, London, England, addressed the Medical Society of the City and County of Denver, May 17, on "Transition from Medieval to Modern Times."

**License Restored.**—At a meeting of the state board of medical examiners, the license of Dr. Hall H. Thomas to practice medicine and surgery in Colorado was restored. Dr. Thomas's license had been revoked, July 7, 1931, after he was found guilty of unprofessional and dishonorable conduct in having an unlicensed practitioner associated with him in the practice of medicine.

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[1] Stevens, N. E.: The Fad as a Factor in Botanical Publication, Science 75: 499 (May 13) 1932.

## CONNECTICUT

**Society News.**—At a meeting of the Stamford Medical Society, April 12, the speakers were Drs. Arthur H. Ruggles, Providence, R. I., on "Neurosis in General Practice"; Clarence O. Cheney, New York, "Psychiatry in the Community," and Clarence G. Bandler, New York, "Newer Treatment of Prostatic Obstruction."

**County Society's Annual Meeting.** — The one hundred and fortieth annual meeting of the Hartford County Medical Association was held in Hartford, April 5. Dr. Robert S. Buol, New Britain, presented a case of pyloric stenosis; Dr. Frank A. Pemberton, Boston, "Recent Developments in Gynecology," and Dr. Herbert Thoms, New Haven, Conn., "Recent Developments in Obstetrics." Entertainment included a buffet supper and smoker. Dr. Henry F. Stoll, Hartford, was elected president at this meeting, and Dr. Stanley B. Weld, Hartford, reelected secretary.

**Rabies Prevalent.**—The Connecticut department of health in its weekly bulletin, May 23, reported that rabies among dogs is now prevalent in the state. Since the first of January, fifty-seven dogs have been found to have rabies as compared with a total of sixty-three for the year 1930, which was the highest total in fourteen years. Other high years were 1927 and 1931 with fifty-six cases reported for each year, and 1926 with fifty-four. Low years were 1920 with only four cases and 1924 with five cases. At the present time, the report continues, twelve towns in Connecticut are under dog quarantine, which means that dogs not vaccinated against rabies are not permitted to roam at large. Cases of rabies have been reported from thirty-six towns since the first of the year.

## ILLINOIS

**Licenses Revoked and Suspended.** — David Andrew Stevens' license to practice medicine in Illinois was revoked by the state department of registration and education, May 12. Stevens entered the California state prison at San Quentin, April 18, 1931, to serve two indeterminate sentences, one not to exceed fifteen years and the other from one year to life, the sentences running consecutively. Stevens' California license was revoked, July 9, 1931, because of his conviction of a statutory offense. He must serve at least two calendar years before his parole application can be considered. On May 18, the department suspended for three months the medical license of Dr. Ethel Maria Fikany, Chicago. She was formerly associated with Lester Tilton, the cancer "specialist," who is now on trial for conspiracy to violate the medical practice act.

### Chicago

**Society News.**—Officers of the Chicago Tuberculosis Society for the ensuing year are Drs. Minas Joannides, president; Ellis B. Freilich, vice president, and Otto C. Schlack, secretary.——The first Joseph A. Capps Prize paper was read by Dr. Warren B. Matthews, May 27, before the Institute of Medicine of Chicago on "Studies on the Etiology of Gastric and Duodenal Ulcer." The prize was presented to Dr. Matthews at this meeting. Other speakers on the program were Drs. Otto F. Kampmeier on "Problem of Coordination of Medical Libraries in Chicago," and Frank E. Simpson, "Problems in Radium Treatment of Carcinoma and Other Radiosensitive Tumors."

## INDIANA

**Personal.** — Dr. Monroe T. Koons, Mulberry, has retired from the practice of medicine after fifty-seven years in service. ——Dr. and Mrs. Josephus Myers, Alton, celebrated their golden wedding anniversary in March. Dr. Myers, who is 81 years of age, is said to be Crawford County's oldest practicing physician.

**Society News.** — Dr. Carl E. Badgley, Detroit, among others, addressed the Elkhart County Medical Association recently in Elkhart on "Maggots in the Treatment of Osteomyelitis."——The Marshall County Medical Society was addressed at Plymouth, May 5, by Dr. Louring W. Vore, Plymouth, on "Management of the Diabetic."——At the May 9 meeting of the Randolph County Medical Society in Winchester, Dr. Fred M. Ruby, Union City, spoke on "The Medical Eye Specialist versus Optometrist."——Dr. Paul R. Boren, Poseyville, addressed the Posey County Medical Society in New Harmony, May 12, on "Anaphylactic Reaction Following Administration of Diphtheria Toxin-Antitoxin."——The Indianapolis Medical Society was addressed, May 16, by Drs. Thomas B. Noble, Jr., and Homer G. Hamer on "A New Conception of Gynecological Surgery" and "Various Causes of Perineal Swellings," respectively. Dr. Ralph M. Waters, Madison, Wis., addressed the society, May 24, on spinal anesthesia.——Dr. Thomas J. Heldt, Detroit, addressed the Madison County Medical Society, April 18, on "Newer Methods in the Treatment of General Paresis."

## LOUISIANA

**Personal.**—Dr. George S. Bel, emeritus professor of theory and practice of medicine and clinical medicine, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed professor of the principles and practice of medicine in Louisiana State University Medical Center, succeeding the late Dr. James Birney Guthrie.

**Medical Center Dedicated.** — The new Louisiana State University Medical Center in New Orleans was dedicated, May 10, the ceremonies taking place on the grounds of Charity Hospital. Dr. Emmett L. Irwin was master of ceremonies, and Dr. Arthur Vidrine, dean of the medical center, made the introductory remarks. The new medical school building, which with equipment cost $1,500,000, was opened to students last fall.

**Society News.**—Dr. Cecil O. Lorio, Baton Rouge, was elected president of the Louisiana State Pediatric Society, in New Orleans, May 10; Dr. Edwin A. Socola and Dr. Maud Loeber, New Orleans, were elected vice president and secretary, respectively. Among the speakers at this meeting were Dr. Laurence R. DeBuys, New Orleans, on elevated temperatures in the new-born.——At the annual meeting of the Louisiana State Coroners' Association, May 10, Dr. Willis P. Butler, Shreveport, was elected president; Dr. Charles M. Horton, Franklin, vice president, and Dr. Luther L. Ricks, Independence, secretary.——Dr. Charles J. Bloom, New Orleans, addressed the Seventh District Medical Society, recently, on "Use of Dicalcium Phosphate in Experimental Rickets."——Dr. Clarence Pierson, Pineville, was elected president of the Louisiana Hospital Association, April 7, at its annual meeting in Alexandria. The next annual session will be held in Shreveport.

## MARYLAND

**University Observes One Hundred and Twenty-Fifth Anniversary.**—The University of Maryland celebrated the one hundred and twenty-fifth anniversary of its founding, June 3. The exercises were held in Baltimore and at College Park. Speakers included Dr. William H. Welch, director emeritus, Johns Hopkins University Institute of the History of Medicine, and John H. Finley, associate editor of the New York *Times*. Clinics were given by Dr. Raymond G. Hussey, professor of pathology, Yale University School of Medicine, and Major Norman T. Kirk, Walter Reed Hospital, Washington, D. C. Dr. Hussey spoke on "Coronary Thrombosis," and Major Kirk, "Some Phases of Amputation." Both are graduates of the school. The principal speaker at the alumni banquet was Dr. Watson Smith Rankin, Charlotte, N. C. The guests included Raymond S. Pearson, LL.D., president of the university; members of the board of regents; Dr. Randolph Winslow, professor emeritus of surgery, and Dr. Leonard E. Neale. The University of Maryland Medical School was established as the College of Medicine in December, 1807. It is the fifth oldest institution for medical education in the United States. The schools antedating the Maryland institution are the College of Physicians and Surgeons of New York, University of Pennsylvania Medical School, Harvard Medical School and Dartmouth Medical School. The University of Maryland has absorbed the Baltimore Medical College and the College of Physicians and Surgeons. It has one of the oldest medical school libraries in the country and is said to have been the first medical school to make dissection a compulsory part of its curriculum.

## MASSACHUSETTS

**License Revoked.**—At a special meeting of the board of registration in medicine, May 12, the license of Dr. William H. H. Briggs, Haverhill, was revoked because of a court conviction of having performed an abortion. At this meeting the license of Dr. James P. McCue, Hudson, was suspended.

**Personal.**—An oil portrait of Dr. Frederic A. Washburn, director, Massachusetts General Hospital, Boston, has recently been painted and presented by his friends to the hospital. The portrait is the work of Mr. Edmund C. Tarbell.——Dr. Charles Stanley Raymond, for the past three years assistant to the commissioner of mental diseases for Massachusetts, has been appointed superintendent of the Wrentham State School.

**Society News.** — Dr. Frederic Jay Cotton, Boston, addressed the Berkshire District Medical Society in Pittsfield, May 13, on "Fractures of the Ankle and Wrist."——At the annual meeting of the Suffolk District Medical Society, April 27, Dr. William H. Robey was elected president.——Dr. Charles G. Miles, Brockton, is the president for the ensuing year of the Plymouth District Medical Society. Dr. Leon A. Alley, Middleboro, was among the speakers at the annual meeting of the society, his subject being "The Sanatorium Child."——Dr. Albert Warren Stearns addressed the New England Society of Psychiatry, May 17, on "Experiences in Treatment of Crime in Massachusetts."——At the May 20 meeting of the New England Roentgen Ray Society, Dr. Byrl R. Kirklin, Rochester, Minn., spoke on "Value of the Meniscus Sign in the Diagnosis of Carcinoma of the Stomach."

**Floating Hospital.**—The *New England Journal of Medicine* reports that a custom has been adopted by the Boston Floating Hospital of naming a certain day in recognition of a gift of $200. Two days have already been named, one in memory of Robert W. and Nellie A. Milne, and the other in memory of Albert C. Smith. The donor of the sum of $200 has the opportunity of meeting the approximate cost of expenses for that day in memory of a friend or relative or to mark an anniversary, the journal reported. The Boston Floating Hospital is now known as the Jackson Memorial Building. It is a unit of the New England Medical Center. June 1, 1927, the boat called the floating hospital was burned at a loss of about $150,000, while undergoing an annual overhauling at the dock (The Journal, June 18, 1927, p. 1973). It had been in operation for several years carrying thousands of tenement children down the harbor in summer on fresh air cruises. The Boston Floating Hospital was established in 1891.

## MICHIGAN

**Society News.**—Gov. Wilber M. Brucker addressed the Wayne County Medical Society, Detroit, May 24, on "State Affairs."——The St. Clair County Medical Society was addressed at Port Huron, May 3, by Dr. John L. Chester, Detroit, on "Thyrogenic Heart Disease."——Dr. George B. Eusterman, Rochester, Minn., will address the Calhoun County Medical Society, June 7, on "Clinical and Roentgenological Consideration of Malignant Gastric and Duodenal Lesions Masquerading as Benign Disease, and Vice Versa."

**Service for Children Having Heart Disease.**—The board of education of Detroit maintains special schools and classes in various sections of the city for children afflicted with heart disease. Of 1,148 children examined during 1931, 631 were admitted for care. Of these 452 had organic heart disease. Two hundred and eleven children were admitted to classes in open air schools, and 378 to classes in open window rooms. Forty-two were cared for in the regular grades, and 146 were transported to school by the board of education. Changes were made in the clinical classification of 110 children under observation during the year; 66 improved and 44 declined. In this service, the children are either referred by private physicians or detected by routine school examinations. The department of health furnishes constant medical supervision of the classes, consisting of selection of those who are eligible for care, determination of the need for transportation, assignment to the proper class, classification according to type of disease, regulation of the activities of the children while in school, advice as to home activities, and some follow-up care after dismissal from school.

## NEW JERSEY

**Society News.**—Nine physicians who were natives of Gloucester County but have practiced elsewhere were guests of honor at a dinner given by the Gloucester County Medical Society, May 19. They were Drs. Isidor P. Strittmatter, Charles C. Wolferth, George M. Laws and Carroll F. Haines, Philadelphia; Oram R. Kline and Reuben L. Sharp, Camden; Lydia W. Stokes, Woodbury; David R. Brewer and Charles L. S. Brennan, Gloucester City.

**State Medical Meeting at Atlantic City.**—The one hundred and sixty-sixth annual meeting of the Medical Society of New Jersey will be held in Atlantic City, June 15-17, under the presidency of Dr. John F. Hagerty, Newark. The house of delegates meets the first day and the scientific sessions begin Thursday, June 16. Guest speakers listed on the program include Drs. Lewis Gregory Cole, New York, on "Pathogenesis and Repair of Gastric and Duodenal Ulcer"; George W. Mackenzie, Philadelphia, "Management of Running Ears"; Laurance D. Redway, Ossining, N. Y., "Pathology of the Living Human Eye and Its Clinical Recording by Color Photography"; Roger H. Dennett, New York, "Treatment of Chorea"; Murray H. Bass, New York, "Diagnosis and Treatment of Tuberculosis in Infancy and Childhood," and Leroy A. Wilkes, New York, "Rôle of New Jersey Physicians in the Community Health Program." A dinner dance will be given, Thursday evening. A scientific exhibit, prepared under the direction of Dr. Harrison S. Martland, Newark, will be presented.

## NEW YORK

**Report of Grievance Committee.**—Nearly 3,000 complaints of illegal practice and 201 complaints against licensed physicians were investigated during the five-year period begun January, 1927, when the Webb-Loomis bill amending the state medical practice act became a law, according to a recent report by Dr. Harold Rypins, secretary, state board of medical examiners and executive secretary of the state grievance committee. Of 2,932 cases of illegal practice, no violation was found in 1,066. Of 1,866 violations of the statute, 1,355 were stopped without criminal prosecution; 274 were prosecuted and 237 cases were uncompleted at the time of the report. Convictions were obtained in 205 of the 274 cases prosecuted, a phenomenally high percentage, Dr. Rypins pointed out. The outright practice of medicine in defiance of state law has diminished greatly during the five years. Technical violations have, on the other hand, increased. The second major object of the amended medical practice act was the creation of the grievance committee for the disciplining of physicians. In 100 cases, half the charges received, the physician complained about was exonerated. In the remaining 101 cases there was definite evidence of wrongdoing. In 41 of these, the offense was not of a nature to warrant more than a warning and only seventeen were referred to the board of regents for formal discipline. Eight licenses were revoked and two were suspended; six physicians were censured and one case was dismissed.

### New York City

**Personal.**—Dr. Abraham Flexner, for many years director of the division of studies and medical education of the General Education Board, was elected president of the board of trustees of Howard University, Washington, D. C. Dr. Flexner succeeds John H. Sherburne, LL.B., of Boston.——Dr. S. Adolphus Knopf has been appointed official delegate to represent the United States at the eighth conference of the International Union Against Tuberculosis, to be held at Amsterdam and The Hague, September 6-9.

**Arbitration Among Dentists and Dental Trades.**—Disputes arising between members of the dental profession and the dental trades in Greater New York, including laboratories, manufacturers and dealers in supplies, will hereafter be submitted to arbitration under a plan adopted, April 25, by the groups concerned, in cooperation with the American Arbitration Association. The organizations that will participate in the plan include the first and second district dental societies of New York, the Associated Dental Laboratories, Dental Exhibitors' Association and the Metropolitan Gold Club. An advisory committee made up of one representative from each of the related groups will cooperate with the American Arbitration Association in administering the plan. There will also be a special panel of arbitrators drawn from the cooperating organizations to furnish technical advice. When disputants desire the services of arbitrators not connected with dentistry, the regular panel of the association will be available. The sponsors point out that the arbitration plan will operate only when there is an actual controversy arising out of a contractual relation. When there has not been a written contract, the parties to a dispute may mutually agree to arbitration. The plan contemplates, however, that the dental trades will prepare order forms including a provision for arbitration in accordance with the rule of the arbitration association and the New York arbitration law. All arrangements for administration of the plan will be handled by the association with the help of the advisory committee when needed, according to the announcement.

## NORTH DAKOTA

**Society News.**—The Sixth District Medical Society was addressed, April 12, among others, by Drs. Paul H. Burton, Fargo, on "Backache"; Reuben H. Waldschmidt, Bismarck, "Fractures of the Humerus," and Robert W. Henderson, Bismarck, "Physiology of the Kidney."——Drs. Carl E. Elofson and Ralph E. Pray, Fargo, addressed the April meeting of the Cass County Medical Society, Fargo, on complications of pneumonia and childhood tuberculosis, respectively.——The Southwest District Medical Society held its April meeting at New England, with Dr. Albert E. Spear, Dickinson, as the speaker, on disorders of the eye.

# MEDICAL NEWS

## PENNSYLVANIA

**License Revoked.**—The Pennsylvania State Board of Medical Education and Licensure revoked the license of Dr. Modestus William S. Buechele, Altoona, to practice medicine in Pennsylvania, April 22. Dr. Buechele was convicted of violating the antinarcotic laws of Pennsylvania, but sentence was suspended on condition that he leave the state at once.

**Reports Requested on Occupational Disease.**—The state department of health of Pennsylvania requests hospitals, physicians and other persons to report all cases of anthrax, anthracosis, poisoning by aniline, arsenic, benzol, chromium, lead, manganese, mercury, dinitrobenzol and other industrial substances and silicosis. These cases should be reported to local health officers, but special reports direct to the state department are also requested. Reports of lead poisoning must also be made to the department of labor and industry. The department of health announces that increased attention is to be given to these diseases henceforth.

**Society News.**—The annual meeting of the Fifth Councilor District of the Medical Society of the State of Pennsylvania will be held at York, July 28. Drs. Elliott P. Joslin, Boston, and Eldridge L. Eliason, Philadelphia, will speak on diabetes and the surgical aspects of diabetes, respectively.——The program of the Pittsburgh Academy of Medicine, May 24, included addresses by Drs. John P. Griffith on "Treatment of Toxic Goiter"; William S. McEllroy, "Cyanosis Due to Altered Blood Pigment," and Frank H. Rimer, "Diagnosis and Treatment of Maxillary Sinusitis."——Drs. William W. Peter and Victor G. Heiser, New York, were guest speakers at the annual meeting of the Pennsylvania Public Health Association, in Pittsburgh, May 26-27. Dr. Peter's subject was "Adventures in Health Education" and Dr. Heiser's, "Health Conservation in Middle Age."——Dr. William H. Mayer, Pittsburgh, addressed the Northampton County Medical Society, Easton, May 20, on "What the Family Doctor Should Know About Mental Conditions."

## SOUTH DAKOTA

**Dr. Pohlman Appointed Dean.**—Dr. Augustus C. Pohlman, professor of anatomy, St. Louis University School of Medicine, St. Louis, has been appointed dean of the South Dakota University School of Medicine, succeeding the late Dr. George R. Albertson. Dr. Pohlman will also be professor and director of the department of anatomy. Dr. Pohlman was professor and director of the department of anatomy at St. Louis University School of Medicine from 1913 to 1929, when he began special research on deafness. In 1930 he was made research professor of anatomy, giving up his administrative duties to continue his studies of deafness. He has held teaching positions at Cornell University, Johns Hopkins University and Indiana University. He graduated from the University of Buffalo School of Medicine in 1900.

## UTAH

**Tuberculosis Institute.**—An institute on "case finding" as a factor in the control of tuberculosis was recently held in Salt Lake City for tuberculosis workers of Washington, Arizona, Oregon, California, New Mexico, Idaho, Wyoming, Nevada, Montana and Utah. Among other speakers, Drs. Iago Galdston and Harry E. Kleinschmidt, New York, led discussions on "Pathology and Epidemiology of Tuberculosis" and "Methods and Machinery of Case Finding," respectively. Drs. Galdston and Kleinschmidt and Dr. Kendall Emerson, also of New York, addressed the Salt Lake County Medical Society at its regular monthly meeting.

## VIRGINIA

**University News.**—Dr. Frank L. Apperly, until recently a member of the department of pathology, University of Melbourne, has been appointed professor of pathology at the Medical College of Virginia, Richmond. Dr. William D. Cutter, secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago, delivered the commencement address of the college, May 31.

**Dr. Lapham to Direct Prenatal Work.**—Dr. Maxwell E. Lapham, Philadelphia, has been selected as clinical instructor in prenatal and postnatal work, which is to be conducted under the sponsorship of the Medical Society of Virginia. This activity is a recent expansion of the society's graduate work. It will include review, instruction and clinical demonstration for practitioners of the state. Dr. Lapham was formerly an instructor in obstetrics at the University of Pennsylvania Medical School.

**Society News.**—Dr. Earl B. McKinley, Washington, D. C., addressed the Richmond Academy of Medicine, April 26, on "The Filtrable Viruses and Bacteriophage" and Dr. J. B. Dalton, on "Care of the Weak Foot."——Dr. Austin I. Dodson, assistant professor of genito-urinary surgery at the Medical College of Virginia, Richmond, has been promoted to the professorship to succeed Dr. Robert C. Bryan, who recently retired.——At a recent two day meeting of the Southwestern Virginia Medical Society in Bristol, the following program was given: Drs. Warren F. Draper, Richmond, state health commissioner, "Matters of Current Interest in Medicine and Public Health"; Isaac C. Harrison, Danville, "Responsibilities of the General Practitioner in the Field of Preventive Medicine"; Arthur D. Hutton, Marion, "Clinical Laboratory as an Aid in the Diagnosis, Treatment and Prognosis of Diseases"; Linwood D. Keyser, Roanoke, "Transurethral Resection of the Prostate"; Elbyrne G. Gill, Roanoke, "Esophageal Stricture"; Temple S. Fay, Philadelphia, "Intracranial Pressure and Its Relation to Modern Problems of Medicine"; Walter C. Caudill, Pearisburg, "Meckel's Diverticulum: Report of Case with Ulcer and Perforation"; Marcellus A. Johnson, Jr., Roanoke, "Trauma," and Roger H. DuBose, Roanoke, "Some Common Causes of Anorexia in Children."

## GENERAL

**National Board Meeting.**—At the annual meeting of th National Board of Medical Examiners in Washington, May 2 Dr. Waller S. Leathers, Nashville, Tenn., was reelected president for the ensuing year; Mr. Everett S. Elwood, Philadelphia, was reelected executive secretary, and Dr. John S. Rodman, Philadelphia, reelected medical secretary. Reports for the year showed an increase in the total number of candidates examined, and a total of 1,035 new applications for admission to Part I as compared with 973 in the previous year. The total number of states now recognizing the board's examinations is forty-one, besides the territories of Porto Rico, Hawaii and the Canal Zone.

**Society News.**—Dr. Alvin G. Foord, Pasadena, Calif., was named president-elect of the American Society of Clinical Pathologists and Dr. Walter M. Simpson, Dayton, Ohio, became president at the annual meeting in New Orleans, May 6-9. The Burdick Award was given to Dr. Benjamin S. Kline, Cleveland, for his contribution on serological diagnosis of syphilis. Dr. Roy R. Kracke, Decatur, Ga., received the society's gold medal for an exhibit on agranulocytic angina.——Dr. Frank Smithies, Chicago, was elected president of the American Therapeutic Society at the annual meeting in Baltimore, May 16-17. Dr. Oscar B. Hunter, Washington, D. C., is secretary.——Dr. Fred Wise, New York, was elected president of the American Dermatological Association at the annual meeting in Havana, Cuba, May 3-5.

**Another Four Weeks of Automobile Fatalities.**—The U. S. Department of Commerce announces that during the fou weeks ended May 14 eighty-five large cities in the United States reported 564 deaths from automobile accidents, as compared with 688 deaths during the four weeks ended May 16, 1931. Most of these deaths were the result of accidents which occurred within the corporate limits of the city, although some accidents occurred outside the city limits. For the fifty-two week periods ended May 14, 1932, and May 16, 1931, the totals for all the cities were, respectively, 8,832 and 9,097, which indicate a recent rate of 24.6 per hundred thousand of population as against an earlier rate of 26. Eight cities reported no deaths from automobile accidents for the last four weeks, while three cities reported no deaths from automobile accidents for the corresponding period of 1931.

**Public Health Meeting.**—Three subjects of major importance in the West will be discussed at the third annual meeting of the Western Branch of the American Public Health Association, which will be held in Denver, June 9-11. Psittacosis, now apparently endemic in native western birds of the parrot family, will be discussed by Karl F. Meyer, Ph.D., San Francisco; Rocky Mountain spotted fever, with special reference to its relation to typhus, by Dr. Robert H. Riley, Baltimore; and reciprocal relations for control of shell fish in Pacific ports, by Drs. Giles S. Porter, Sacramento, Calif.; Frederick D. Stricker, Portland, Ore., and Albert E. Stuht, Seattle, state health officers. Other speakers will be Drs. Eugene L. Bishop, Nashville, Tenn.; Mazyck P. Ravenel, Columbia, Mo., and John A. Ferrell, Kendall Emerson, New York; Michael M. Davis, Ph.D., Chicago, and Louis I. Dublin, Ph.D., New York.

**Medical Bills in Congress.**—*Changes in Status:* H. R. 11082 has been reported unfavorably to the House, proposing to liberalize existing restriction relative to the dissemination of information and devices for the prevention of conception

(H. Rept. 1435). The committee report said, in part: "This is a very controversial matter; and in these times of economic unrest and discontent, with the necessity upon Congress of giving its undivided attention to public matters of the highest importance, the committee reaches the conclusion that it is unwise at this time to inject a discussion of this matter into the House and country." H. R. 10236, the revenue bill, is still before the Senate. On May 26, the Senate specifically exempted "frames or mountings for spectacles or eyeglasses" and "surgical instruments" from the section proposing a tax of 10 per centum on jewelry, which section was reinserted in the bill after having been stricken therefrom by the Senate Committee on Finance.

**Results of Special Board Examinations.**—Forty-four candidates took the examination of the American Board of Otolaryngology in New Orleans, May 9; thirty-seven passed and seven failed. The next examination will be held in Montreal, September 17. New requirements for candidates will go into effect after the Montreal examination, according to Dr. Harris P. Mosher, Boston, president of the Board, as follows:

1. A candidate acceptable for the examination must be a graduate of an approved medical school with at least one year of approved internship or three years of general practice.
2. In addition, a candidate must have completed an academic year as a basic course in otolaryngology or one year of internship in otolaryngology followed by two years of specialized practice.
3. Five years of specialized practice will be accepted in lieu of the requirements of paragraph 2.

Fifteen applicants took the examination of the American Board of Obstetrics and Gynecology in New Orleans, May 10, with three failures.

**Winners of Annual Golf Tournament.**—Dr. John Welsh Croskey, Philadelphia, was elected president of the American Medical Golfing Association following the eighteenth annual tournament and dinner in New Orleans, May 9. Drs. Homer K. Nicoll, Chicago, and James P. O'Kelley, New Orleans, were elected vice presidents. The names of winners of the various events follow:

Dr. Samuel M. Hill, Dallas, Texas, association championship: the Will Walter Trophy, with a low gross score of 161 for thirty-six holes.
Dr. Alonzo C. Smith, Wooster, Ohio, handicap championship for thirty-six holes: the Detroit trophy.
Dr. John P. Loudon, Yakima, Wash., the thirty-six hole choice score handicap championship: the St. Louis trophy.
Dr. John L. Lattimore, Topeka, Kan., low gross eighteen hole championship: the Golden State trophy.
Dr. Harry H. McClellan, Dayton, Ohio, low net eighteen hole championship: the Ben Thomas trophy.
Dr. John P. Dewitt, Canton, Ohio, the "maturity event," limited to Fellows more than 60 years old: the Minneapolis trophy.
Dr. Edwin G. Zabriskie, New York, the "old guard" championship, limited to past presidents of the golfing association: the Wendell Phillips trophy.
Dr. Robert C. Jamieson, Detroit, the "kickers handicap": the New Orleans trophy, donated by Mayor T. S. Walmsley of New Orleans.
Dr. Jacob R. Rupp, Detroit, the consolation event.

**Grants of Commonwealth Fund.**—Clinical instruction in prenatal and postnatal care will be provided for Virginia physicians in the coming year through a grant of $10,000 to the Medical Society of Virginia by the Commonwealth Fund. The grant, which has a reservation of $5,000 for next year and is conditioned on the appointment of a satisfactorily qualified clinician, represents an extension of the fund's established activities in graduate education for physicians, since the medical society takes the initiative and direct responsibility in a project for improving the practice of its members. The fund, at its April meeting, also made appropriations to continue the study of dental decay at Columbia University School of Dental and Oral Surgery; to continue the development of rural public health service in New Mexico (where the fund is helping the state health department to provide public health nursing in fourteen counties); to enable pediatricians to attend the Southern Pediatric Seminar, and to continue the study of the effectiveness of current technic in preventing the spread of diphtheria and scarlet fever, under direction of the American Public Health Association. The sum of $143,720 was appropriated to the Division of Rural Hospitals for the coming year, with a provision for special assistance to the state health department of Maine in organizing town-unions for public health similar to those already set up in the Nashoba and Southern Berkshire districts in Massachusetts and in process of formation in the district surrounding the hospital at Farmington, Maine. An appropriation of $61,140 was made to carry the fund's mental hygiene service in Great Britain through another year.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

St. Joseph's Hospital, Philadelphia, $5,000 by the will of the late Patrick J. Lawler.

Woodford County Memorial Hospital, Versailles, Ky., $20,000 by the will of Col. John C. Durrett.

Shriners Hospital for Crippled Children, Philadelphia, and the Children's Seashore House, Atlantic City, N. J., each $1,000 by the will of the late Catharine Royal Shellenberger.

Bethesda Home, St. Louis, $5,000, and German Protestant Orphan Asylum, Barnard Free Skin and Cancer Hospital, St. Louis, each $2,000 by the will of Mrs. Gussie L. Grenner.

American Dormitory of the Cité Universitaire of Paris, $50,000 to be devoted to the creation of scholarships for young medical students and students of music and composition, by the will of the late Harriet Hale Wooley.

Mount Sinai Hospital, New York, $10,000 by the will of Rosalie Hyams.

Woman's Medical College of Pennsylvania, Philadelphia, $10,000 by the will of the late George Taylor.

Hospital of St. Barnabas, Newark, N. J., $5,000 by the will of Rev. Melvin Honeyman.

Mary Hitchcock Memorial Hospital, Hanover, N. H., $120,000 by the will of Charles N. Vilas, New York.

Children's Hospital, Boston, Hospital for Joint Diseases, New York, each $5,000 by the will of Mrs. J. L. Hanna.

Woman's Hospital, New York, $10,000 by the will of Dr. James Riddle Goffe.

St. Luke's Hospital, New York, $88,000, and New York Eye and Ear Infirmary, $30,000 by the will of Mrs. M. B. Caswell.

Presbyterian Hospital, Chicago, $25,000 by the will of the late John W. Scott.

Holmes Memorial Hospital of the University of Cincinnati, Cincinnati, $3,000 by Mrs. Christian R. Holmes to establish an ophthalmic unit.

Boston Home for Incurables, Boston, and Children's Hospital, Boston, each $2,000 by the will of the late Dr. William Appleton.

Sydenham Hospital, New York, $2,500 by the will of the late Simon Sichel.

St. Vincent's Hospital and St. Joseph's Hospital for Consumptives, New York, each $50,000 by the will of the late Dr. John B. Manning.

Babies' Hospital, Memorial Hospital for the Treatment of Cancer and Allied Diseases and New York Post-Graduate Medical School and Hospital, all of New York, $10,000 each by the will of the late William Fitz Randolph.

Presbyterian Hospital, New York, $15,000 by the will of Miss Ida Adams.

Margaret Pillsbury Hospital, Concord, N. H., $10,000 by the will of Mrs. Ella Hoppin.

## CANADA

**Balfour Lecture.**—Dr. Rudolph Matas, emeritus professor of surgery, Tulane University of Louisiana School of Medicine, New Orleans, delivered the sixth annual Donald C. Balfour Lecture at the University of Toronto Faculty of Medicine, April 5, on "The Story of Postoperative Pulmonary Embolism Before and After Lister." The date was the one hundred and fifth anniversary of the birth of Lord Lister.

**Silver Jubilee.**—The Toronto Academy of Medicine celebrated its silver jubilee, April 7, with a banquet at the King Edward Hotel, after which Dr. Archibald Malloch, librarian of the New York Academy of Medicine, New York, made an address on Sir William Osler. Papers on the history of the academy were read by Drs. Edward S. Ryerson and Harry B. Anderson. Miniatures of the presidential badge of office were presented to past presidents of the academy.

**Society News.**—Drs. Duncan Campbell Smyth and Alexander Stewart Macmillan, Boston, addressed the Toronto Academy of Medicine, March 1, on "Bronchoscopy as an Aid in the Diagnosis and Treatment of Pulmonary Conditions" and "X-Ray Diagnosis of Diseases of the Esophagus," respectively.——The American Pharmaceutical Association will hold its annual meeting jointly with the Canadian Pharmaceutical Association in Toronto, August 22-27.——Drs. J. W. Thomson and Archibald W. Hunter addressed the Vancouver Medical Association, April 5, on "Emergencies in Abdominal Surgery" and "Diagnosis and Treatment of Some Urological Emergencies," respectively.——The Canadian Public Health Association and the Ontario Health Officers' Association held a joint annual meeting, May 25-27.——The annual Lister Day celebration was held, April 5, at the University of Manitoba, Winnipeg, with Dr. William A. Gardner as the orator.

**Annual Meeting of Canadian Medical Association.**—The sixty-third annual session of the Canadian Medical Association and the fifty-second annual meeting of the Ontario Medical Association will be held in Toronto, June 20-24, with headquarters at the Royal York Hotel. Speakers at a public meeting, June 24, will include Drs. George W. Kosmak, New York, and James H. Mason Knox, Jr., Baltimore, on "Maternal Welfare" and "Infant Welfare," respectively. Included among the speakers are Drs. Ralph Noble, New York, on "Relationship of Psychiatry to General Medicine"; Daniel F. Jones, Boston, "Cancer of the Rectum"; Conrad Berens, New York, "Motor Anomalies in Relation to Prescribing Lenses"; Ralph M. Tovell, Rochester, Minn., "Spinal Anesthesia"; George H. Whipple, Rochester, N. Y., "Pigment Metabolism and Anemia Problems," and Donald C. Balfour, Rochester, Minn., "Variabilities in Duodenal Ulcer." There will be symposiums on cancer, collecting antiques of medical interest, and bronchiectasis. Dr. Francis R. Packard, Philadelphia, will deliver the Osler Oration, June 22, on "William Osler in Philadelphia and the School in Which He Taught."

## FOREIGN

**Congress on Biliary Lithiasis.**—Physicians who wish to present papers at the International Congress on Biliary Lithiasis to be held in Vichy, France, September 19-22, must notify the general secretariat, 24 Boulevard des Capucines, Paris, before July 1, according to an announcement. Prof. Paul Carnot is president of the congress and among the honorary presidents are Dr. Charles Gordon Heyd, New York, and Lord Moynihan of Leeds, London. Dr. Frank Smithies, Chicago, is president for the United States. Three topics have been chosen for discussion in general sessions as follows: sequelae of cholecystectomy, medical and mineral water treatment of the gallbladder in biliary lithiasis, and gallstones in the liver. In addition there will be four sections, in which shorter papers will be presented. The latter may not exceed three pages of forty lines each, while the papers for the general sessions may be ten pages long. The sections will be medicine, surgery, therapeutics and hydrology, and electroradiology and physical therapy. The official program and information concerning steamship and hotel accommodations may be obtained from Dr. Frank Smithies, 920 North Michigan Avenue, Chicago. The general secretary is Dr. J. Aimard, Paris.

**Centenary Meeting of British Medical Association.**—The one hundredth anniversary of the founding of the British Medical Association will be celebrated at the annual session in London, July 21-30. The annual representative meeting will be held July 21 and the three following weekdays, while the scientific sections will meet July 27-29. The annual general meeting will be held, July 23, at the British Medical Association House in London, and the incoming president, Lord Dawson of Penn, will deliver his address at a meeting, July 26. There will be a pilgrimage to Worcester, Sunday, July 24, to unveil two memorials to Sir Charles Hastings, founder of the association (THE JOURNAL, Dec. 5, 1931, p. 1718). Among subjects for discussion listed are "Clinical Application of the Recent Work on Bone Diseases," "Menace of Quackery in Physical Medicine," "Skin Diseases in Relation to Industry," "Immunologic Basis of Prophylactic Inoculation Against Bacterial Diseases," "Treatment of Inflammatory Conditions by Radiation," "Serum Treatment of Pneumonia," "Use of Nonspecific Protein Therapy," and "Mental Health and the General Practitioner." Among other participants in the discussions will be Drs. Russell L. Cecil, New York; Leroy U. Gardner, Saranac Lake, N. Y., and Charles MacFie Campbell, Boston. The annual popular lecture will be given, July 29, by Prof. Julian S. Huxley, Highgate, London. Dr. William George Willoughby, Eastbourne, is the present president of the association.

# Government Services

### First Woman Surgeon in Public Health Service

Dr. Estella Ford Warner has been appointed a surgeon in the U. S. Public Health Service. This is the first time in the history of the public health service that a woman has held this rank, the New York *Times* reports. Dr. Warner will tour the country in the interest of child hygiene work, study the methods of state, municipal and school health authorities and recommend improvements, with the object of making a report on the proposed coordination of child health work throughout the country. In 1928, Dr. Warner was appointed director of the Marion County (Oregon) Child Health Demonstration of the Commonwealth Fund, succeeding Dr. William DeKleine. She had been pediatrician of the demonstration since 1925. Previously she was medical director of the bureau of child hygiene of the Oregon State Board of Health. She held a similar position with the Portland board of health, and was for six years lecturer in child hygiene at the University of Oregon. Dr. Warner graduated from the University of Oregon Medical School in 1918.

### U. S. Public Health Service

Dr. Charles L. Williams was commissioned as senior surgeon in the regular corps of the public health service to rank from May 23; Asst. Surg. Thomas B. McKneely, relieved at New Orleans and assigned at marine hospital, Fort Stanton, N. M.; A. A. Surg. Charles O. Absher, relieved at marine hospital, Fort Stanton, and assigned at marine hospital, San Francisco.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

May 7, 1932.

### Public Demands Reduction of Road Accidents

In spite of the new road traffic act, the appalling death toll of the roads continues without sensible diminution. The public and the press cry out that something more must be done, but no one seems able to suggest anything that will make much difference. In the House of Commons the home secretary, Sir Herbert Samuel, said that the police did all they could to prevent dangerous driving but that the figures showed an exceedingly bad state of things. In Great Britain in 1931 no fewer than 6,691 persons were killed and 202,119 injured in street accidents. Every day of the year eighteen people were killed and 553 injured. The only favorable feature was that last year the number of fatal accidents was 614 less than in the previous year, but, on the other hand, the nonfatal accidents were increased by 24,224.

The subject was discussed also at the National Safety Congress, organized by the National Safety First Association. Mr. Pybus, minister of transport, said that he could see the effect of the association in the prevention of accidents in factories. But was the incredible story of death to continue unabated on the roads? In addition to the figures given for the whole country, the following were given for London. In 1931, 1,325 persons were killed in the streets, as against 1,398 in 1930, a reduction of 5.2 per cent, as against a reduction of 8.5 for the country as a whole. But closer examination revealed the startling fact that decrease of seventy-three in the London deaths was accounted for almost entirely by the fact that sixty-seven fewer motor cyclists and pillion riders were killed, indicating that the motor cycle was being less used in the metropolitan area. As against the 8.5 decrease in deaths throughout the country must be set the following: 1. There has been a reduction of about 3.2 per cent in the number of vehicles licensed to operate on the roads. 2. The number of persons injured has increased by 13.5 per cent. The returns for London for the first three months of 1932 are most disquieting. The number of persons killed has increased from 289 in the corresponding quarter of last year to 314, and the injured have increased from 9,943 to 10,865. The deputy secretary to the ministry of transport, in deploring these figures, said that he did not think that more could be done by increasing penalties or further penal legislation. What was needed was that public opinion should be roused and insist that the reckless driver who had endangered lives should receive adequate punishment.

In the House of Lords, Lord Buckmaster introduced a bill to amend the new road traffic act. His bill would enable the judge to adjust the degree of punishment to the degree of negligence. It provided that if a man killed a person by negligent driving he would be guilty of manslaughter, and if a driver knocked down or injured a person and drove straight on (as is often done) that would be a criminal offense. His bill also provided that no truck that exceeds 5 tons in total weight shall exceed the speed of 5 miles an hour in any city, town or village. He would rather cross blindfolded the railway level crossings than some of the roads as he knew them today.

The lord chancellor and other legal lords expressed appreciation at the proposal to alter the English law of manslaughter, which had existed for centuries and drew a distinction between civil and criminal negligence. The Earl of Plymouth, representing the government, expressed sympathy with the object of the bill. The government was fully alive to the gravity of the position, but he was convinced that the bill would not attain its object. If passed, "manslaughter" and "unlawful wounding" would mean something entirely different when the driver of an automobile was concerned than in any other circumstances. One of the chief impediments to a substantial reduction in the terrible toll of deaths was the reluctance of magistrates and juries to convict in cases of dangerous driving. To increase the penalties might only increase the reluctance. The government had the warmest sympathy with Lord Buckmaster's object but did not think that the bill would do anything to attain it. The bill was read a second time, without a division, showing that the house was not in sympathy with the government's do nothing policy.

### Neanderthal Man in Palestine

Three adult skeletons of Neanderthal type have been found in Palestine by the joint expedition of the British School of Archeology in Jerusalem and the American School of Prehistoric Research. They were in a small rock shelter at the western foot of Mount Carmel, which was thickly strewn with implements of Mousterian type and animal bones and bore only slight traces of later occupation. The discovery is of great importance in view of the scarcity of Neanderthal remains outside Europe. Last year a young American student, Mr. T. MacCown, found a skeleton of a 2-year child of Neanderthal type in the same cave. This is now in the Museum of the Royal College of Surgeons, London, for comparison with casts of the Neanderthal skull, known as the Galilee skull, which was discovered in 1925. The only relatively complete adult Neanderthal skeletons have heretofore been found in France. Sir Arthur Keith regards the discoveries as of the highest interest and thinks that they may throw entirely fresh light on the relations of modern man to the Neanderthal type. While the front of the child's skull is of Neanderthal type, the back is of an entirely new type, more resembling that of modern man and not akin to that of the Neanderthal man of Europe. While changes of growth might considerably alter this, it is noteworthy that the child's skull from Gibraltar is purely Neanderthal. Thus the Palestine skull may represent a new type of man in a transient stage. Neanderthal man became extinct in Europe at least 20,000 years ago, and it seems probable that the Palestinian remains are older.

### Production of Carbon Monoxide from Paint

Certain air spaces in ships and other places may remain sealed over long periods of time. Among them are the double bottoms and "bulges" or "blisters" of warships, made as a defense against torpedo attack. When such spaces have been opened for inspection or repainting, men have entered them and death has resulted. The cause is generally asphyxia. Carbon monoxide poisoning has been erroneously invoked, as the skin in such cases of acute asphyxia often remains pink. But, in the majority of cases, spectroscopic examination of the blood does not reveal any trace of carbon monoxide. Chemical analysis of the air of such spaces has shown that they may contain less than 2 per cent of oxygen without any proportional rise in the carbon dioxide content. It has long been known that the linseed oil of the paint absorbs oxygen. In the *Journal of Industrial Hygiene,* Dudding, Dudley and Frederick of the Royal Naval Medical School have shown that the air of such spaces may contain as much as 0.2 per cent of carbon monoxide. Experiments made to determine its origin showed that the iron oxide paint used in ships' bulges, which is stored sealed for various periods, may contain percentages of carbon monoxide ranging from 0.08 to 0.27. The constituent of the paint responsible for this gas is the boiled linseed oil. Chemical analyses of air taken from a bulge showed 1.3 per cent of oxygen and 0.03 of carbon monoxide. The percentage of carbon monoxide, in an atmosphere containing the ordinary amount of oxygen, which will cause dangerous symptoms in man, is laid down as from 0.15 to 0.2 per cent. It might therefore be inferred that the small percentage of carbon monoxide found in these spaces is of only academic interest, as a man entering would be asphyxiated before he could be poisoned with carbon monoxide. However, there is no constant inverse relation between the amount of oxygen and carbon monoxide in analyses of air from these spaces. This research finds application in disasters that have occurred in the United States Navy. In the *Nevada,* three men were overcome after working in a blister one and one-half hours, and there was no question as to the diagnosis of carbon monoxide poisoning. In the *New York,* nine men entered a bulge and were affected within a few minutes. Two died, and carbon monoxide was found in their blood.

## PARIS

*(From Our Regular Correspondent)*

April 20, 1932.

### Surgery of Uterine Cancer

Professor Jean-Louis Faure recently affirmed before the Academy of Medicine that, in nine cases out of ten, cancer of the uterus is definitively curable through surgical intervention, if it is applied early enough. A few days previously, Professor Hartmann had published statistics no less optimistic on the surgical treatment of cancer of the stomach. These two surgeons are eager to defend the reputation of their art against the inroads of radiology, which is coming more and more into favor. They took occasion to point out the disadvantages of radiology. The public fears surgical operations and is more ready to resort to radium and radiography, which appear to entail no immediate risk. The radiotherapeutists have called attention to the fact that hopes based on their art were limited. These frank statements have sometimes unjustly brought surgery into discredit, which fact no doubt motivated the recent outbursts of Hartmann and Jean-Louis Faure. The latter was one of the first, in France, to attack uterine cancer by hysterectomy, applied widely, with removal of the superior portion of the vagina and the parametrium, and, especially, the use of wide Mikulicz drainage. But when the glands are involved, recurrence is inevitable. However, an early diagnosis, which is not difficult if the patient is examined at the first signs of disease, permits operating before the glands are attacked. That is the whole problem. Jean-Louis Faure affirmed that cancer of the uterus had become the most likely curable of all forms of visceral cancer. In cases in which operation is timely—that is, during the first two or three months—essential recoveries, in a series extending back several years, amounted to 83 per cent, and in a more recent series, to 96 per cent. In the total of forty-six patients operated on, there were two deaths, or 4.34 per cent; two patients were lost sight of and hence eliminated; in the remaining forty-two patients operated on there were two recurrences, or 4.54 per cent, and forty definitive recoveries, or 90.9 per cent. These results would have appeared, in an earlier day, incredible. But they can be secured only in certain cases, which, unfortunately, constitute only 1.5 per cent of patients operated on. The other cases—inoperable—which constitute most of the patients, are amenable to radium. There are still too many women who come too late to operation. Patients must be operated on early. Jean-Louis Faure said that when the general education of patients and physicians shall enable competent surgeons to operate on patients within the first two or three months, this disease, which until recently has presented such terrible aspects, will nearly always be cured. On the whole, the welfare of patients with uterine cancer is in the hands of their physicians, who should know how to diagnose a neoplasm as soon as the first signs appear.

### Changes in Tuberculosis Hospitals

Dr. Georges Petit has published a sort of manifesto in which he declares that we must modify our conceptions as to the most effective means of combating tuberculosis. Scientific

Dr. Robert [illegible] Library

reasons combine with financial considerations to point out the mistakes made and to suggest the adoption of new methods. One of the chief mistakes has been the multiplication of small dispensaries, installed with the aid of private funds. Petit considers the dispensary a useless innovation. It should no longer remain in the hands of private societies, which, in spite of good intentions, are subject to local influences, often of a political nature, which take away its independence. It should be attached to the hospital and managed by administrative boards. By doing otherwise friction is set up, or sometimes a rivalry, between the two institutions. Many dispensaries are insufficiently equipped. As a rule, the rooms are inferior. A large sum would be required to equip properly the dispensaries. The attachment to a hospital would necessitate little new equipment, and there would be a greater certainty of its proper use. This question should be judged on its own merits and unaffected by influences foreign to the object to be attained. Official statistics show the small part played by the sanatorium in the crusade against tuberculosis. As to the results, they are perverted, for several reasons. First, the sanatorium was established for fresh-air treatment, and experience has shown that fresh air alone has never sufficed to cure a tuberculous patient. This is now fully recognized, so that, in all sanatoriums, therapeutic action has regained the place that it should never have lost. Furthermore, the stay in the sanatorium is always too short to bring about more than an improvement, which is too often only transitory. However, the greatest reproach that can be brought against the sanatorium is that it receives only certain classes of patients. This weakness is serious; for, under these conditions, the sanatorium is not a general social factor, and it loses much of its utilitarian character in the crusade against tuberculosis. The sanatorium should admit all tuberculous patients. The hospital-sanatorium is, therefore, the only institution that meets he scientific conceptions and the needs of society. The great ffort to establish in the hospitals a special pavilion for the tuberculous is the beginning of a change which is widely needed and universally demanded. It is a difficult task, for there are private interests that oppose the movement; but its opponents cannot prevent the new development, for the impetus it has received is too great.

## ITALY

*(From Our Regular Correspondent)*

March 31, 1932.

### Pediatricians Discuss Diphtheria

The Venetia Euganea chapter of the Società italiana di pediatria held recently its first regional congress at Padua, in the Clinica pediatrica, under the chairmanship of Professor Frontali. The chief topic on the program was "Diphtheria." Baccichetti discussed antidiphtheria vaccination as applied to the school children of Treviso, in 1931, 2,470 children having been vaccinated. In 105 diphtheria cases reported during the year in the commune, 6 of the patients had been vaccinated. Fifteen per cent of the children, although vaccinated, presented a positive Schick reaction. Nevertheless, the author favors making antidiphtheria vaccination compulsory, at least in collective groups of children.

Pagani-Cesa reported the results of antidiphtheria vaccination in groups of children in Padua. Of 257 children vaccinated about three years ago with three injections of Ramon toxoid, he found that only 1.8 per cent of the subjects become Schick negative. A year and a half later, he tested this group to discover how many had remained Schick positive and found the same number were Schick positive as before, showing thus that the immunization either occurs within two months from the date of the vaccination or does not occur at all. Control examinations applied, a year and a half after the inoculation, to children who became Schick negative as a result of their vaccination showed them to be still negative, proving that they had preserved their immunity. Having administered to the Schick-positive subjects a fourth injection of anatoxin, in a dose of 1.5 cc., he obtained immunization in half of the cases, showing thus that in antidiphtheritic immunization the size of the dose employed plays a part. Not one of the children vaccinated, with a Schick-negative outcome, came down with diphtheria, during two years of observation.

Denes of Padua presented some bacteriologic considerations on diphtherial sore throat. The diphtheria bacillus of the normal clinical type, which is commonly isolated in cases of pseudomembranous sore throat as clinically characterized, may show notable deviations from the norm. To these modified diphtheria bacilli belong, according to the speaker, not only the Hoffmann bacillus and other parabacilli and pseudobacilli of diphtheria, but also coccal and diplococcal types that are isolated in some forms of pseudomembranous sore throat and are hypovirulent strains due to local or general immunizing factors The speaker proposed a method for distinguishing the virulen diphtheria bacillus from the modified forms on the basis o partial staining with a 33 per cent alcohol, during the application of the Gram stain.

Golin made Schick tests on seventy children in the Clinica pediatrica of Padua, and also simultaneously made throat cultures in these cases on Löffler's medium. He found forty-five of the children Schick positive (64.28 per cent). Among the subjects examined, he found, in addition, ten healthy carriers of diphtheria bacilli (13.63 per cent), and among these 11 per cent who were Schick positive.

Cantilena of Venice pointed out that it is a common practice to use large doses of serum in the treatment of diphtheria. This does not prove that the use of serum has lost its value, althoug the reasons for the fact observed are not apparent; the use o serum is today more necessary than ever and confidence in i should not be shaken.

Brunetti spoke of the dangers of intubation in diphtheritic laryngeal stenosis, emphasizing the frequency of chronic laryngeal stenosis in patients in whom the tube is left too long in the larynx. In that manner the air passage is damaged. Research has shown that in such subjects the bronchial tree and the lungs are particularly involved.

Rubatelli spoke on the treatment of chronic postdiphtheritic laryngeal stenosis. This is a therapeutic problem of great importance. The methods that have been tried do not furnish a sure means of preventing grave complications. Stenosis of the respiratory passages is due chiefly to lesions resulting from prolonged intubation.

Radici of Padua described two cases of diphtheritic adenoiditis with dysphagia, in the new-born. He ascribes to the dysphagia symptom great importance in the new-born, owing to the fact that this symptom may, in the absence of visible tonsillar lesions, arouse suspicion of diphtheritic involvement of the pharyngeal tonsil.

Giorgi described a case of diphtheritic polyneuritis in a girl who had never had symptoms of diphtheria but whose sister had diphtheria forty days previously. This patient had been immunized with antidiphtheritic serum. The girl was found to be a carrier of diphtheria bacilli. The speaker held that the antidiphtheritic prophylaxis had caused the diphtheria to remain latent, permitting, however, the production of toxins that caused the paralysis.

In the discussion that followed, Professor Frontali remarked that the laryngologists see more frequently the rare sequels of intubation and of tracheotomy rather than the diphtheritic laryngitis as it actually exists. This leads to differences of opinion. The preference that pediatricians give to intubation, as against tracheotomy, is based on the large proportion (nearly 100 per cent) of cases in which pulmonitis develops in the child following tracheotomy, and on the high mortality (about 50 per cent). Intubation causes a rather low frequency of bronchopulmonary complication and a lower mortality (about 20 per cent). Frontali is of the opinion that the permanent changes in the larynx are due to intubations of long duration. He holds that intubation should not be prolonged beyond 100 hours. Shorter periods of intubation are possible today because serotherapy causes the pseudomembranes to disappear in from twenty-four to seventy-two hours. He said that the Schick test enables one to withhold vaccine treatment in Schick-negative subjects and reveals, after vaccination is done, the persons not yet immune, who can then be given another dose of anatoxin. After any vaccination one may find from 10 to 20 per cent of persons not sufficiently immunized, although Schick negative, who may still be subject to diphtherial infections. He proposed a resolution, which was unanimously approved, in which doubts recently raised against the value of antitoxin and the preventive value of vaccinations with the Ramon anatoxin were stated to be unfounded.

Professor Frontali reported on the treatment of meningitis with a serum produced by the use of the Weichselbaum meningococcus. In the treatment of twenty cases he used specific agglutinant serums directed against types A, B and C of the meningococcus; nine patients received antimeningococcus serum, type B (45 per cent); one, antimeningococcus serum, type C (5 per cent), and ten, antimeningococcus serum, type A (50 per cent). The number of deaths was eight (40 per cent); three patients were improved (15 per cent); nine recovered (45 per cent), and of these only two had any sequels. The results, on the whole, were encouraging. The speaker regretted that the manufacturers of serums in Italy, Switzerland and Germany are unable to furnish specific agglutinant serums for the several types of meningococcus.

Orefice of Vicenza presented the results of his studies on mongolism, calling attention to the increase of this disease, in the last ten years, in the province of Vicenza.

### Meeting of Anatomists

The Società italiana di anatomia held recently, in Palermo, its third annual convention, under the chairmanship of Professor Chiarugi, director of the Istituto di anatomia of the University of Florence. Professor Levi discussed certain changes found in aged persons. He considered the pigment of the nerve cells, the fenestration of the ganglion cells, the decrease in the number of the Purkinje cells, the changes in the caliber of the muscle fibers, the increase of elastic fibers and of the brown pigment of the heart, the increase in the connective tissues and the diminution of the elastic fibers in the vessels, the regression of the lymphatic tissues, the increase of the collagen in the entire organism and of the reticular tissue, with transformation of the latter into ordinary connective tissue.

### Tonsillitis and Kidney Disease

Prof. Camillo Torrigiani, of the University of Florence, delivered recently a lecture on tonsillitis in relation to kidney disease. He discussed various conceptions as to the physiology of the tonsils, pointing out the protective function of the healthy tonsil and the harm that may result from the diseased tonsil. He divided into four types the renal disorders related to tonsillitis: (1) simple albuminuria; (2) focal glomerulonephritis, the most salient characteristic of which is hematuria; (3) diffuse glomerulonephritis, with edema, hypertension, marked albuminuria and sometimes retinitis, and (4) chronic nephritis. Focal glomerulonephritis is the most frequent form. Professor Torrigiani holds that tonsillitis with general symptoms may cause true sepsis but generally is a local infection. He reported 560 cases of tonsillectomy for renal disorders, but he had statistics on the results in only 190 cases. Among these he observed 17 cases of simple albuminuria, 91 cases of acute focal glomerulonephritis, 47 cases of chronic focal glomerulonephritis, and 15 cases of diffuse chronic glomerulonephritis. In 91 cases of an acute focal type, he had 48 recoveries, 23 improvements and 20 cases with a tendency to enter a chronic state. Of the 47 chronic focal types, 25 healed within twelve months, 7 improved and 15 remained unchanged.

## BERLIN

*(From Our Regular Correspondent)*

April 18, 1932.

### Influenza in Germany

In spite of the hardships that rest heavily on Germany at present, it has not been spared several local epidemics of influenza. The reports based on statistics are not especially disquieting, but every physician knows that, in the past few weeks, we have had to contend with some severe infections. In Breslau, during the last weeks of February and extending over into March, there was an outbreak of influenzal disease, an account of which is given in the *Deutsche medizinische Wochenschrift* by Prof. P. Prausnitz, the director of the Hygienisches Universitäts-Institut in Breslau. He explains the development of the epidemic as due in part to the overcrowding of pupils in the schoolrooms. The recognition of this cause induced the municipal health service to abolish classes or to close schools entirely when at least 10 per cent of the pupils were ill and further overcrowding was contemplated. Thus, on March 11, about 70 per cent of all classes were temporarily disbanded. The rapid retrogression of the epidemic was due, Prausnitz thinks, in no small measure to this procedure. He advanced also the belief that this epidemic, which presented surprising features when compared with earlier epidemics, furnishes evidence of the general lower resistance not only of the pupils but also of adults. Similarly, it could be proved by statistics that the "welfare jobless" furnish more than their proportionate share of the cases, because of the fact that, having been out of work for a long time, they had long since exhausted their savings and their reserves of strength. The Breslau epidemic was of a mild nature, in the main. In Berlin the outbreak did not assume epidemic proportions but in Switzerland there was a conspicuous increase in the morbidity. In England the epidemic appeared with the change of the year. A slight increase of morbidity occurred in Denmark, while in Finland no change was noted. These statements, based on statistics, are of course entirely inadequate for the understanding of epidemic disease that presents such a changing picture as influenza. Everywhere, severe complications and sequels of influenza are found the diagnosis of which is based partly on the clinical course, but chiefly on the leukocyte count, since the bacteriologic manifestations seldom furnish reliable data.

### Diphtheria Carriers

A number of clinicians, writing in the "Kinderärztliche Praxis," emphasize the difficulties of completely eliminating diphtheria bacilli from carriers, for if, as is usually the case, the bacilli are in the throat or nose, they cannot be killed with certainty, and while people are speaking, coughing or sneezing, the bacilli may be easily scattered and become the source of contagion. Professor Husler, in the *Münchener medizinische Wochenschrift*, states that countless attempts have been made to free diphtheria carriers of the bacilli. As a rule, all such attempts fail. The methods employed vary, ranging from gargles of the most diverse kinds, and sprays, to roentgen treatment and even to tonsillectomy. And if one does finally conclude that a sterilization has been brought about, not infrequently the bacilli soon reappear. In view of these facts, it may be just as well to abandon all drastic methods. Simple gargles and, when the bacilli are in the nose, open-air treatment should be used. Many bacillus carriers are harmless, but unfortunately there is no reliable method by which the degree of virulence in man can be tested. Such a test would enable the physician to distinguish between dangerous and harmless carriers. In addition, it is probable that the degree of virulence or infectiousness is not constant. A carrier who has been well for months sometimes may suddenly be taken ill. The isolation of a carrier should not extend over too long a period, as it may impair the development and interfere with the education of the child in question.

### Death of Prof. Carl Spiro

The death of Prof. Carl Spiro, formerly professor of physiologic chemistry at the University of Strasbourg, at the age of 65, is announced. Spiro was a native of Berlin. Near the close of the eighties, he was called to Strasbourg as assistant to the pharmacologist Schmiedeberg, and later to Hofmeister. He retained his professorship up to the time of the dissolution of the German university in 1918, and in 1921 he accepted the chair of physiologic chemistry in Basel. Along with Hofmeister, he was the first to apply physical chemistry to the field of biology and to introduce the colloidochemical mode of thinking into the science of physiology. Spiro was working on a large handbook of colloidochemical medicine when he died. Beyond the limits of his generally recognized scientific performances, Spiro revealed his scholarly nature by aiding at great personal sacrifice his younger colleagues. He shared without stint the treasures gathered by his long experience and studies, and thus advanced the cause of science, while he continued to occupy an obscure position in the background.

## BUDAPEST

*(From Our Regular Correspondent)*

April 4, 1932.

### Symposium on Congenital Syphilis

The Royal Medical Society held a debate, January 15, on the present state of our knowledge pertaining to congenital syphilis. Dr. E. Tüdös exhibited a case of syphilis in the third generation. He said, on the basis of cases reported in the literature, that there is no doubt that congenital syphilis may be conveyed to the fetus. The history of the case exhibited by the speaker was as follows: The grandfather acquired syphilis while unmarried. In his marriage, he infected the grandmother. From this marriage, after two abortions, one boy and one girl, both with classic signs of congenital syphilis, were born. The third living prematurely born girl was free from apparent contamination at birth. When 20 years old she married, as an intact virgin. Her husband was perfectly healthy, with a negative Wassermann reaction. In the child born from this marriage, syphilitic osteochondritis of both elbows developed. The spleen was large. The baby had shining soles and enlarged glands at the elbows. The Wassermann reaction was strongly positive. The mother had general adenopathy and she was of a thin, gracile figure; her Wassermann reaction was strongly positive and her teeth were irregular with hutchinsonian changes on the upper central incisors. In this case the assumption of the transference of syphilis to the third generation by the placental route can be regarded as proved.

Prof. J. Guszmann said that, when a daughter is married, syphilitic parents inquire whether syphilis is continued in the offspring; that is to say, in the third generation. In general, it can be stated that the chance is small, as even in absence of treatment the infectivity of the disease disappears in the course of years; therefore, by the time the individual suffering from congenital syphilis reaches the age of 18-20 years, the danger of infection may be regarded as nil. Moreover, the negative possibility of infection is 100 per cent certain if the woman with congenital syphilis is subjected to antisyphilitic treatment during pregnancy. Although the transference is uncommon, it may still occur, as was proved by the family history exhibited by Dr. Tüdös. He had a similar case. The grandmother, now 70 years of age, suffered from acquired syphilis. During her married life she was pregnant, by two husbands, thirteen times. When 48 years of age she presented gummas. At present her Wassermann and Kahn reactions were 4 plus. A daughter of the former suffered from congenital syphilis. Another of her children, the eighth one, when 7 years of age, had his tibia swollen and ulcerated, the process lasting for six years. A 8 years of age the child had a parenchymatous keratitis. Meanwhile gummas occurred in other situations. At present the eburnation of the tibia and its sheathlike curvature, dystrophic teeth and macular cornea can be seen. The Wassermann, Kahn and luetin reactions were 4 plus. The grandchild, the son of the former, 19 years of age, suffers from congenital syphilis. The imbecile boy went to grammar school for three years. In his first two years he had fits. Hearing in his right ear is badly impaired, his speech is muffled and indistinct, and his right eye is cataractous. The palate is strongly arched; he has an asthenic constitution, an idiotic facial expression and microcephalia. The Wassermann, Kahn and luetin reactions are 4 plus.

Professor Sarbó spoke on syphilitic constitution with special regard to familial congenital syphilis. He examined forty-six families, which he divides into three classes: syphilitic parents without tabes or dementia paralytica, and their descendants; tabetic parents; parents with dementia paralytica, and their offspring. In all these classes one can find among the descendants all the manifestations of syphilis; from this he concludes that the individual spirochetes do not evoke different disorders of the nervous system. In other words, the assumption of the existence of neurotropic spirochetes is false. The second problem in conjunction with this topic is: Is it true that in syphilitic marriage the later born children are free from syphilis? He made a thorough investigation and found that this rule is erroneous, as proved by his own cases. Professor Sarbó discussed the question: Is there any and if so what is the difference among the descendants of syphilitic parents as to the possibility of the syphilitic infection? He found, in contrast with data heretofore accepted, that most miscarriages occur among the offspring of parents with dementia paralytica and the fewest miscarriages occur among the descendants of syphilitic parents; on the other hand, in the latter group the number of dead and debilitated fetuses is considerably greater, and the number of healthy children is much greater among the children of parents with dementia paralytica. Heretofore this fact has been explained as due to the attenuation of the virulence of the spirochetes. In opposition to this contention, Professor Sarbó refers to his original conception, on which he published a book some years ago, that patients with congenital syphilis, like those with acquired syphilis, become infected by the blood and lymphatic systems. Cases of juvenile tabes and dementia paralytica are derived from the latter.

As regards the mode of infection, he propounds a new theory. According to him there are individuals whose lymph glands and lymphatic system are so constructed that they prevent the spirochetes in them from getting into the blood system; in such individuals the organism does not get infected through the blood stream and on this account skin manifestations do not appear. This is the reason why they are missing in such cases of congenital syphilis in which tabes and dementia paralytica make their appearance. He supports his assumptions with experimental data and with facts from human pathology. The numerical conditions of the placenta have to be reckoned with. The strikingly great number of healthy descendants of marriages among those with dementia paralytica he ascribes to the fact that in these cases the spirochetes are encased in the lymph glands and therefore the infecting capacity of such patients is considerably less than in those infected through the blood. The prophylactic antisyphilitic treatment of mothers proved to be efficacious in experiences after the war.

Dr. E. Tüdös remarked that the results of Wassermann and other tests give no decisive answer to the question Is congenital syphilis curable? In cases of congenital syphilis, negative Wassermann reactions and freedom from symptoms mean a cure only in a clinical sense. The earlier the treatment is begun, the more probable is complete cure and the elimination of possible late syphilis of the central nervous system.

K. Burger mentioned that many obstetric textbooks state that pregnant women who have had syphilis a long time before need not be subjected to antisyphilitic treatment. This is wrong, he said. Today pregnant women who give a negative Wassermann reaction are treated if, in the history, traces of syphilis appear. The importance of the protection of gravid women is accentuated by every obstetric institute. In many a family latent syphilis is detected by the serologic test made along with the obstetric examination. Antisyphilitic treatment during gravidity is likely to be followed by the delivery of a healthy fetus in from 80 to 90 per cent of the cases.

### Interpretation of Electrocardiograms Taken After Death

Prof. Arthur Hasenfeld exhibited at a recent meeting of the Interhospital Association a series of electrocardiograms proving that electrical phenomena in the heart do not cease completely until thirty-five minutes after the setting in of clinical death. Martini and Schell, who made electrocardiographic examinations, observed electrical phenomena only for nine minutes and thirty-eight seconds after the onset of death. Also the animal experiments of Henrije prove that the electrical phenomena continue after the onset of death. Hasenfeld even succeeded in resuscitating such hearts. His extraordinary observations were made on a woman, aged 62, in his clinic, suffering from severe myocardial degeneration. She died just prior to the electrocardiographic examination. After ineffectual resuscitating experiments lasting for ten minutes, electrocardiographic tests were made at the tenth, twentieth, twenty-sixth, thirty-fifth and forty-fifth minute. In the electrocardiograms, even on the one taken at the forty-fifth minute, the proofs of distorted electrical phenomena were clearly seen. They did not completely cease until forty-five minutes after the onset of death. From his cases Hasenfeld draws the following conclusions: 1. Electrical phenomena may survive death by thirty-five minutes. 2. The possibility of hidden life is undeniable. 3. The resuscitation of the heart is possible; in acute cases (narcosis, intoxication, suffocation) efforts at resuscitation have to be performed energetically for at least half an hour. 4. The contraction of the heart is not the only source of electrical phenomena.

## TURKEY

*(From Our Regular Correspondent)*

Ankara, April 23, 1932.

### Law Curbs Press on Crime

At the meeting of the mental hygiene society in Istanbul, Prof. Dr. Fahreddin Kerim, the president, made reports on his observations in connection with examinations of feebleminded children made at various outpatient departments; on a project of prohibiting marriage for the mentally afflicted, and the pro and con of their sterilization; on the value of intelligence tests, and on steps the society has undertaken with regard to the establishment of juvenile courts.

According to statistics, in Istanbul in 1928 there were 231 suicides, 116 among males and 115 among females; in 1929 there were 172 suicides, 101 among males and 71 among females; in 1930 there were 86 suicides, 49 among males and 37 among females. All investigation into the causes of these suicides revealed that by far the largest number could be ascribed to extreme poverty, other causes in the order of frequency being nervous breakdown, insanity, alcoholism, love affairs and incurable diseases.

An investigation into the causes of homicides revealed that they were mostly traceable to alcoholism, poverty, unemployment, jealousy, revenge and grudge.

Though suicides have decreased in the last two years, homicides have been increasing, so provisions were made in the law of 1931 to prohibit newspapers or periodicals from publishing photographs or circumstances in connection with suicides, homicides or other crimes in such a manner as to act as an incentive; demoralizing details in connection with divorce cases, or proceedings pertaining to legal medicine if sexual relations are involved; stories either true or fictitious tending to degrade public morals or stimulating the formation of gangs; or articles true or fictitious tending to undermine family life or suggesting that the duties of motherhood are burdensome or otherwise to make motherhood undesirable. From one to two years in prison besides a fine ranging from 200 to 400 Turkish pounds awaits persons violating the respective provisions of the press law; from one week to one year in prison besides a fine of from 25 to 200 Turkish pounds is the punishment for publication of indecent pictures or undesirable pictures in connection with suicides, homicides or other crime.

The mental hygiene society stresses the need of establishing juvenile courts as a means of decreasing crime. As the result of a questionnaire, information was obtained concerning 201 prisons. In December, 1930, the juvenile inmates in 80 prisons numbered 732; in 1931 the average number of juvenile delinquents traceable was 1,310. In only 21 of these 80 prisons are the inmates taught a trade; 26 indicated that they had wards for juveniles and 4 said that juveniles were kept away from adult inmates by the use of special rooms assigned to juveniles only. Five of these eighty prisons have their own physicians; in seventy-five the health officer is called on as the need arises; in five prisons, physical examinations are made at certain intervals, in one once every fortnight, in one every three days, in one every two days, and, in the Istanbul prisons, physical examinations are made every day. The charge of manslaughter was faced by 310 juveniles between the ages of 11 and 20; 200 were involved in robbery and theft, 39 in kidnaping of young women and 27 faced charges of stabbing. In 393 prisons there were 24,000 inmates in 1930, of whom 732 were between the ages of 11 and 20; of these, 231 had both father and mother, 279 had no father, 68 had no mother, and 154 had no father and no mother; 372 juvenile delinquents were born in rural communities and 309 in urban communities; 470 of these juveniles had no schooling at all and 224 discontinued school at an early age; 221 smoked and 20 used alcohol and narcotics; 103 of the juveniles were married between the ages of 14 and 18.

### First Woman Pharmacist

According to the law, the number of pharmacies is limited to one pharmacy to every 10,000 of population. It is therefore becoming more difficult for pharmacists to own a pharmacy and for this reason applications for admission to the school of pharmacology are decreasing. During the last ten years, a number of women have taken up the study of medicine but few take up the study of pharmacology. Having completed the prescribed course at the school of pharmacology and the required practical experience at a pharmacy, Belkis Hanum has been decided on to fill a vacancy that occurred through the death of the proprietor. She thus became the first woman to own and operate a pharmacy.

## Marriages

Morris J. Radin, Hartford, Conn., to Miss Cecile Alta Horowitz of Worcester, Mass., April 10.

Roscoe Rostin White, Logan, W. Va., to Miss Jean Oplinger of Ocean City, N. J., May 21.

William Duncan, Watertown, S. D., to Miss Katherine I. Peabody of Webster, recently.

Morris L. Cable to Miss Raleigh June Gross, both of Minneapolis, in April.

Fuller Albright, Boston, to Miss Claire Birge of New York, May 20.

# Deaths

**William H. De Ford,** Des Moines, Iowa; College of Physicians and Surgeons, Baltimore, 1883; also a dentist; member of the Associated Anesthetists of the United States and Canada; past president of the Iowa State Board of Dental Examiners and the Iowa State Dental Society; formerly professor of pathology, oral hygiene and anesthetics, College of Dentistry, State University of Iowa, professor of dental surgery and anesthetics, Drake University College of Medicine and professor of pathology, anesthetics and exodontia, College of Dentistry, Drake University; aged 73; died, March 22.

**Elmer Hendricks Funk** ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1908; Sutherland M. Prevost professor of therapeutics, materia medica and diagnosis at his alma mater; member of the Association of American Physicians and the American Climatological and Clinical Association; fellow of the American College of Physicians; past president of the Pennsylvania Tuberculosis Association; on the attending medical staff of the Jefferson Medical College Hospital; aged 45; died, May 13, of angina pectoris.

**Roy Bishop Canfield** ⊕ Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1899; professor of otolaryngology at his alma mater; member of the American Laryngological Association, American Laryngological, Rhinological and Otological Society and the American Otological Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the University and St. Joseph's Mercy hospitals; aged 57; was killed, May 12, in an automobile accident.

**William Webster Root** ⊕ Slaterville, N. Y.; Rush Medical College, Chicago, 1904; founder in 1902, and secretary-treasurer of the Alpha Omega Alpha honorary fraternity; in charge of emergency hospitals and research bacteriologist to Parke, Davis and Company, Detroit, 1908-1911; associate founder in 1925 and secretary-treasurer of the Association of College Honor Societies; for many years on the staff of the Ithaca (N. Y.) Memorial Hospital; aged 64; died, April 23, of arteriosclerosis.

**Francis Hervey Slack** ⊕ Boston; Tufts College Medical School, Boston, 1898; formerly secretary of the city board of health; professor of bacteriology, Kansas State Agricultural College, Manhattan, 1910-1911, and for many years instructor in the biology department, Massachusetts Institute of Technology, Cambridge; formerly on the staff of the Brooks Hospital, Brookline; aged 57; died, May 5, in the Massachusetts General Hospital, of carcinoma and bronchopneumonia.

**Leland Osgood Mauldin** ⊕ Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1903; member of the American Academy of Ophthalmology and Oto-Laryngology and fellow of the American College of Surgeons; past president of the South Carolina Medical Association and the Greenville County Medical Society; on the staff of the Greenville City Hospital; aged 53; died, May 6, of heart disease, following influenza.

**Albert Montgomery Dupuy McCormick** ⊕ Medical Director, Rear Admiral, U. S. Navy, retired, Berryville, Va.; University of Maryland School of Medicine, Baltimore, 1888; entered the Navy in 1888 and retired in 1930 on attaining the age of 64 years; fellow of the American College of Surgeons; aged 66; died, April 20, in Washington, D. C., of coronary thrombosis.

**William Daniel Hohmann** ⊕ Kewanee, Ill.; Baltimore Medical College, 1890; past president of the Henry County Medical Society; formerly health officer of Kewanee; for many years on the staffs of St. Francis Hospital and the Kewanee Public Hospital; aged 64; died, May 8, of pulmonary and intestinal tuberculosis.

**Lea Wadsworth Tindolph** ⊕ Olean, N. Y.; University of Virginia Department of Medicine, Charlottesville, 1906; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staff of the Olean General Hospital; aged 59; died, April 25, of acute dilatation of the heart and lobar pneumonia.

**Thomas Wotton Bickerton** ⊕ Fanwood, N. J.; College of Physicians and Surgeons in the City of New York, 1881; member of the Medical Society of the State of New York; for twenty years medical director of the New York Life Insurance Company; aged 78; died, May 4, of heart disease.

**George Donohoe** ⊕ Cherokee, Iowa; Harvard University Medical School, Boston, 1898; member of the American Psychiatric Association; medical superintendent of the Cherokee State Hospital; aged 56; died, May 13, in Rochester, Minn., following an operation for ulcers of the stomach.

**Julius Elwood Hiatt** ⊕ Richmond, Ind.; University of Indianapolis Medical Department, 1902; past president of the Wayne-Union County Medical Society; formerly coroner of Henry County; on the staff of the Reid Memorial Hospital; aged 62; died, April 1, of cerebral hemorrhage.

**Charles William Chastain,** Plattsburg, Mo.; University of Missouri School of Medicine, Columbia, 1880; College of Physicians and Surgeons in the City of New York, 1881; for many years member of the school board; deputy state health commissioner; aged 74; died, April 19.

**Lee Preston Somers,** New Castle, N. C. (licensed, North Carolina, 1889); member of the Medical Society of the State of North Carolina; aged 67; died, April 16, in the Davis Hospital, Statesville, of carcinoma of the colon, stomach and liver and chronic interstitial nephritis.

**John R. Minehart** ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1903; professor of pharmacognosy and bacteriology and dean of the school of pharmacy, Temple University; aged 53; died, May 10, in the Temple University Hospital, of cerebral hemorrhage.

**Adolph J. Girardot,** Toledo, Ohio; Detroit College of Medicine, 1895; served during the World War; formerly on the staff of St. Vincent's Hospital; aged 61; died, April 15, in the Veterans' Administration Hospital, North Chicago, of chronic pulmonary tuberculosis.

**Frank Blair Humphreys** ⊕ Angola, Ind.; University of Michigan Medical School, Ann Arbor, 1892; served during the World War; formerly county coroner, and member of the school board of Angola; aged 66; died, May 10, of influenza and pneumonia.

**John Emory Reed,** Benton, Ill.; St. Louis College of Physicians and Surgeons, 1910; member of the Illinois State Medical Society; served during the World War; division superintendent of public health; aged 51; died, April 25, of heart disease.

**Thomas A. D. Baird** ⊕ Bay City, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1885; aged 69; on the staffs of the Bay City General Hospital and the Mercy Hospital, where he died, April 27, of lobar pneumonia.

**Franklin Edward Williams,** Vienna, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; aged 50; died, April 25, in the Oglethorpe Private Infirmary, Macon, of heart disease.

**William Blake,** Detroit; Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1873; member of the Michigan State Medical Society; formerly mayor of Lapeer, Mich.; aged 87; died, May 2, of arteriosclerosis and gangrene.

**Robert Frank Flowe,** Kannapolis, N. C.; North Carolina Medical College, Charlotte, 1913; member of the Medical Society of the State of North Carolina; aged 43; died, April 30, in the Jefferson Hospital, Philadelphia, of empyema.

**James Francis O'Leary,** Shreveport, La.; Bellevue Hospital Medical College, New York, 1873; member of the Louisiana State Medical Society; Confederate veteran; aged 85; died, April 19, of bronchopneumonia and influenza.

**George Thomas Boyd** ⊕ Los Angeles; Kansas City Medical College, 1905; served during the World War; aged 58; on the staff of the Hollywood Hospital, where he died, May 5, of an overdose of drugs, self-administered.

**Oliver H. Paxson,** Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1890; emeritus professor of therapeutics at his alma mater; served during the World War; aged 72; died, May 9, of heart disease.

**Frank Floyd Barger,** Urbana, Ohio; Miami Medical College, Cincinnati, 1903; member of the Ohio State Medical Association; served during the World War; aged 54; died, May 7, of streptococcic infection of the throat.

**Albert Lynch,** Fairbury, Neb.; University of Michigan Medical School, Ann Arbor, 1901; fellow of the American College of Surgeons; for many years mayor of Fairbury; aged 63; died, April 18, of cerebral embolism.

**Ainslee Power Ardagh,** Orillia, Ont., Canada; Trinity Medical College, Toronto, 1890; L.R.C.S., L.R.C.P., Edinburgh, and L.F.P.S., Glasgow, 1891; formerly member of the board of education; aged 63; died, March 11.

**Edward Albert Foley** ⊕ Chicago; Northwestern University Medical School, Chicago, 1896; assistant managing officer

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⊕ Indicates "Fellow" of the American Medical Association.

of the Chicago State Hospital; aged 58; died, May 17, of chronic nephritis and coronary thrombosis.

**Samuel E. Armstrong,** Rutherford, N. J.; Albany (N. Y.) Medical College, 1885; member of the Medical Society of New Jersey; aged 78; died, April 23, of cerebral hemorrhage, arteriosclerosis and chronic myocarditis.

**Addison Lee Ambrose,** Long Beach, Calif.; University of Michigan Homeopathic Medical School, Ann Arbor, 1882; member of the Nebraska State Medical Association; aged 77; died, March 4, of chronic myocarditis.

**John Alexander Rose,** San Francisco; University of Aberdeen Faculty of Medicine, Aberdeen, Scotland, 1897; aged 58; died, February 29, in the French Hospital, of lobar pneumonia and acute diffuse nephritis.

**George Brooks Swasey,** Portland, Maine; College of Physicians and Surgeons in the City of New York, 1875; member of the Maine Medical Association; aged 80; died, April 21, of cerebral hemorrhage.

**Henry Clay McKinley** ⊕ Meyersdale, Pa.; Philadelphia University of Medicine and Surgery, 1868; for thirty-eight years secretary of the Somerset County Medical Society; aged 91; died, March 29, of senility.

**Charlotte Alden Nortell,** Oak Park, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 52; died, May 13, of coronary occlusion and arteriosclerosis.

**Charles Henry Christal,** Los Angeles; L.R.C.P., Ireland, and L.R.C.S., Ireland, 1908; aged 47; was drowned, May 10, in Buenos Aires, when he stumbled as he was walking up a gang plank to board a ship.

**John Mills Lang,** Chicago; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 66; died, May 19, of chronic valvular heart disease and chronic interstitial nephritis.

**Loammi J. Smith,** Ridge Spring, S. C.; University of Maryland School of Medicine, Baltimore, 1903; served during the World War; aged 53; was found dead, April 12, of acute dilatation of the heart.

**Ardelle T. Hall,** Los Angeles; Chicago Homeopathic Medical College, 1883; aged 75; died, March 10, in the Good Samaritan Hospital, of gangrene of the foot, arteriosclerosis and diabetes mellitus.

**Radford Ola Braswell** ⊕ Fort Worth, Texas; Physio-Medical College of Indiana, Indianapolis, 1901; aged 58; died, May 5, in St. Joseph's Hospital, of coronary occlusion and diabetes mellitus.

**John Henry Martin,** New Matamoras, Ohio; College of Physicians and Surgeons, Baltimore, 1893; for many years member of the board of education; aged 71; died, April 28, of heart disease.

**Alva Thompson McKinney,** Elkton, Ky.; Physio-Medical Institute, Cincinnati, 1880; member of the Kentucky State Medical Association; aged 75; died suddenly, April 29, of angina pectoris.

**Robert Neff Keely** ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1882; formerly on the staff of the Wills Hospital; aged 71; died, May 10, of poison, self-administered.

**Clarence Mann Paine,** Atlanta, Ga.; Albany (N. Y.) Medical College, 1887; past president of the state board of medical examiners; aged 71; died, April 28, of acute intestinal obstruction.

**William Jesse Taylor,** Pipestone, Minn. (licensed, Minnesota, 1893); member of the Minnesota State Medical Association; Civil War veteran; aged 87; died, April 15, of bronchopneumonia.

**Leonard Kyle Philpot,** Columbia, S. C.; Atlanta Medical College, 1875; member of the South Carolina Medical Association; aged 78; died, April 2, of angina pectoris and diabetes mellitus.

**William Bennett Jeffries,** Citronelle, Ala.; Washington University School of Medicine, Baltimore, 1876; aged 78; died, April 15, in Fairfield, of chronic nephritis, arteriosclerosis and uremia.

**Julia Ann Bray Russell,** Brighton, Mass.; Boston University School of Medicine, 1880; aged 85; died, April 12, of arteriosclerosis, cerebral thrombosis and fracture of the right femur.

**Charles Keown** ⊕ Independence, Mo.; Hering Medical College, Chicago, 1913; aged 52; on the staff of the Independence Sanitarium, where he died, April 21, of septicemia.

**William L. Des Portes,** Columbus, Ga.; College of Physicians and Surgeons in the City of New York, 1894; aged 62; died, March 26, of an overdose of morphine, self-administered.

**Harry William Wirklich,** Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1918; aged 38; died, April 23, of peritonitis and appendicitis.

**Orville Wilbur Lane,** Great Barrington, Mass.; Hahnemann Medical College and Hospital of Philadelphia, 1887; aged 76; died suddenly, April 23, of embolism.

**Thomas R. Howell,** Madisonville, Ky.; Hospital College of Medicine, Louisville, 1904; for seven years county coroner; aged 59; died, April 25, of chronic nephritis.

**Robert Wallace Cooke,** Van Nuys, Calif.; University of Cincinnati College of Medicine, 1924; aged 35; died, March 26, of chronic ulcerative colitis and septicemia.

**Catherine Walker,** Jamestown, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1885; aged 90; died, March 25, of chronic endocarditis and myocarditis.

**James William Sifton,** Emmett, Idaho; University of Pennsylvania School of Medicine, Philadelphia, 1894; aged 78; died, February 9, of bronchopneumonia.

**Howard Bayard Erdman** ⊕ Macungie, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1906; aged 53; died, May 12, of cerebral hemorrhage.

**Herman T. Schneider,** Conway, Mo.; Hahnemann Medical College and Hospital, Chicago, 1878; aged 87; died, February 28, of myocarditis and influenza.

**Orient C. Higgins,** Porterville, Calif.; California Medical College, Oakland, 1882; aged 76; died, March 17, of ruptured kidney as the result of an accident.

**Theodore Sprissler** ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1887; aged 71; died, May 3, of arteriosclerosis.

**Gelon B. Smithson,** Wellborn, Fla.; University of Louisville (Ky.) School of Medicine, 1894; aged 64; died, April 11, of myocarditis and influenza.

**Argo Melbourne Foster,** Racine, Wis.; Michigan College of Medicine and Surgery, Detroit, 1892; aged 66; died, May 3, of coronary sclerosis.

**William Volney McCanless,** Danbury, N. C.; College of Physicians and Surgeons, Baltimore, 1888; aged 79; died, April 24, of angina pectoris.

**Richard Kersey Horn,** Brantley, Ala.; Georgia Eclectic Medical College, Atlanta, 1881; aged 75; died, March 29, of cirrhosis of the liver.

**Clyde Briggs Laughlin,** San Francisco; University of California Medical Department, 1900; aged 61; died, March 23, of Hodgkin's disease.

**Charles Wesley Williams,** Escondido, Calif.; Missouri Medical College, St. Louis, 1881; aged 75; died, February 10, of multiple myeloma.

**Walter Farnham,** Palouse, Wash.; University of Oregon Medical School, Portland, 1892; aged 63; died, February 24, of septic sore throat.

**Robert Fulton Winchester,** Santa Barbara, Calif.; Medical School of Maine, Portland, 1867; aged 86; died, March 31, of arteriosclerosis.

**Claude L. Shafer** ⊕ Alvin, Texas; University Medical College of Kansas City, Mo., 1902; aged 60; died, April 19, of heart disease.

**Alexander Hector Beaton,** Orillia, Ont., Canada; Victoria University Medical Department, Coburg, 1864; aged 93; died, March 4.

**Lazare Wischnewetzky,** New York; University of Wurzburg, Germany, 1886; aged 73; died, March 8, of heart disease and bronchitis.

**Patrick Joseph Taugher,** St. Nazianz, Wis.; Chicago Medical College, 1886; aged 70; died, April 12, of cerebral hemorrhage.

**William J. Burleigh,** St. Louis; Missouri Medical College, St. Louis, 1883; aged 76; died, April 25, of cerebral hemorrhage.

**Edward Paul Fick** ⊕ Seattle; Rush Medical College, Chicago, 1903; aged 51; died, May 3, in Roseburg, Ore., of heart disease.

**James B. Steedman,** Louisville, Ky.; Louisville Medical College, 1884; aged 69; died, March 30, of cerebral hemorrhage.

**Thomas Robertson** ⊕ Steeleville, Ill.; St. Louis Medical College, 1887; aged 70; died, April 22, of influenza.

**William M. Hoover,** Grove City, Ohio; Columbus Medical College, 1880; aged 80; died, April 28.

# *Correspondence*

## CARRIERS OF HEMOPHILIA

*To the Editor:*—I read with interest the inquiry as to whether or not female hemophilia carriers could be detected by any method, and your reply thereto, which appeared in The Journal, May 7, page 1679. It has always been my opinion that none of the tests proposed are of any value, whereas in your reply you take the stand that although the tests are not absolutely reliable, when positive they would constitute strong evidence that the woman in question was a carrier.

May I quote the following, which appeared in *Eugenical News,* December, 1931, page 214:

> There seems to be considerable popular misapprehension concerning the possibility of determining a female carrier of hemophilia by some blood or chemical test, whereas as far as medical science now knows, the only method differentiating between a woman, from an affected family who is a carrier of hemophilia, and one from the same family who is not a carrier, is to let each produce sons or grandsons and to determine the proportion of hemophiliacs among them. . . . Dr. Carroll L. Birch states on November 23 in a letter to *Eugenical News:* "In recent years two proposed tests have appeared in the literature; one concerned the type of the blood, and the other the reaction of the blood to cobra venom. Neither of these tests have proven successful."

With special reference to the relationship between blood groups and hemophilia, I said in a paper (*Genetics,* May, 1932, p. 336):

> Kubanyi has determined the blood groups of members of hemophiliac families, in order to determine the presence or absence of linkage. Kubanyi's work, it would seem, is unnecessary, for hemophilia is a sex-linked trait, whereas blood groups are not, so that linkage between these two characters is hardly possible.

As a matter of fact, a careful analysis of Kubanyi's data will show no evidence of linkage between blood groups and hemophilia. Perhaps some ambitious worker will now try to determine whether or not the recently discovered agglutinogens M and N of Landsteiner and Levine are linked to hemophilia. Such work also would be futile, however, since the agglutinogens M and N are not sex linked.

Alexander S. Wiener, M.D., Brooklyn.

## "ALLERGIC INERTIA AND AVITAMINOSIS"

*To the Editor:*—I am much interested in the editorial in The Journal, April 23, entitled "Allergic Inertia Due to Avitaminosis." The editorial quotes the work of Hurwitz and Wessels purporting to show that there is a lack of parallelism between the reactivity of the bronchial smooth musculature and the uterine musculature. The authors are quoted as indicating that, in a controlled series of experiments, they found this disparity due probably to a vitamin deficiency.

In a study that I made in association with H. L. Gruehl, reported in the *Proceedings of the Society for Experimental Biology and Medicine* (**26**:197, 1928) and published in extenso in the *Journal of Laboratory and Clinical Medicine* (**16**:1069 [Aug.] 1931), we compared the anaphylactic response of a sensitized animal to various routes of shock demonstration, and in comparing the Schultz-Dale method with the intravenous we showed in a series of twenty-three animals that in eleven animals there was a similar response of the uterine strip and the bronchial musculature, in one animal there was a doubtful reaction of the uterine muscle with a positive bronchial constriction, in six animals there was negative uterine constriction and positive bronchial constriction, and in five animals both were negative.

Our series of animals is similar to that quoted by Hurwitz and Wessels, and it will be noted that our animals were all fed alike. They all received green leafy vegetables which are sent regularly from a neighborhood vegetable market. We believe, therefore, that the vitamin content of their diet was in no way different. Our conclusions in this study were merely to the effect that smooth muscles are not all sensitized to an equal degree, and that the muscles in the guinea-pig that respond most regularly to anaphylactic sensitization are the smooth muscles of the bronchioles, and further that the most regular results of anaphylactic shock in the guinea-pig are brought about by the intravenous route.

In another experiment (*Proc. Soc. Exper. Biol. & Med.* **26**:127, 1928) we sensitized virgin guinea-pigs by inhalation and showed that the inhaled substances sensitized the bronchial musculature, and in certain instances also sensitized the uterine musculature.

In view of the work quoted, we can merely indicate that at times the musculature of the uterus does not become sensitized. Again we cannot attribute this to avitaminosis. It appears to me that in the domain of anaphylaxis and allergy there are many conclusions drawn that are not warranted, and that there is not enough understanding of the irregularities that exist in sensitization. There must be many factors that play a rôle. Possibly vitamin deficiency does, but I do not believe that the paper of Hurwitz and Wessels has demonstrated this.

Bret Ratner, M.D., New York.

# *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## ALLERGIC RHINITIS

*To the Editor:*—For the past five years my wife has had daily attacks of what I first thought was a hyperesthetic rhinitis. The attack usually was ushered in by a complete occlusion of both nares and a sensation as though the pressure within was about to burst the nose. Then profuse rhinorrhea would take place, as well as a period of sneezing. One nose and throat man, who said that a small spur on the septum was responsible, did a submucous resection, but the condition was aggravated. Then one inferior turbinate was cauterized, with slight relief. Allergic tests were negative. The frontal sinuses are normal. Seven teeth presumably causing a focal infection were extracted. She went to Texas because of a more equable climate; slight relief was obtained but still the attacks persisted. At present she has an attack at about 4 or 5 a. m. and is awakened because of the inability to breathe through the nostrils. After assuming the upright posture, she obtains some relief and soon starts to sneeze and has a profuse discharge of a watery secretion. She is 39 years of age and was always in excellent health until this trouble started. Urinalysis, blood examination and basal metabolism determination show nothing. Will you please give me any information as to the etiology and treatment of such a case? M.D., Illinois.

Answer.—The symptoms—occlusion of the nares, feeling of pressure, rhinorrhea and sneezing—are characteristic of allergic rhinitis, also called hyperesthetic or vasomotor rhinitis, or perennial hay fever. The fact that two nasal surgical procedures were carried out with no relief confirms the diagnosis of an allergic condition; i. e., hypersensitivity to something probably containing protein. The rest is detective work. Skin tests are of the greatest help and should be done thoroughly. It is not sufficient to do a dozen or twenty. Such testing is incomplete and only casts reflection on the allergic management of these cases. The patient should be tested for all sorts of epidermals, for every food she eats, for pollens, and for miscellaneous substances like orris root and pyrethrum (insecticides). Scratch tests are probably best and, if negative, should be followed up by intradermal tests. By this thorough examination there is much more chance of locating the offending material than by incomplete and haphazard testing. After these tests have been carried out and if negative again, certain other management is indicated. The history of the time of the attacks strongly suggests that the irritating substance is in the bedroom. Therefore rugs should be removed, and the draperies or curtains should be thoroughly cleaned, along with the rest of the room; a good vacuum cleaner is best here. The pillows and mattress should be encased in light rubber sheeting and sewed with triple stitching so that there is no possibility of particles of feathers or cotton or horsehair escaping. If all these measures fail to bring relief, attention must be directed elsewhere. All animals should be removed from the house; face powder should be free from orris root or not used at all; talcum powder and bath powders must be avoided. If all these procedures are likewise unsuccessful, attention to the diet may help. Autogenous vaccine from the nasal secretion may be of aid.

### ERYTHEMA NODOSUM

*To the Editor:*—A white woman, aged 40, had an acute membranous sore throat and tonsillitis with typical symptoms six weeks ago. This cleared up quite readily with a 10 per cent solution of mild silver protein and acetylsalicylic acid. Seven days later an inflamed, indurated, tender area appeared just distal and somewhat lateral to the left patella, free of the tibia. This area was slightly raised, quite hot, with color disappearing on pressure, and there was no fluctuation. Within the next week there were many more similar areas on the left leg as well as on the right, another below the left elbow posterior aspect and an area of conjunctivitis on the nasal side of the right eye. There never was evidence of pathologic change in any internal organ. The patient never looked or felt severely ill, felt weak and had considerable pain in walking. These lesions have steadily improved in the past four weeks, but when the patient stands they become a bluish hue, which worries her, together with her extreme weakness. To my mind there must have been a bacteremia present with multiple areas where they became lodged in the blood stream. Is this diagnosis correct and what would be the correct manner of treatment? The temperature since the development of the lesions has ranged from normal to 100 F. Please omit name.

M.D., Nebraska.

Answer.—The condition described, including onset with a history of sore throat, followed by inflamed, tender lesions, chiefly on the lower limbs, corresponds to that of erythema nodosum. The course is usually mild and the fever is slight. Several weeks is often required for the disappearance of the lesions, and there may be recurrences. The condition frequently begins with sore throat or pharyngitis, which, with the fever and other symptoms, suggests an acute infectious disease. There are usually no sequelae. Movement of the extremities may be painful on account of the local tender nodes.

In some years there occur a number of cases in one locality, while in other years only an occasional isolated case is encountered.

The appearance of the lesions strongly suggests an embolic lodgment of organisms, occurring during the course of a bacteremia. In one series of cases routine blood cultures yielded in two instances colonies of small nonhemolytic streptococci, while in several other cases blood cultures showed no growth.

In treatment during the acute illness, sodium salicylate or some other salicyl compound gives relief from pain. Rest in bed, or at least relative rest, is desirable.

Weakness, lassitude and anemia are noted following the disease, as in acute rheumatism, and call for iron therapy and other supportive treatment.

### KAHN TEST AND WASSERMANN

*To the Editor:*—Will you kindly advise whether the acetone insoluble test is more delicate and more definite than is the Kahn test in determining a Wassermann reaction?

J. H. Turner, M.D., Huntington Park, Calif.

Answer.—It is assumed that by "the acetone insoluble test" is meant the Wassermann test in which is employed an acetone insoluble antigen. This antigen was perfected by Noguchi, who believed that the acetone insoluble fraction of heart tissue lipoids was superior as a Wassermann antigen to the acetone soluble fraction. The use of acetone insoluble antigen in the Wassermann test was in considerable vogue two decades ago. Its use has gradually been abandoned, owing largely to its insufficient sensitivity. The Kahn test is generally considered more sensitive than the Wassermann test with an acetone insoluble antigen. Caffey and Kreidel (*Am. J. Dis. Child.* 38:1206 [Dec.] 1929), who made a comparative study of the two tests, reported the Kahn to be more sensitive and more specific.

### PREGNANCY AFTER CHILDBIRTH WITHOUT INTERVENING MENSTRUATION

*To the Editor:*—Can pregnancy occur following a prior childbirth without an intervening menstruation? The question is asked in the interest of a multipara, aged 32, whose youngest baby is now 7 months old. She nursed the baby for three months and has not menstruated since the beginning of pregnancy sixteen months ago. She now presents the classic symptoms of a three months' gestation. Can a virgin become pregnant prior to the first menstruation?

Willis P. Baker, M.D., Santa Ana, Calif.

Answer.—Pregnancy can and does often occur after childbirth without an intervening menstruation. There is a common belief among the public that a woman who nurses a baby cannot conceive as long as lactation continues and for this reason many women do not use contraceptives during this period. This belief is erroneous, as is the notion that a woman does not menstruate while she is nursing a baby. Women may become pregnant even within a few weeks after delivery. In one case no menstruation occurred for a period of eight years because of constantly repeated pregnancies. A virgin can become pregnant before the onset of the first menstruation. Likewise gestation is possible after the menopause has occurred. From the foregoing it may be seen that even though menstruation may be absent during such physiologic periods as childhood, lactation and the change of life, ovulation may nevertheless occur and conception is possible. Even during pregnancy in some instances ovulation may occur and this is the basis for the belief that superfetation may take place.

### SEX DESIRE AND MENOPAUSE—HIGH VOLTAGE ROENTGEN THERAPY IN CANCER

*To the Editor:*—In regard to the artificial induction of the menopause in women by means of the x-rays, I should like to ask whether sexual frigidity is a common consequence. What percentage of frigidity accompanies or follows the normal menopause? In cancer of the uterus does irradiation with 200,000 volts or higher possess definite, proved curative results that cannot as well be obtained by the 140,000 to 160,000 volt technic? Please omit name.

M.D., California.

Answer.—Gradual loss of sexual desire may be a sequence of the artificial menopause. Maintenance of sex desire appears to be slightly more common than after the normal menopause. As a rule, lack of sex desire accompanies the normal menopause, although a considerable number of women continue to be sexually active for some years. A 200,000 volt machine furnishes the minimum amount of energy for satisfactory high voltage roentgen therapy. A still stronger voltage is preferable.

### MENSTRUAL CYCLE

*To the Editor:*—In Queries and Minor Notes, March 19, appeared an answer to a question on "Physiologic Sterility and Conceptive Capacity," in which mention was made of experimental work being done along this line by Knaus and a combination of disks worked out by him. Where may one obtain these conclusions arrived at by Knaus, as well as the disks? In mentioning the "menstrual cycle," where does one begin? In other words, which is the first day of the cycle? Please omit name and city.

M.D., Iowa.

Answer.—The articles by Knaus are written in German, but abstracts of these papers may be found in the 1929 Year Book of Obstetrics and Gynecology by J. B. De Lee and J. P. Greenhill, pages 21-22, and in the 1931 Year Book, pages 363-364. In the latter article are comments by Greenhill on the matter of physiologic periods of sterility in women. The most recent original articles are:

Ueber den Zeitpunkt der Konzeptionsfähigkeit des Weibes, *Arch. f. Gynäk.* **146:** 343, 1931.
Sterilizierung und Konzeptionsverhütung, *Zentralbl. f. Gynäk.* **55:** 2854, 1931.

The disks may be obtained by writing to Konzip-Hauptvertrieb, Stübing bei Graz, Austria.

By the beginning of the menstrual cycle, the day the menstrual bleeding begins is meant. This is the first day of the cycle.

### GOITROGENIC PROPERTIES OF CABBAGE

*To the Editor:*—1. Why do experimental animals fed on cabbage develop goiter? 2. Is it the result only of an exclusive cabbage diet? 3. Is the goiter in question simple, colloid or hyperplastic? 4. What bearing on the diet of man has a liberal amount of raw or cooked cabbage?

L. W. Meckstroth, M.D., Chicago.

Answer.—1. Because of the presence in cabbage of a goitrogenic substance. This goitrogenic property is, in general, inversely proportional to its ability to absorb iodine (Marine and others).

2. No. Cracker dust (Hunt), fat to pigeons (McCarrison), liver to dog, fowl or trout (Marine and Lenhart) will also produce goiter. Brussel sprouts and cauliflower have about the same potency as cabbage. The goitrogenic property is greatly increased by steaming.

3. Hyperplastic.

4. Cooking or steaming the cabbage greatly increases its potency in producing hyperplasia. Hashed fresh cabbage has little property of producing thyroid hyperplasia. In most of this work on rabbits, cabbage was the principal food of these animals. It seems doubtful whether enough cooked cabbage would be ingested daily by a given individual over a long enough period to produce a hyperplastic thyroid gland.

The following references are pertinent:

Marine, David; Baumann, E. J., and Cipra, A.: Studies on Simple Goiter Produced by Cabbage and Other Vegetables, *Proc. Soc. Exper. Biol. & Med.* **26:** 822 (June) 1929.
Marine, David; Baumann, E. J.; Webster, B., and Cipra, A.: Effect of Drying in Air on the Goiter-Producing Substance in Cabbage, *Proc. Soc. Exper. Biol. & Med.* **27:** 1025 (June) 1930.
Webster B., and Cipra, A.: Effect of Acid and Alkaline Hydrolysis on the Goitrogenic Substance Contained in Cabbage, *Proc. Soc. Exper. Biol. & Med.* **27:** 1926 (June) 1930.

### POISONING BY ERGOAPIOL

*To the Editor:*—Will you please send me the formula of ergoapiol, manufactured by Martin H. Smith Company, New York. I would also appreciate if you send me any reports of poisoning or deaths due to the use of this drug if they have been reported in the medical literature. A patient of mine died in the hospital today and the postmortem revealed a severe toxic, fatty metamorphosis in the liver and kidneys and heart. She gives a history of having taken eighteen ergoapiol capsules within forty-eight hours in order to induce an abortion, together with self-insertion of a rubber tip into the uterus. Following this she began to bleed and passed clots, the bleeding ceasing in three days. The next day she began to vomit and had diarrheal movements. The next day she became jaundiced and was unable to urinate and in the succeeding eight days passed only 16 ounces of urine in spite of all measures to induce diuresis. During her entire illness she had a normal pulse and temperature. I believe she was chemically poisoned by the ergoapiol, although we were unable to have a toxicologic examination of the kidneys or liver. I understand that this preparation can be purchased by the public in drug stores without a doctor's prescription, and I believe that measures should be taken to prevent this in view of the toxic nature of the preparation.

J. J. Labow, M.D., Elizabeth, N. J.

Answer.—The symptoms and the tragic ending in the case reported are quite evidently due to volatile oil poisoning, such as occurs unfortunately too commonly from the use of these oils as abortifacients. The formula for Ergoapiol given by the manufacturers is:

| | |
|---|---|
| Apiol (Special) | 5 grains |
| Ergotin | 1 grain |
| Oil Savin | ½ grain |
| Aloin | ⅛ grain |

The "Apiol" in this preparation is very probably the oleoresin of parsley seed. The dose taken by the patient of either this oleoresin or of the oil of savin, and still more especially of the two combined, would be adequate to produce the gastro-enteritis, hepatitis and nephritis, which might be postulated as having been produced, on the basis of the symptoms observed.

### PARALYSIS OF VOCAL CORDS

*To the Editor*—I have a patient who developed a paralysis of the left vocal cord following an abdominal operation, a complication which seems most remote. Physostigmine, however, was given for abdominal distention, and the paralysis was peripheral in origin. Is physostigmine known to have any special action on the vocal cords? If so, does it do permanent damage? Please omit name.

M.D., Long Island.

Answer.—Physostigmine (eserine) stimulates many involuntary muscles in the body. We do not know that any effect has ever been noted on the vocal cords. The paralysis of the left vocal cord must have been due to some other coincidence or lesion. Whether the effect on the vocal cord will be permanent or not depends on the type of injury to the recurrent laryngeal nerve, and its nature cannot be determined without knowing what other factors may have been present besides the use of physostigmine.

### EDEMA OF FOOT AFTER INJURY

*To the Editor:*—Perhaps you will be able to assist me with this problem. I have a man under my care, aged 30, who was injured in November, 1931. His foot and leg were caught between two heavy iron rollers of a conveyor. The rollers were about 2 inches apart, but there was some give to them, so that they could be spread farther apart with force. A roentgenogram showed no dislocations or fractures, and none could be demonstrated clinically. There was a great amount of pain and swelling in the foot and leg immediately following the accident. The foot and lower part of the leg were placed in a circular plaster cast for three weeks, which relieved the pain. After removal of the cast there was still marked edema of the foot and leg up to the point at which the rollers were stopped. He was allowed up on crutches. Gradually the edema in the leg disappeared, but it still persists in the foot, especially just above the toes. There is moderate pain on pressure over the edematous parts, and also on pressure on the sole beneath the long arch The foot feels better when supported with a Gibney boot of adhesive tape, but there never is any severe pain, except when weight is borne on it. There is no limitation of motion in the ankle joint, and neither voluntary nor passive motion of this joint, or the joints of the toes, gives any pain. The treatment has consisted of support with adhesive tape, as that seems to make it feel the best. For three weeks the support was left off and the patient was advised to soak the foot in strong epsom salt solution, but no improvement resulted. Another roentgenogram was taken three weeks ago and no pathologic signs were found by the chief of the x-ray department. Any advice or assistance you can give to me as to diagnosis or treatment will be appreciated.

Louis LeFevre, M.D., Muskegon, Mich.

Answer.—A proper round-toe shoe with a rigid shank should be worn. In the shoe a felt or rubber pad should be inserted to support the longitudinal arch. If there is valgus deformity of the foot, the inner border of the heel should be built up three-sixteenths inch.

The foot should be massaged twice daily, any type of anodyne ointment being used.

Contrast sprays should be used, the patient sitting in the tub and spraying with warm and cool water alternately for ten minutes.

An elastic anklet may be of value, to be worn part of each day.

Exercises for the longitudinal and transverse arches should be started as soon as possible.

### INTERMENSTRUAL PAIN, OR "MITTELSCHMERZ"

*To the Editor:*—A married woman, aged 31, complains of cramps in the lower abdominal region two weeks after her menstrual period. They are severe enough for her to go to bed. She also has some pains during the menses, which come every twenty-eight days. Her mother states that she had the same trouble until after she passed the menopause period. What can account for this kind of pain and what line of treatment should be followed? Would cystic ovaries cause such symptoms? Another patient complains of severe epigastric pains periodically every six weeks. She has been to several doctors but none seemed to give her much relief. The pains stay with her from five to seven days and then disappear, leaving her entirely well. Blood, urine and genital examination prove negative. Gastric examination showed only diminished free hydrochloric acid. *Otherwise the patient is the picture of health.* What possible causes may account for it? Please omit name.

M.D., Nebraska.

Answer.—Intermenstrual cramps, occurring approximately two weeks before the flow, are usually caused by bursting of the ovary incident to extrusion of the ovum. This symptom, called "intermenstrual pain," or "mittelschmerz," often arises from only one ovary and may occur only every second month or even less frequently. It affects, particularly, rather delicate patients, although occasionally those of robust constitution and placid nerves have considerable distress. The duration of the pain may be only a few minutes, but the majority experience some discomfort for several hours. Rest in bed and a hot water bag usually suffice; codeine may be given without hesitancy.

Although the periodic attacks of epigastric pain complained of by the other patient suggest a possible relationship to the genitalia, the high location of the discomfort speaks against a genital focus. Modern gynecologists have little faith in "reflex" symptoms due to genital lesions. Lesions of the intestine occasionally produce symptoms only at the time of pelvic congestion incident to menstruation. For example, chronic appendicitis may cause no distress except at this time.

### STARCH AS ANTIDOTE IN IODINE POISONING

*To the Editor:*—In the twentieth edition of the U. S. Dispensatory on page 593, it states that "in the case of iodine poisoning the stomach must be evacuated and drinks administered, containing an amylaceous substance." Is there any difference in the administration of raw starch and boiled starch as an antidote for iodine and is it considered advisable to evacuate the stomach before giving the antidote? M.D., New Jersey.

Answer.—Boiled starch would constitute the more efficient antidote, because it combines much more actively with iodine than raw starch. Nevertheless, in an emergency, no time should be lost in administration of the antidote and the raw used if procuring of boiled starch would delay administration. For the same reason, the starch should be administered even before the passing of the stomach tube.

### SECONDARY PNEUMOCOCCUS PERITONITIS

*To the Editor:*—A child, aged 2½ years, developed pneumonia with diffuse general pneumococcus peritonitis as a complication. This was proved by inserting a needle and withdrawing and examining the fluid. Should the child be operated on or left alone? What is the prognosis either way? Kindly omit name.

M.D., New York.

Answer.—Secondary pneumococcus peritonitis as indicated in this case is reported to be slightly less fatal than the primary form. In a review of fifty-six cases in children, McCartney and Fraser (*Brit. J. Surg.* 9:479 [April] 1921) concluded that early operation was indicated in all cases of pneumococcus peritonitis. This should be done under gas and oxygen, or with local anesthesia. These authors found that the mortality in their series of cases before early operation was instituted averaged 65 per cent; after earlier recognition with immediate operation, the mortality rate dropped to 53 per cent. Later they added blood transfusion, which they insisted must be done at the onset of the period of septicemia to give the best results. Their mortality rate then dropped to 42 per cent.

Many patients die within one or more days regardless of the treatment. Any localized abscess should be drained at that point. Since many of the cases, especially the primary ones in the female, are believed to arise from the pneumococcus gaining entrance through the fallopian tubes, the pelvis is the chief site of the peritonitis and the abdomen should be drained as low as possible. Vaginal drainage has proved satisfactory in the diffuse primary type of peritonitis in children.

In addition to early operation and blood transfusion when indicated, fluids should be given through the skin, so that the gastro-intestinal tract is permitted absolute rest.

### DETERMINATION OF HEMOGLOBIN

*To the Editor:*—Can you tell me approximately what the relative accuracy is between the determination made on a Bausch and Lomb "Newcomer hemoglobinometer" and the "hemoglobin outfit" manufactured by the LaMotte Chemical Products Company of Baltimore? As I wish to use this apparatus for clinical work, a small percentage of error is of no great consequence, but I would want a method that is more accurate than the ones commonly used in office practice.

George H. Clark, M.D., Oskaloosa, Iowa.

Answer.—The actual quantitative determination of hemoglobin has been a subject of much discussion during recent years. Articles have appeared from time to time comparing the methods in current use and calling attention to sources of error. These have been followed by modifications that have increased the accuracy of the determinination. This has been particularly true of the Sahli and the Newcomer instruments. The LaMotte hemoglobin outfit is the most recent and embodies a modification of the original Wong method, which determined hemoglobin through its iron content. The results are reported in the number of grams of hemoglobin per hundred cubic centimeters of blood. The latest model of the Bausch and Lomb Newcomer hemoglobinometer also uses the quantitative reading instead of employing a percentage based on an arbitrary standard of what constitutes 100 per cent. In view of our lack of modern data of what 100 per cent represents, it is advisable to determine hemoglobin in grams per hundred cubic centimeters directly. While no recent studies are available on the comparison of the relative accuracy of the latest instruments, there is reason to believe that the ones mentioned are satisfactory for most purposes, as they have been carefully checked against more accurate methods.

### POSSIBLE OPTIC ATROPHY FROM CIGARETS IMPREGNATED WITH TOILET WATER

*To the Editor:*—I have a patient with partial optic atrophy who for the past six or eight months has smoked cigarets impregnated with toilet water. He estimates that during this time he has used 5 or 6 ounces of the toilet water. He first noticed failing vision about two months after he smoked these cigarets. He has been a moderate drinker for years but so far as he knows the whisky he has drunk has *not been* adulterated. The toilet water probably contains wood alcohol. Is it possible that smoking cigarets containing it could produce optic atrophy? I should think that when lighted the alcohol would evaporate, but possibly a poisonous residue might be left. Any information you can give me on the subject will be appreciated.

Grace Tankersley, M.D., Pine Bluff, Ark.

Answer.—It is possible that smoking cigarets that have been saturated with toilet water could cause optic atrophy. As suggested, there is undoubtedly methyl alcohol in the toilet water and liquid or, rather, unevaporated methyl alcohol may remain in the tobacco, even after considerable drying has occurred. When the cigaret is ignited, the fumes of the alcohol (which has a low boiling point of 66 C.) will be carried in with the tobacco smoke and absorbed from the mucous membranes. As only a small amount would be inhaled from each cigaret, not enough poisons would be absorbed to cause the symptoms of an acute methyl alcohol poisoning; but there would be sufficient to produce the almost specific damage to the optic nerve fibers, provided the individual was of the susceptible type. The susceptibility to damage from the small amounts of methyl alcohol was undoubtedly increased by the tobacco fumes as well as the ethyl alcohol and fusel oils of the accessory whisky.

### ANASTOMOSIS OF FALLOPIAN TUBES

*To the Editor:*—Can anastomosis of tubes resected and tied seven years ago be reestablished by operation? The patient is 28, had had no pelvic inflammatory disease, and had five pregnancies prior to the sterilization operation.

Willis P. Baker, M.D., Santa Ana, Calif.

Answer.—The outlook for relief of sterility in patients with tubal obstruction limited to the fimbriated extremity is excellent. Tubal resection, transplantation of the resected tubes into the uterus, or laying open the obstructed distal portions of the tubes usually results in failure. Theoretically, it should be possible to anastomose tubes which have been resected, but experience indicates that the prognosis is unfavorable in cases such as the one in question.

# Council on Medical Education and Hospitals

## COMING EXAMINATIONS

Alabama: Montgomery, July 11. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

Arizona: Phoenix, July 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave., Phoenix.

California: *Reciprocity.* Los Angeles and San Francisco, June 15. *Regular.* San Francisco, July 11-14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

Colorado: Denver, July 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

Connecticut: *Basic Science.* New Haven, June 11. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, July 12-13. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Delaware: Wilmington, June 14-16. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

District of Columbia: *Basic Science.* Washington, June 29-30. *Regular.* Washington, July 11-12. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

Florida: Tampa, June 13-14. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

Georgia: Atlanta, June 15-16. Joint Sec., Mr. R. C. Coleman, 111 State Capitol Bldg., Atlanta.

Hawaii: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Room 48, Young Bldg., Honolulu.

Illinois: Chicago, June 28-July 1. Supt., Mr. Paul B. Johnson, Springfield.

Indiana: Indianapolis, June 21-23. Sec., Dr. William R. Davidson, 413 State House, Indianapolis.

Kansas: Kansas City, June 21-22. Sec., Dr. C. H. Ewing, Larned.

Louisiana: New Orleans, June 9-11. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

Maine: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

Maryland: *Homeopathic.* Baltimore, June 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore. *Regular.* Baltimore, June 21-24. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

Massachusetts: Boston, July 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

Minnesota: Minneapolis, June 21-23. Sec., Dr. E J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

Missouri: St. Louis, June 14-16. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City.

National Board of Medical Examiners: Examinations in Parts I and II will be held at all centers where there are five or more candidates, but *not* at Durham, Minneapolis, nor New Haven, June 27-29. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

Nebraska: *Regular.* Omaha, June 9-11. Dir., Mrs. Clark Perkins, Lincoln.

New Jersey: Trenton, June 21-22. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

New York: Albany, Buffalo, New York, Syracuse, June 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315, State Education Bldg., Albany.

North Carolina: Raleigh, June 20. Sec., Dr. John W. MacConnell, Davidson.

North Dakota: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

Oregon: Portland, July 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

Pennsylvania: Philadelphia and Pittsburgh, July 5-9. Sec, Mr. Charles D. Koch, Dept. of Public Instruction, Harrisburg.

Rhode Island: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

South Carolina: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

South Dakota: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

Texas: Marlin, June 21-23. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

Utah: Salt Lake City, July 6-8. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

Vermont: Burlington, June 22-24. Sec., Dr. W. Scott Nay, Underhill.

Virginia: Richmond, June 15-18. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

Washington: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

West Virginia: Harpers Ferry, July 12. Sec., Dr. W. T. Henshaw, State Health Dept., Charleston.

Wisconsin: Milwaukee, June 28-30. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

## Wyoming February Report

Dr. W. H. Hassed, secretary, Wyoming State Board of Medical Examiners, reports 2 physicians licensed by reciprocity with other states, Feb. 15, 1932. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | *Reciprocity* with |
|---|---|---|---|
| Creighton University School of Medicine | | (1928) | Nebraska |
| University of Wisconsin Medical School | | (1929) | Utah |

### Vermont February Report

Dr. W. Scott Nay, Vermont State Board of Medical Registration, reports the written examination held at Burlington, Feb. 9-11, 1932. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Two physicians were licensed by endorsement, Jan. 1 and March 15, 1932, respectively. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Pennsylvania School of Medicine | | (1930) | 90 1 |
| University of Vienna Faculty of Medicine | | (1919)* | 84.5 |
| University of the Dominican Republic Faculty of Medicine and Natural Sciences | | (1910) | 85 |

| College | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| University of Edinburgh Faculty of Medicine | | (1925) | N. B. M. Ex. |
| Yale University School of Medicine | | (1910) | Mass. |

* Verification of graduation in process.

### Maine March Report

Dr. Adam P. Leighton, Jr., secretary, Maine Board of Registration of Medicine, reports the written examination held at Portland, March 8-9, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following colleges were represented:

| College | PASSED | Year Grad | Per Cent |
|---|---|---|---|
| Yale University School of Medicine | | (1931) | 82.6 |
| Tufts College Medical School | | (1919) 77.6, (1930) | 85.9 |
| University of Michigan Medical School | | (1924) | 85.7 |
| Hahnemann Medical College and Hosp. of Phila | | (1931) | 85.6 |
| University of Toronto Faculty of Medicine | | (1930) | 86.3 |
| McGill University Faculty of Medicine | | (1924) | 85.7 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Rush Medical College | | (1892) | N. Dakota |

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## *Book Notices*

**Reports of the Committee Upon the Physiology of Vision. IX. Psychological Factors in Peripheral Vision.** By G. C. Grindley. Medical Research Council, Special Report Series, No. 163. Paper. Price, 1s. Pp. 49, with 8 illustrations. London: His Majesty's Stationery Office, 1931.

Factors accounting for the great difference between peripheral and central vision are of three kinds. They are physical, such as the distortion of images from oblique rays, retinal, due to the distribution of rods and cones, and central, due to the interpretation of the images in consciousness. The present report describes the author's experimental investigation of these central factors. An apparatus was arranged in which an observer fixed a light through an aperture while objects were exposed at angles of 20, 40, 60 and 80 degrees from the center of fixation by means of a projection apparatus. By means of a shutter, the time of exposure could be varied but was usually one-tenth second. Six psychologists were used as observers for about 800 readings, the images exposed being drawn as accurately as the visual impression would allow. The figures used were geometric figures consisting of combinations of circles and lines. As would be expected, the accuracy of observation decreased markedly with distance from the fixation point and with decrease in the size of the object. Objects of the same size appeared smaller in the periphery, possibly on account of the sparsity of receptors in this portion of the retina. Some observers drew figures quite unlike the one exposed, and here apparently a previously existing "perceptional pattern" was aroused by the figures shown. Sometimes only parts of the figure were observed, indicating that certain parts dominated others in the impression formed. The same effect was noted when several figures were exposed at once, some being observed while others were not. When an object had been previously observed a number of times, it was seen more easily or was wrongly seen in place of other objects not distinctly seen, indicating a "sensitization" to certain perceptional patterns. There was great variability in interpretation of the same figure seen on different occasions under identical conditions, especially in the part of the field where objects were just perceptible. The effect of time was tested by exposing the same object at 80 degrees for periods of from a hundredth to one second. Some correct observations were made in a hundredth of a second but the accuracy increased markedly up to one second. When other objects were exposed simultaneously nearer to the fixation point, a longer time was required to recognize the same peripheral figure correctly, evidently because the attention was diverted by the more central figures. If told in which part of the field the object was to be seen, most observers saw it with slightly greater accuracy, indicating the effect of a conscious effort of attention. In experiments to determine localization in the peripheral field, most observers showed a tendency to localize objects nearer to the fixation point than they actually are, the error being greater for objects placed farther in the periphery. Most of the central factors revealed by the experiments, such as those of attention, expectation and the tendency to interpret images in terms of known forms, apply to direct as well as to peripheral vision and the author concludes that no distinct differences can be claimed in the psychic processes involved in these two types of vision.

**Thomson and Miles' Manual of Surgery.** By Alexander Miles, M.D., LL.D., F.R.C.S., Consulting Surgeon, Royal Infirmary, Edinburgh, and D. P. D. Wilkie, M.D., F.R.C.S., Professor of Surgery, University of Edinburgh. Volume II: Extremities, Head, Neck; Volume III: Thorax, Abdomen Eighth edition. Cloth. Price, $3.80 each. Pp. 685, with 303 illustrations. Pp 578, with 177 illustrations. New York: Oxford University Press, 1931.

In volume II, the various fractures of the extremities, the head and the neck are considered in detail, with clear and illustrative roentgenographic and anatomic demonstrations. Injuries to the skull and the brain and disease processes are described rather briefly but to the point. Congenital malformations of the extremities and spinal column are considered with the accepted orthopedic measures indicated. The neck organs are described with the chief pathologic lesions found, their symptomatology, and a review of the accepted therapeutic measures. The general plan of considering the normal anatomic relations of the region under discussion is to be commended. In volume III the discussion of the thorax is rather hurried but probably is adequate for a manual. This volume covers the various intra-abdominal organs, pancreas, spleen and genito-urinary tract. Needless to say, only the high points can be even mentioned. Many surgeons probably would disagree with the authors in the included and the omitted material. The reaction to these two volumes is the same given for the first volume, in that a textbook of this character should be used mainly for review and not as an introduction to the field of surgery by the student.

**Über Klimatophysiologie.** Von Prof. Dr. A. Loewy, Schweizerisches Forschungsinstitut für Hochgebirgsklima und Tuberkulose in Davos. Paper. Price, 4.80 marks. Pp. 77, with 13 illustrations. Leipzig: Georg Thieme, 1931.

This is an abstract, for physicians and meteorologists, of lectures that appeared in the *Deutsche medizinische Wochenschrift* last year. According to Loewy, climate represents the sum of the atmospheric and terrestial conditions, typical of certain regions, which directly influence our well being. The effect of atmospheric conditions on metabolism and on bodily health is thoroughly studied; the effect of heat and cold on our moods is noted; the joys experienced by beautiful scenery are connected with benefits to health. While in general climates have been divided into warm and cold, Loewy especially takes up the study of the climates of high altitudes, the desert, the tropics, and that of the coast of the North Sea. The physiologic instruments employed in studying the skin and subcutaneous temperatures, in estimating the evaporation of moisture from the skin and the lungs, and for the measurement of the gaseous interchange in respiration are described and pictured. In the average climate, evaporation of moisture from the body in twenty-four hours is estimated at about 1,000 Gm. Of this moisture, 75 per cent comes from the skin and 25 per cent from the breath. In desert climates the daily total amounts to nearly 3 liters and the skin-breath proportion is as 85 to 15. In high altitude climates the ratio is 60 to 40. The coast climate of the North Sea is recommended for anemia and for poorly developed children. The stimulating effect on the skin of the cool temperature, of the air movement and of radiation are considered responsible for the beneficial effects.

The sun's rays and their effects are analyzed. Sunshine has a direct influence in stimulating the growth of children; hence height is increased in summer, whereas gain in weight is more noticeable in the winter months. A review is given of the literature on the effects of ultraviolet radiation on the blood and its power to lower the blood pressure. The ultraviolet irradiation of food is discussed. It is noted that the hay grown at high altitudes has a greater vitamin content, when fed in winter, than the fresh pasturelands of lower altitudes have in summer. The shorter ultraviolet rays can inhibit the development of goiter, and therefore residence in high altitudes must be considered in the prevention of goiter.

Reference is made to the easy acclimatization to altitude of the recent explorers of Everest. It is of interest that Noel in his "Story of Everest" noted, at extreme altitudes, mental depression, irritability, inertia, the dislike of meat by the climbers, and other symptoms, which led Gale of Glasgow to compare their condition to that of hyperthyroidism. Gale suggested that the best air pilots and future members of Everest expeditions should be men of "slow pulse, solid countenance and quiet speech"; in other words, those with slight hypothyroidism. Loewy calls attention to the purity of the atmosphere of high altitudes as a factor in the lessening of allergic conditions such as asthma, but he points out that a similar situation exists in sea climates. The well known increase of red blood corpuscles and of hemoglobin is described, but the lymphocyte increase of altitude is not mentioned. At even moderate altitudes the cholesterol content of the blood is found to be increased, and in different organs the calcium content was found increased at the expense of the potassium. Anesthetics, such as ether, appear to work more quickly at altitudes, and alcohol is less intoxicating and disappears more quickly from the blood. Desert climates, such as the climate of Egypt, have not been fully studied, but they induce an increase in red corpuscles without a corresponding proportionate increase of hemoglobin as in high altitudes. The systolic blood pressure is also lowered in the normal as well as in arteriosclerotic and nephritic patients. With moderate exercise, however, the blood pressure rises rapidly. A chart is given showing how Europeans adapt themselves to tropical heat. The chemical changes in the blood in the tropics are the opposite to those of elevated climates, the cholesterol and calcium being markedly decreased.

The little book is of unusual interest, containing a greater mass of information than the size would promise. Books on climate are rare, so one welcomes a work in which the physiology of climate can be found so well related and reviewed. The maxim of Montesquieu is still true: "The empire of climate is the most powerful of all empires."

**Psychology at Work.** By Lois Hayden Meek, Floyd H. Allport, and Others. Edited by Paul S. Achilles. Cloth. Price, $2.50. Pp. 260, with illustrations. New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1932.

This is a symposium planned to present the participation of psychology in daily life. All the authors are teachers who are known for their contributions to this field. Each of the chapters is of importance to the medical profession, but especial interest attaches to the chapter by Dr. Walter R. Miles on "Psychology and the Professions." He encourages particularly the development of clinics in which medicine and psychology cooperate for the handling of disease that comes so definitely in both fields. There are many practical suggestions in this book of importance to workers charged with the selection of personnel and with obtaining maximum outputs consistent with good health in industry.

**Klinische Mikroskopie: Atlas und Leitfaden.** Von Dr. A. Kowarski. Paper. Price, 42 marks. Pp. 172, with 323 illustrations. Berlin: Urban & Schwarzenberg, 1932.

During the past year, many books on laboratory diagnosis have been offered to the medical profession. In each case the author has sought to justify his effort by some new departure in presenting the subject. The present work deals exclusively with microscopic investigations of blood, puncture fluids, secretions, excretions and products of diseased organs. The text differs in no way from the material found in any of the recent comprehensive works on laboratory diagnosis except that continuity is preserved by omitting everything but clinical microscopy. The book is concise and contains the essential information which the physician should know of the clinical material usually submitted for laboratory examination. It would seem that in a textbook of this nature a chapter on microscopy in general could have been added profitably. The author devotes quite a large chapter to the examination of feces, but it is doubtful whether the information presented justifies this detailed treatment. The discussion on the examination of the blood is good, although many of the instruments are not generally available to the physician in America. The organization of the book is excellent. On the margins are numbers, which refer the reader to colored illustrations in the back of the book. About half of the book is an atlas of illustrations in from one to four natural colors. The author has chosen this because he feels that photography does not lend itself to adequate illustration of such specimens. If this work was intended for the physician, the author must presume that he has other books on clinical pathology, for the text covers only the microscopic phase of laboratory investigation. The chief value of the work is the atlas, as there does not appear to be any feature of the text that is not contained in the latest books on laboratory diagnosis in this country.

**The Work, Wealth and Happiness of Mankind.** By H. G. Wells. In two volumes. Cloth. Price, $7.50 per set. Pp. 1-454 and 455-924, with illustrations. Garden City: Doubleday, Doran & Company, Inc., 1931.

This constitutes the third contribution of the great H. G. Wells to his account of modern knowledge. His previous works on the history of our civilization and on the science of life represent special studies from the point of view of history and of science of what man has learned. His present book deals primarily with economics. It is written with the literary technic for which the author is so well known. It shows a tremendous grasp of the available information. The book reveals, moreover, an analysis of trends of our civilization including our economic waste that is highly instructive when such a study is so much needed. The books are beautifully printed and handsomely illustrated and enlightening.

**Grundriss der Entwicklung des Menschen.** Von Dr. Alfred Fischel, o. Professor der Embryologie und Vorstand des Embryologischen Institutes der Wiener Universität. Paper. Price, 11 marks. Pp. 141, with 117 illustrations. Berlin: Julius Springer, 1931.

Fischel's Lehrbuch der Entwicklung des Menschen was published by Springer in 1929. In the review in The Journal it was characterized as one of the best works on the subject available. But for medical students it was rather long (822 pages). This smaller book is a condensation of the work: it attempts to put into clear and available form those fundamental facts and principles which every medical student and every physician must know. The author has succeeded admirably. The book can be highly recommended to students and perhaps will suggest to teachers of medical students in embryology and other subjects that we might have better students and physicians if courses were less encyclopedic in content and thorough training in essentials more simply insured.

**Communicable Diseases for Nurses.** By Albert G. Bower, M.D., Head of Department of Communicable Diseases and Associate Professor of Medicine, University of Southern California, and Edith B. Pilant, R.N., Superintendent of Nurses, Communicable Disease Section, Los Angeles General Hospital. With a foreword by Elizabeth F. Miller, R.N. Second edition. Cloth. Price, $3. Pp. 358, with 35 illustrations. Philadelphia: W. B. Saunders Company, 1932.

The first edition of this volume appeared in 1929. Since that time enough new material has been developed to warrant a complete rewriting of the text; moreover, on the request of several nurses, the authors have added a chapter on impetigo. Some attempt has been made to refrain from the use of technical terms, although the very nature of the subject makes this difficult. However, each time a technical term is used a definition is provided. The volume is exceedingly practical, giving complete information as to aseptic technic and the avoidance of contamination. The chapter on the care of communicable diseases in the home is followed by a discussion of various infectious diseases in systematic order, beginning with definition and following with etiology, symptoms, diagnosis, treatment and nursing care. A good glossary and index complete the volume.

**Das Chlorophyll als Pharmakon.** Von Professor Dr. Emil Bürgi. Paper. Price, 6.40 marks. Pp. 84, with 28 illustrations. Leipzig: Georg Thieme, 1932.

At least seventy workers have studied the pharmacology of chlorophyll since 1913, when Willstätter established definitely its close chemical relationship to hemoglobin. Various physical and chemical changes have been described, especial attention having been devoted to the circulation, blood picture, metabolism and growth. This review of results is illustrated by a variety of protocols and figures, especially from the works of the author, the pioneer in the field. He is intrigued by the conception of "leaf-green" as a "tonic" and growth stimulating vitamin. Strengthening of the heart (not decompensated) is also claimed. Increasing importance is thus ascribed to the green vegetables in both dietetics and therapeutics.

# Medicolegal

## Fracture of Coccyx; Refusal to Submit to Operation

*(Indian Territory Illuminating Oil Co. v. Bates (Okla.), 1 P. (2d) 750)*

As the result of an accident occurring in the course of his employment, Bates fractured his coccyx. His employer offered to pay for an operation to repair the fracture. Bates refused, claiming that he had been advised by physicians not to be operated on. Notwithstanding the employer's tender of an operation, however, the Industrial Commission of Oklahoma awarded compensation. The employer thereupon appealed to the Supreme Court of Oklahoma, contending that the claimant's disability was the direct result of his failure to submit to medical and surgical treatment which the employer had tendered to him; that the claimant had no right to refuse to submit to an operation "that all the medical testimony recommended should be performed"; that the operation was not dangerous and would restore in a short time the claimant's ability to perform manual labor; and that claimant's employer could not be required to continue indefinitely the payment of compensation.

A medical witness for the claimant testified that the removal of the coccyx entailed the danger of a permanent fistula and that it would leave a certain amount of disability. On behalf of the employer a physician testified that by far the greater number of patients who complain of injury to the coccyx and of pain in it are of highly neurotic, nervous types, with whose coccyges there is absolutely nothing wrong as far as can be determined by physical examination or by use of the roentgen ray. Patients of this class should never be operated on, since they never get well. In other patients, the pain complained of is due to some definite pathologic condition, which, because of the proximity of a sensitive plexus of nerve groups, which becomes irritated by the trauma, causes the patient to become nervous and irritable. Patients of this class should be operated on, because they always get well. The claimant, in the opinion of the witness, belonged to this latter class. The roentgen ray showed a very short angularity of the distal half of his coccyx, an angle of about 90 degrees to the sacrum. An operation in his case would enable him to go back to work in three or four weeks.

The rule previously stated by the Supreme Court of Oklahoma is: "If the operation is not attended with danger to life and health, or extraordinary suffering, and if, according to the best medical or surgical opinion, the operation offers a reasonable prospect of restoration or relief from the incapacity from which the workman is suffering, then he must either submit to the operation or release his employers from the obligation to maintain him." *Henly v. Oklahoma Railway Co.*, 81 Okla. 224, 197 P. 488. The real question in this case, said the Supreme Court, is whether the refusal of the claimant to submit to the surgical operation which was tendered is reasonable. It is a pure question of fact, determinable under the workmen's compensation act of Oklahoma by the Industrial Commission. It is for the commission to determine it from all the evidence, facts and circumstances appearing at the trial, including the testimony of the claimant as well as that of medical experts. The finding of the Industrial Commission with respect to this matter, like its determination of any other fact, if there is any competent evidence reasonably tending to support it, is binding on the court. Inasmuch as the commission found that the claimant was not unreasonable in his refusal to be operated on, and since there was competent evidence reasonably tending to support that finding, the determination of the commission was upheld. The question of the unreasonableness of a claimant's refusal to submit to a surgical operation, however, said the court, should not necessarily be confined to its unreasonableness on the date when the operation was tendered by the employer and refused by the employee. The question should be open for further investigation at any time, by the employer, or by the commission on its own motion, dependent on a change in the claimant's condition and his progress toward restoration to health, and the reasonableness of his attitude at the time toward submitting himself to a further tender of a surgical operation.

The award of the commission in favor of the claimant was affirmed.

**Expert Testimony: Opinion Evidence.**—The chief value of expert evidence, in the judgment of the Supreme Court of Missouri, Division No. 1, lies in the fact that the witness possesses superior knowledge of the subject under consideration and by reason of his study, training and experience is able to discern and trace the causal connection, if any, between successive events. The expert witness can aid the jury in determining whether an alleged injury was the result of the cause to which it is attributed or of a different cause. The witness should be left free in the exercise of all his faculties in so doing. He should not be told to exclude matters which may be important. It is proper for a medical expert to testify and give his opinion either from facts within his own knowledge and observation or from hypothetical facts, or from the two combined. Where the witness has personal knowledge of the subject matter, a hypothetical presentation is unnecessary; an opinion based on and supported by the personal observation and knowledge of the witness is more likely to be correct than an opinion based on facts which are only hypothetical. A hypothetical question should include all the facts essential to the theory of the party propounding it. Undisputed facts, when material to the issue, must always be included in it. When, in submitting to witnesses a hypothetical question designed to elicit their opinions concerning the cause of an abortion, the witnesses were instructed to assume all of the facts stated in the hypothetical question and to eliminate any other cause, the court erred in not sustaining a timely objection by the defendant to the inclusion of the instruction to eliminate every cause except those embodied in the question.—*De Donato v. Wells (Mo.), 41 S. W. (2d) 184.*

# Society Proceedings

## COMING MEETINGS

American Association for the Study of Goiter, Hamilton, Ontario, June 14-16. Dr. J. R. Yung, 670 Cherry St., Terre Haute, Ind., Secretary.

American Neurological Association, Atlantic City, June 6-8. Dr. Henry Alsop Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

American Orthopedic Association, Toronto, Canada, June 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., June 2-6. Dr. A. J. Chesley, State Board of Health, St. Paul, Minnesota, Secretary.

Maine Medical Association, Rangeley, June 16-18. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Boston, June 8-10. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

National Tuberculosis Association, Colorado Springs, June 6-9. Dr. Charles J. Hatfield, 7th and Lombard Streets, Philadelphia, Secretary.

New Jersey, Medical Society of, Atlantic City, June 15-17. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.

# *Current Medical Literature*

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Cancer, New York

**16:** 227-438 (March) 1932

*Cancer and Tuberculosis with Some Comments on Cancer and Other Diseases. E. B. Wilson and Helen C. Maher, Boston.—p. 227.

*Carcinoma of Penis, with Report of Sixty-Seven Cases. W. E. Leighton, St. Louis.—p. 251.

*Lymphatic Leukemia with Thymic Enlargement: Brief Review of Literature with Case Reports. L. F. Craver and W. S. MacComb, New York.—p. 277.

Distribution of Blood Cholesterol in Cancer. Helen R. Downes and G. T. Pack, New York.—p. 290.

*Blood Changes in Malignant Diseases. C. N. Myers and B. Throne, New York.—p. 297.

Transplantation of Rous Fowl Sarcoma Number I into Guinea-Fowls and Turkeys. M. J. A. des Ligneris, Johannesburg, Transvaal, South Africa.—p. 307.

Genetic Studies on Transplantation of Tumors. J. J. Bittner, Bar Harbor, Maine.—p. 322.

Further Studies on Inactivation of Tumor-Producing Viruses by Means of Dyes. Margaret Reed Lewis and W. R. Lewis, Baltimore.—p. 333.

*Recovery of Active Agent of Rous Chicken Sarcoma After Its Intravenous Injection into Fowls. M. J. Sittenfield, Balbina Johnson and J. W. Jobling, New York.—p. 345.

*Relation of Hypophysis to Growth of Malignant Tumors: I. Effect of Hypophysectomy on Transplanted Mammary Carcinoma in White Rat. H. A. Ball and L. T. Samuels, Los Angeles, with assistance of Winea Simpson.—p. 351.

*Metabolism of Sulphydril Compounds in Tumor Tissue. A. Goerner and M. Margaret Goerner, Brooklyn.—p. 360.

Influence of Various Preparations of Lactic Acid on Transplanted Tumors: I. Action on Sarcoma Thirty-Nine. I. A. Parfentjev, W. Devrient, V. D. Suntzeff and B. Sokoloff, St. Louis.—p. 366.

Osteogenic Sarcoma of Dog: Pathologic and Roentgenologic Observations. W. H. Feldman and Frances A. Ford, Rochester, Minn.—p. 377.

*Undifferentiated Round-Cell Sarcoma of Ilium (Ewing Tumor) Containing Hemopoietic Elements. N. W. Roome and P. A. Delaney, Chicago.—p. 386.

*Papillary Mixed Tumor of Body of Uterus. G. H. Kistler, Chicago.—p. 399.

Diffuse Hemangioma of Spleen. E. Kellert, Schenectady, N. Y.—p. 412.

Spindle-Cell Sarcoma of Thigh: Case Report. S. W. Vernick and J. R. Lisa, New York.—p. 419.

Method for Measuring Radon Seeds. A. J. Allen.—p. 423.

**Cancer and Tuberculosis.**—According to Wilson and Maher, there seems to be little or no evidence in favor of an antagonism or dissociation between cancer and tuberculosis and a considerable variety of evidence in favor of a slight degree of positive association between the two, but until better estimates of morbidity rates are available one may not be dogmatic over the matter and may well admit that for practical purposes cancer and tuberculosis may be regarded as independent. There does seem to be considerable evidence that cancer of the esophagus is associated with pulmonary tuberculosis, as might perhaps be natural if the condition resulted in long-continued malnutrition. At present there seems to be no material on which to make a clear-cut discrimination between the association of the lesions which should lead to the judgment that they tend to originate in the same persons because of constitutional diathesis and that association which might result merely from an invasion of one of the processes by the other or a lowered resistance to the progress of one of the diseases owing to debilitation by the other.

**Carcinoma of Penis.**—A summary of the sixty-seven cases of carcinoma of the penis reported by Leighton reveals that twenty-four patients refused operation or for some other reason were not treated, while forty-three received treatment. Of the patients refusing treatment, three are known to have died of cancer and one of an unknown cause; nineteen have not been heard from, and one was operated on elsewhere. Ten patients had had a partial amputation before coming to the clinic, and in all of these recurrence of the cancer had taken place. Of the forty-three patients receiving treatment, four received roentgen rays or radium. Of these, three died and one is untraced. Five biopsies showed carcinoma. In one of these cases, amputation was performed elsewhere and the patient was reported well a year later. The condition of the other four is unknown. Thirty-four patients were operated on. Of these, five have not been heard from. Fourteen died, two postoperatively and three of recurrence; nine lived from one month to eighteen years, dying of other causes than cancer. Nineteen are living from six months to twenty-five years. A study of the pathologic specimens with respect to the malignancy of the cancer according to Broders' classification revealed that five were in group I, nineteen were in group II, six were in group III, and one was in group IV. There were only three deaths from recurrence in the series. In each of these there was a metastasis in the inguinal lymph nodes at the time of operation. In one there was a group II tumor and in one a group III tumor. On the other hand, five patients with group II tumors with inguinal metastases at the time of operation are still alive and free from recurrence.

**Lymphatic Leukemia with Thymic Enlargement.**—Craver and MacComb state that tumefaction of the thymus in association with lymphatic leukemia, while rare, is a definitely recognized variant of that disease and is probably the result of leukemic infiltration of the organ. In cases of thymic tumor, the blood and lymph node system should be carefully observed for evidence of leukemia. The thymic tumors associated with lymphatic leukemia are radiosensitive. In younger individuals the leukemic process is likely to be of a more acute type. Therefore, while the disease is responsive in some measure to irradiation, great caution in selection of dosage is needed to avoid precipitating such exacerbations as an increase of a hemorrhagic tendency or an acute leukopenia. When a hemorrhagic tendency or a leukopenia is already established, it would seem best to withhold treatment until one can judge the gravity and acuteness of the disease.

**Blood Changes in Malignant Diseases.**—Myers and Throne report studies which indicate that in cancer during the earlier decades of life the index for plasma/whole blood and serum/whole blood is slightly higher than in the later decades of life. It furthermore appears that the indexes are slightly lower for females in the early decades of life, with a gradual increase at the fifth decade. There is some difference in the averages for the males and females. For epithelioma of the skin, the averages are almost identical with those found for cancer situated elsewhere. Psoriasis was one of the diseases selected for control experiments because in certain instances an association has been suggested between psoriasis and abnormal fat metabolism. A comparison of the results obtained for cancer with those obtained for psoriasis indicates that the index is slightly higher for psoriasis. The cholesterol indexes for eczema, dermatitis and a group of miscellaneous diseases, with the exception of xanthoma, were similar to those obtained for cancer. It would appear, therefore, that cholesterol indexes offer nothing of value for the detection of neoplastic conditions. Certain other abnormal conditions found in the blood have offered evidence that there is a disturbance in the biochemical and the biophysical metabolism involving fats, carbohydrates and nitrogen.

**Recovery of Active Agent of Rous Chicken Sarcoma.**—Sittenfield and his associates describe experiments in which they demonstrated that the untreated blood of chickens injected intravenously with from ten to twenty tumor-producing doses of the Rous chicken sarcoma is infective for forty-eight hours but noninfective thereafter until the terminal stages of the disease. Extracts of the blood of chickens inoculated intravenously with similar doses of the active filtrate remain infective for eight days and then become noninfective until late in the disease. The inhibiting substances present in the blood are not sufficient to protect the chicken against more than one tumor-producing dose when it is given intravenously.

**Relation of Hypophysis to Growth of Malignant Tumors.**—Ball and Samuels noted that in a group of hypophysectomized albino rats largely composed of males, the growth rate of a transplantable mammary carcinoma was greatly reduced. If hypophysectomy was performed after development of the tumor, there was an immediate retardation of the rate of neoplastic growth. In the series, hypophysectomy did not cause complete cessation of tumor growth.

**Metabolism of Sulphydril Compounds in Tumor Tissue.**—*White rats with Flexner-Jobling rat carcinoma transplants* showed a decrease in glutathione content of liver and tumor when placed on a low cystine diet by the Goerners. This decrease was more marked in the liver tissue than in the tumor. Liver tissue seemed to lose glutathione more readily than tumor tissue. On a normal diet, tumor tissue varied more widely as to glutathione content than liver. Animals placed on a low cystine diet showed a larger number of unsuccessful transplants than those on a normal diet.

**Undifferentiated Round-Cell Sarcoma of Ilium.**—Roome and Delaney report a case of round-cell sarcoma of the ilium, with extensive skeletal and few visceral metastases. It is classified as an atypical Ewing sarcoma. Special stains show the presence of hematopoietic elements in the tumor. The possibility that the tumor is a borderline Ewing sarcoma, merging into a myeloid stem-cell tumor (hemocytoblastoma), is discussed.

**Papillary Mixed Tumor of Body of Uterus.**—Kistler describes a mixed tumor of the body of the uterus and adnexa, *unusual in that it contained both epithelial and mesothelial* derivatives. Narrow branched papillae with slender fibrous connective tissue stalks covered by columnar cells constituted most of the tumor. In the fibrous stalks were bundles of smooth muscle and masses of hyaline cartilage. Edematous or *embryonal myxomatous tissue was not a constituent of this* mixed tumor of the uterus. The cartilage tissues were distributed in multiple small focal masses, which differed markedly in size and in degree of differentiation. Such variations in structure suggest the origin of cartilage islets from the connective tissue stroma of the tumor.

## American Journal of Hygiene, Baltimore

**15:** 319-600 (March) 1932

Coccidiosis in Gallinaceous Birds: II. Comparative Study of Species of Eimeria of Chicken. E. E. Tyzzer, H. Theiler and E. Elizabeth Jones, Boston.—p 319.
Host Parasite Relations in Experimental Amebiasis in Monkeys in Panama. R. Hegner, C. M. Johnson and R. M. Stabler, Baltimore.—p. 394.
*Observations on Serologic and Immunologic Reactions of Meningococcus *Strains in Relation to Serum Production.* *Mary B. Kirkbride* and Sophia M. Cohen, Albany, N. Y.—p. 444.
Syphilis and Gonorrhea in Upstate New York. A. Pfeiffer and H. W. Cummings, Albany, N. Y.—p. 459.
*Precipitin Experiments with Yellow Fever Virus. M. Frobisher, Jr., Bahia, Brazil, South America.—p. 485
Presence of Thermophils in Raw and Pasteurized Milk in Baltimore with Record of New Species. V. Zavagli, Baltimore.—p. 498.
Formalin Treatment of Transplantable Rat Carcinoma. R. E. Gardner and R. R. Hyde, Baltimore.—p. 509.
An Evaluation of Egg-Count Data in Hookworm Infestation. W. C. Earle and C. R. Doering, Boston.—p. 513.
Dried Infectious Monkey Serum as Antigen in Yellow Fever Complement Fixation. N. P. Hudson, Chicago—p. 557.
Some Observations on Nyssorhynchus Group of Anopheles (Culicidae) of Panama. D. P. Curry, Panama, R. P.—p. 566.
Climate as Factor in Health of Man. C. A. Mills, Cincinnati.—p. 573.
Geographic Variations in Female Sexual Functions. C. A. Mills, Cincinnati.—p. 593.

**Serologic Reactions of Meningococcus Strains.**—Kirkbride and Cohen record the serologic reactions of 451 strains of the meningococcus. As a result of long continued artificial cultivation, the state standard groups I and III strains have become very similar in agglutination and agglutinogenic reactions. It is considered important, however, for purposes of therapeutic serum production, to continue to recognize both groups. A strain recently isolated in this country is allied with both the federal and the English strains and may represent a broad group which includes all three. Wide variation was obtained in the agglutination titers of serums from rabbits immunized with carefully selected strains from recent cases of meningitis. None of these strains were apparently markedly superior antigenically to the state strains used for more than thirteen years in serum production. The state standard strains compared favorably in the valence of their serologic reactions and, in general, in antigenic activity with the federal strains. The groups I and III strains of the two standards were not closely related. The authors believe that further laboratory study and clinical data are required before replacement of present state strains by recently isolated strains is made in the routine production of the therapeutic serum.

**Precipitin Experiments with Yellow Fever Virus.**—Using a technic which he describes, Frobisher found that the virus of yellow fever in mosquitoes engendered in rabbits neither precipitins nor protective bodies against the same virus contained in monkey blood. Large amounts of the virus from the blood of infected monkeys failed to engender in rabbits demonstrable precipitins against the virus in mosquitoes, but in relatively tiny amounts engendered protective bodies against monkey blood virus. Using an antimonkey precipitating serum capable of detecting one part of monkey serum in 20,000 parts of physiologic solution of sodium chloride, the author was unable to demonstrate the presence of monkey protein in Aedes aegypti later than the fourth day after their blood meal.

## American J. Obstetrics and Gynecology, St. Louis

**23:** 309-460 (March) 1932. Partial Index

*Endometrial Hyperplasia and Carcinoma of Body of Uterus. H. C. Taylor, Jr., New York.—p. 309.
*Treatment of Carcinoma of Cervix by Vaginal Hysterectomy and Radium. L. Adler, Vienna, Austria.—p. 332.
Endometrial Transplantation. E. Allen, Chicago.—p. 343.
*Pregnancy and Labor Complicated by Fibroid Tumors. B. P. Watson, New York.—p. 351.
*Treatment of Occipitoposterior Positions, with Especial Reference to Manual Rotation. W. C. Danforth, Evanston, Ill.—p. 360.
Puerperal Gangrene of Extremities. F. P. McNalley, St. Louis.—p. 367.
Blood Guanidine Base Concentration in Eclampsia. H. J. Stander, Baltimore.—p. 373.
**Proposed Modification of Aschheim-Zondek "Pregnancy Test."* T. K. Brown, St. Louis.—p. 379.
Chronic Nephritis Following Apparent Toxemia of Pregnancy. C. H. Peckham, Baltimore.—p. 386.
*Erosion, Leukoplakia and Colposcope in Relation to Carcinoma of Cervix. E. Ries, Chicago.—p. 393.
Posterior Occiput Presentation: Analytic Review of Posterior Occiput Presentations Occurring in One Thousand Consecutive Deliveries at Evanston Hospital. R. A. Scott, Evanston, Ill.—p. 400.
Prolapsed Umbilical Cord: Analysis of One Hundred Cases. J. Kurzrock, New York.—p. 403.
*Observations on Use of Spinal Anesthesia in Abdominal Obstetric Operations. M. F. Eades, Boston.—p. 407.
Primary Choriocarcinoma of Fallopian Tube: *Report of Case.* H. E. Stein, New York.—p. 416.
Comparative Study of Mercurochrome and Hexylresorcinol as Antiseptics During Labor. H. B. Henderson, Denver.—p. 430.
Chinese Customs and Traditions of Childbirth with Birth Statistics for San Francisco. J. Shiang-Min Lee, San Francisco.—p. 434.

**Endometrial Hyperplasia and Carcinoma of Body of Uterus.**—Taylor believes that whether from a practical standpoint endometrial hyperplasia of the body of the uterus is to be regarded as precancerous and treated as such must remain an open question. The relative frequency of hyperplasia undoubtedly indicates that the individual patient with the disease is reasonably safe. Nevertheless it appears that when the hyperplasia is at all marked, the possibility of a predisposition to the development of cancer should be considered and the case regarded with the same degree of suspicion now bestowed on the diffuse forms of hyperplasia of the breast epithelium. In patients of the menopause age and older, an adequate dose of radium is particularly indicated, certainly as the most efficient method of controlling bleeding, possibly as a prophylactic measure against the development of cancer.

**Treatment of Carcinoma of Cervix.**—Adler reports the results he has obtained in the treatment of carcinoma of the cervix by vaginal hysterectomy and radium, which is his routine method. However, he emphasizes the fact that in the treatment of cancer one must not be dogmatic but eclectic and he does not adhere by any means to the vaginal laparotomy. But in these cases he likewise inserts radium into the parametrial wound cavity immediately after the operation as after the vaginal operation. He believes that one must not adhere to a *single method but choose for each case the adequate procedure.* Gynecologists should break off with the old method of gathering statistics. Every gynecologist should take up in his statistics all cases which he sees and all cases in which the patients are living free of recurrence after five years; no matter *whether they were operated on by the vaginal or the abdominal* method or treated with radiation only, all these must be considered as permanent cures. In this way one will get a correct picture of the value of the treatment used in different places by different men. If one examines in this sense the author's material from 1920 to 1926, a proportion of 36 per cent of absolute cures (five years) is obtained. This encourages him to adhere to the path he has taken and to request an examination and trial of the method of treatment which he has developed.

**Pregnancy and Labor Complicated by Fibroid Tumors.**—Watson states that while fibroid tumors may constitute a major complication of pregnancy, labor and the puerperium, the smaller tumors usually permit the patient to proceed to term and deliver normally or with ordinary obstetric assistance. Every patient with fibroids of significant size requires careful watching and guiding during her pregnancy. The most frequent complication during pregnancy is red degeneration. While in some instances symptoms of this may be so acute as to necessitate surgical intervention in the course of the pregnancy, in the majority of cases the patient can be carried to term and delivered by cesarean section followed by myomectomy or hysterectomy. Or she may be delivered by the vagina and a subsequent myomectomy or hysterectomy be done. The size of the tumor may necessitate removal before term, but in the absence of acute symptoms time should be given to see whether the abdomen will not accommodate it.

**Treatment of Occipitoposterior Positions.**—In the treatment of occipitoposterior position, Danforth prefers the method of manual rotation and forceps to forceps rotation for the following reasons: 1. By using the hand, the operator is able at all times to know whether the head is responding to manipulation or not. 2. Should the first grip of the head be imperfect and should the operator feel the skull giving or bending under his fingers, the grip can be altered or shifted a little to prevent this. 3. If rotation is not easily accomplished at the level at which the head is found, the head may easily be shifted upward or disengaged if necessary. If disengagement is found necessary, prolapse of the cord must be watched for. 4. There is a notable freedom from deep upper vaginal tears, which are rather likely to occur in forceps rotation. 5. By the method described, only the right hand is used, regardless of the side on which the occiput lies. This permits the introduction of the left blade of the forceps first in all cases and obviates the awkward readjustment of the handles of the instrument when the right blade is introduced first. It reduces intravaginal manipulation to a minimum. The use of tenacula or other instruments to hold the occiput in the anterior position is unnecessary. The assistance of the external hand is of great value. The author emphasizes the fact that the following conditions, in addition to those usually given in standard textbooks for forceps, should obtain before one proceeds to manual rotation and forceps: 1. The head must be engaged. If molding is necessary, this must already have occurred. 2. The second stage should not have been allowed to proceed so long that a contraction ring has formed. 3. Ether anesthesia is requisite for the production of relaxation of the uterine musculature. With the lesser degree of relaxation accompanying gas anesthesia, success is much more difficult of attainment. The administration of ether may be preceded and followed by ethylene or nitrous oxide, so that the duration of ether anesthesia may be only a matter of a few minutes. After rotation is accomplished, one returns to ethylene.

**Modification of Aschheim-Zondek "Pregnancy Test."**—In Brown's modification of the Aschheim-Zondek test, from 2 to 5 cc. of serum is injected intravenously into the ear vein of a virgin female rabbit. Approximately 10 cc. of whole blood is obtained from the patient, and the serum is removed. The serum is allowed to stand for at least four hours or overnight before injection, as very fresh serum was found to be toxic and might cause death shortly after injection. The average effective amount of serum was found to be 1 cc. per 600 to 700 Gm. of body weight. Rabbits weighing from 600 to 2,150 Gm. are used. Animals weighing between 1,500 and 2,000 Gm. give the most constant results. The rabbits are operated on or examined post mortem from twenty-four to thirty-six hours after injection and the reaction can usually be determined by gross examination. Microscopic examination is used to check the gross observations. The rabbit can be used again at the end of three weeks. The earliest grossly positive reaction is observed at thirteen hours. Several of the animals of the author's preliminary series died before thirteen hours had elapsed. The period of gestation varied from three weeks to seven months. Serums from five patients not pregnant were used and gave negative results. In a doubtful case of pregnancy, three tests were performed and were all negative. A case of hydatidiform mole gave a strongly positive reaction and was found to be negative three weeks later. The reactions of the twenty-five positive specimens examined in the preliminary series were as follows: Eighteen were grossly positive; five were doubtful grossly but positive microscopically (rabbits died in less than thirteen hours); one examined post mortem at twenty-five hours was doubtful grossly but positive microscopically; one died thirty minutes after injection and showed no reaction. The reaction to the use of serum intravenously is found to be definitely more marked and to appear in a shorter time than when urine is used intravenously.

**Erosion, the Colposcope and Carcinoma of the Cervix.**—Ries calls attention to the fact that, in order to lessen the deplorable carcinoma mortality, various propositions have been made in the direction of preventive surgery, such as suture of all lacerations of the cervix, amputation of the cervix, or even vaginal hysterectomy on every woman of carcinoma age. All of these so-called protective methods fail to reach the bulk of carcinoma candidates, because they involve an operation. They furthermore appear largely unnecessary, because they would remove many organs which never would have developed carcinoma. But it would be entirely rational to invite all women to regular colposcopic examinations. As these are simple and painless and require little time, they ought to be consented to readily and repeatedly. The colposcope would then lead to the discovery of carcinomas at such early stages that extensive operations would not be needed. The fight against uterine cancer, of which carcinoma of the portio represents a large proportion, could thus be waged with increased chances of success. The fundamental difficulty to be overcome has always been the indifference of the patients. It is necessary to acquaint them again and again with the risks of tumor development, but it is also necessary to inform them of simple improvements in the means of diagnosis in order to break down their fears of painful procedures and interest them in ways and means of protecting themselves. The author believes that a colposcopic examination must come to be part of every periodic health examination and of every examination for life insurance, and should be as familiar and routine as a urinalysis and a blood examination.

**Spinal Anesthesia in Abdominal Obstetric Operations.**—According to Eades, spinal anesthesia has a definite place in abdominal obstetric surgery when the use of general inhalation anesthesia is contraindicated. The method is safe only with judicious selection of risks, a careful technic of induction, close observation of the patient during anesthesia, and preparedness for any unfavorable reaction. Spinal anesthesia is contraindicated in desperate risks or in conditions in which either shock or hemorrhage is present.

## American Journal of Ophthalmology, St. Louis

**15**: 189-292 (March) 1932

*Some Factors Concerned in Success of Operations for Glaucoma. J. S. Friedenwald, Baltimore—p. 189.

Experimental Studies in Diathermy Applied to Eye and Orbit: A Thermal Effect of Diathermy. W. F. Moncreiff, J. S. Coulter and H. J. Holmquest, Chicago.—p. 194.

Negative Inoculation with Bacterium Granulosis. F. I. Proctor, W. C. Finnoff and P. Thygeson, Denver.—p. 206.

*Tribromethanol ("Avertin") as an Anesthetic in Eye Surgery. F. A. Davis, Madison, Wis.—p. 208.

Double Puncta and Double Canaliculi of Upper Lid. L. Bothman, Chicago.—p. 214.

Studies in Ocular Fatigue: III. Fatigue of Accommodation: History, Apparatus, and Methods of Graphic Study. C. Berens and Elizabeth K. Stark, New York.—p. 216.

*Fate of Foreign Bodies Which Remain Inside Eye. J. Fejer, Budapest, Hungary.—p. 224.

Legal Phases of Industrial Ophthalmology. S. Walker, Chicago.—p. 228.

Practical Device for Radiographic Examination of Optic Foramen. R. Argañaraz, Buenos Aires, Argentina, South America.—p. 230.

**Operations for Glaucoma.**—Friedenwald calls attention to the fact that sudden reduction of intra-ocular tension, as in operations that empty the anterior chamber, results in congestion of the ciliary body. The state thus produced resembles that which is found in acute glaucoma. To combat this effect, the use of retrobulbar injections of solution of epinephrine is advocated.

**Tribrom-Ethanol ("Avertin") as an Anesthetic in Eye Surgery.**—Davis presents the advantages of "avertin" anesthesia in eye operations. The eye is quiet, the conjunctiva is pale and bleeding is reduced. The extra-ocular muscles are relaxed. Intra-ocular tension is reduced, often very materially. The induction of anesthesia is considered ideal, requiring usually from fifteen to twenty minutes after administration by rectum of 0.1 mg. per kilogram of body weight. The postanesthetic period is usually quiet and free from nausea. No deaths have occurred in the author's series of 135 cases. Overdosage, overheating of the drug, and improper postoperative care are given as the causes of danger in use of the drug.

**Fate of Foreign Bodies That Remain Inside Eye.**—Fejer reports three cases in which metallic foreign bodies were retained in the eyeball from five to eighteen years. In two eyes the vision remained useful. In the third case a shrunken globe was removed because of inflammatory symptoms, and histologic examination showed a recent suppurative process due to the presence of the foreign body.

## American Journal of Physiology, Baltimore

**100:** 1-240 (March) 1932

*Influence of Insulin on Motility of Urinary Bladder (Dog). J. L. Lindquist, Chicago.—p. 1.
*Relation of Hypophysis and Ovaries to Experimentally Induced Uterine Bleeding in Monkeys. Seiichi Saiki, Tokyo, China.—p. 8
*Quantitative Study of Placental Transmission and Permeability of Fetal Membranes at Various Stages of Pregnancy. W. A. Lell, K. E. Liber and F. F. Snyder, Rochester, N. Y.—p. 21.
Rhythmic Vascular Uterine Changes. J. E. Markee, San Francisco.—p. 32.
*Interrelationship Between Blood Sugar, Blood Calcium and Blood Coagulability. D. W. Cowan and H. N. Wright, Minneapolis.—p. 40
Effect of Total Absence of Function on Optic System of Rabbits. L. Goodman, Portland, Ore.—p. 46.
Effects of Repeated Electrical Stimulation of Cortical Motor Area in the Cat. Helen C. Coombs, New York.—p. 64.
Afferent Impulses as Cause of Increased Ventilation During Muscular Exercise. W. G. Harrison, Jr., J. A. Calhoun and T. R. Harrison, Nashville, Tenn.—p. 68.
*Effect of Methyl, Propyl and Butyl Alcohol on Growth of White Leghorn Chickens. W. P. Elhardt, Urbana, Ill.—p. 74
Extra-Ocular Reflexes. G. P. McCouch and F. H. Adler, Philadelphia.—p. 78.
Pulse Wave Velocities in Ninety Subjects. Roberta Hafkesbring and R. Ashman, New Orleans.—p. 89.
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Further Studies of Follicular Corpus Luteum Hormone Relationship in the Rabbit. S. L. Leonard, F. L. Hisaw and H. L. Fevold, Madison, Wis.—p. 111.
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Effect of Injection of Hypophyseal Extract in Advanced Lactation. S. A. Asdell, New York.—p. 137.
Relation of Prolan to Anterior Hypophyseal Hormones. H. M. Evans, K. Meyer and M. E. Simpson, San Francisco.—p. 141.
Relative Ineffectiveness of Prolan in Hypophysectomized Animals. F. L. Reichert, R. I. Pencharz, M. E. Simpson, K. Meyer and H. M. Evans, San Francisco.—p. 157.
*Response of Explanted Cardiac Muscle to Thyroxine. Cecile Markowitz and W. M. Yater, Rochester, Minn.—p. 162.
Studies on Physiology of Liver: XXIII. Rôle of Liver in Destruction or Inactivation of Nicotine. M. Biebl, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 167.
Does Physiologic Excitation Influence Permeability in Striated Muscle? E. Gellhorn and D. Northup, Eugene, Ore.—p. 173.
Digestion and Absorption of Raw Starch in Dogs. B. B. Roseboom and J. W. Patton, Ann Arbor, Mich.—p. 178.
Effect of Complete Suprarenalectomy on Estrual Cycle of White Rat, with Reference to Suprarenal-Pituitary Relationship. S. J. Martin, Madison, Wis.—p. 180.
Periodic Ventilation as Induced by Exposure to High Pressure of Oxygen. J. W. Bean, Ann Arbor, Mich.—p. 192.
Comparison of Response of Anesthetized Dog to Lowered Alveolar Oxygen During Uniform Artificial Ventilation and During Normally Controlled Ventilation. R. Gesell, H. Krueger, H. Nicholson, C. Brassfield and Marie Pelecovich, Ann Arbor, Mich.—p. 202.
Comparison of Response of Anesthetized Dog to Intravenous Administration of Sodium Cyanide During Uniform Artificial Ventilation and During Normally Controlled Ventilation with Additional Observations on Effects of Methylene Blue. R. Gesell, H. Krueger, H. Nicholson, C. Brassfield and Marie Pelecovich, Ann Arbor, Mich.—p. 227.

**Influence of Insulin on Motility of Urinary Bladder.**—Lindquist reports that subcutaneous injection of insulin causes an increase in motility and tone of the unanesthetized female dog's urinary bladder. Micturition with or without convulsions may occur at the height of the hyperactivity following insulin. The recorded increases in bladder activity were not due to changes in intra-abdominal pressure. The effect of dextrose administered intravenously on insulin hyperactivity is not constant, but inhibition is frequently noted. In the author's series of dogs the majority showed a considerable degree of urinary bladder motility, prior to injection of insulin.

**Relation of Hypophysis and Ovaries to Experimental Uterine Bleeding.**—Saiki caused menstruation-like bleeding from the uterus by the injection into immature monkeys of an extract of hypophysis (eleven positive cases in twelve). Intervals between the last injection and the external bleeding were from four to nine days, and the duration of the external bleeding was from five to seven days. This menstruation-like bleeding was produced two or three times at short intervals. Castrated monkeys did not bleed microscopically or macroscopically during or after the injection of the anterior lobe extract. The ovaries of the monkeys in which bleeding was produced by the treatment showed no ripe follicles or corpora lutea but there was some difference in the ovaries, as shown by experiments in which the follicles were larger in the ovaries removed after the injections than in the control ovaries. This experimental menstruation-like bleeding was similar to that found in normal monkeys, in which regular menstruation may occur without rupture of a follicle or presence of a corpus luteum. The uteri from the positive cases showed bleeding from an interval stage of the endometrium. A castrated immature monkey, which did not bleed following injections of hypophysis extract, showed menstruation-like bleeding subsequently after a course of injections with follicular hormone. An immature monkey treated with a subeffective dose of hypophysis extract, and then spayed, showed bleeding after removal of the ovaries. Bleeding which normally follows treatment with hypophysis extract was postponed by injections of follicular hormone. It is assumed from these experiments that the experimental menstruation-like bleeding results from an alteration of the endometrium, which occurs when the effect of follicular hormone is removed.

**Quantitative Study of Placental Transmission.**—In a study of placental transmission in a series of rabbits observed during the last third of gestation, Lell and his associates found that following the injection of fetuses in utero with 3 mg. of phenolsulphonphthalein per fetus there is an output during a six-hour period of more than 30 per cent of the dye from the fetus at the twenty-second day of pregnancy, while less than 15 per cent of the dye is excreted from the fetus at the twenty-ninth day. If allowance is made for a sixfold increase in weight of the embryos near term, and the amount of phenolsulphonphthalein injected per fetus is increased to 18 mg., there is still an output during a six-hour period of only 20 per cent of the dye from the fetus at the twenty-ninth day. In a study of the permeability of fetal membranes in a series of rabbits observed during the last third of gestation, it was found that following the injection of the gestation sac with 3 mg. of phenolsulphonphthalein per fetus there is an output during a three and two-thirds hour period of about 4 per cent of the dye from the sac at the twenty-first day of pregnancy, while about 40 per cent of the dye is excreted from the sac at the thirtieth day.

**Blood Sugar, Blood Calcium and Blood Coagulability.**—According to Cowan and Wright, the coagulation time of the blood in living animals may be decreased by injections of dextrose. Intravenous injection of dextrose is more effective in decreasing the coagulation time in jaundiced dogs than in normal dogs, not only in the percentage of successes but also in the degree of shortening. Raising the blood sugar through dextrose infusions results in a heightened blood calcium, as well as a heightened blood coagulability. The blood calcium more closely parallels the blood coagulability curve than does the blood sugar curve, after intravenous injection of dextrose. High carbohydrate forced feeding aids the coagulation-time decreasing effect of dextrose injected intravenously in jaundiced animals with liver damage.

**Effect of Methyl, Propyl and Butyl Alcohol on Growth.**—Elhardt describes experiments in which he demonstrated that heavy doses of methyl alcohol injected into the crops of growing chicks had an injurious effect on the growth and vigor as judged from appearance and also the disposition. Abscesses formed in the crop walls of a few of the subjects. Light doses of methyl alcohol had a slight effect on growth but influenced unfavorably the feathering, combs and disposition of the chicks. Heavy doses of propyl alcohol had a markedly injurious effect on growth and a somewhat deleterious one on appearance and disposition. The same was true of light doses of propyl alcohol in a lesser degree. Both light and heavy doses of butyl alcohol did not retard the growth of the chicks or affect the appearance, except that the combs were somewhat anemic.

**Response of Explanted Cardiac Muscle to Thyroxine.**—Markowitz and Yater made a study of the action of thyroxine on cultures of pulsating fragments of heart muscle removed from two-day chick embryos, before the appearance of nerve elements. Thyroxine exerted its typical effect on the frequency of pulsation and contractility of such fragments, bringing about a progressively greater increase in rate, ending in some cases in fibrillation and paralysis. These results constitute evidence that in clinical hyperthyroidism the tachycardia is due to the action of thyroxine directly on the myocardium and not on intervening nerve elements.

## Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

27: 337-476 (March) 1932

*Miliary Lung Disease Due to Unknown Cause. R. R. Sayers and F. V. Meriwether, Washington, D. C.—p. 337.
Demonstration of Lymphatic Drainage from Maxillary Sinuses. G. E. Pfahler, Philadelphia.—p. 352.
Primary Bronchogenic Carcinoma of Lungs: Report of New Technic in Radiation Therapy. H. K. Pancoast and E. P. Pendergrass, Philadelphia, with Comments by G. Tucker.—p. 357.
*Mensuration of Heart and Chest in Left Posterior-Anterior Oblique Position: Comparative Study: II. Determination of Type of Cardiac Enlargement (Right or Left). W. W. Fray, Rochester, N. Y.—p. 363.
*Roentgenologic Aspect of Subacute and Chronic Intestinal Intussusception. M. L. Sussman, New York.—p. 373.
*Roentgenology of Extra-Alimentary Tumors. H. W. Wiese and J. W. Larimore, St. Louis.—p. 383.
High Voltage Induction Coil and Cascade Tube Roentgen-Ray Outfit. W. D. Coolidge, L. C. Dempster and H. E. Tanis, Jr., Schenectady, N. Y.—p. 405.
*Therapeutic Abortion Produced by Roentgen Ray. W. Harris, New York.—p. 415.
Volvulus of Stomach: Report of Two Cases. S. Azmy and A. Marey, Cairo, Egypt.—p. 420.

**Miliary Lung Disease Due to Unknown Cause.**—Sayers and Meriwether describe about 125 cases of typical miliary lung disease as having been found by roentgen examination among 18,000 individuals during routine physical examination. A majority of the patients did not have sufficient symptoms to cause them to stop work or to seek medical aid. The most characteristic observation was a large number of discrete, dense, shotlike spots scattered over the lung areas. Tubercle bacilli were present in only two of the eighty-eight cases in which an examination was made of the sputum. Unstained smears of thirty-one cases (all those examined) were positive for fungus. Two types of fungi were identified—Aspergillus fumigatus-fisheri and Aspergillus niger. Ten cases tested with antigen of Aspergillus fumigatus-fisheri gave negative reactions; six cases tested with Aspergillus niger all gave positive reactions. The authors believe that thirty-eight cases reported by Sutherland as "miliary calcification of the lungs" probably represent the same condition and that these miliary calcifications may be due primarily to fungous infection.

**Mensuration of Heart and Chest.**—According to Fray, readily identified landmarks of the thorax permit the approximate localization of the interventricular septum on the left oblique roentgenogram in most cases. The establishment of this septum permits the recognition of enlargement of either the right or left side of the heart. Working with known material, the author has succeeded in determining the presence or absence of either left or right cardiac enlargement in over three fourths of a series of seventy-three cases.

**Subacute and Chronic Intestinal Intussusception: Roentgenologic Aspect.**—Sussman offers the following as diagnostic criteria in intussusception: (1) obstruction to the passage of barium either given by meal or enema but not often by both; (2) a filling defect at the site of the obstruction; (3) a palpable mass at the site of the obstruction; (4) a change in the position and shape of the filling defect following defecation, and (5) a compression of the adjacent mucosal folds, particularly well seen in the postdefecation roentgenograms.

**Roentgenology of Extra-Alimentary Tumors.**—Gastro-intestinal roentgenologic studies which were made by Wiese and Larimore in 126 cases of extra-alimentary abdominal tumors have been analyzed for the help given to the diagnosis beyond that of disproving the tumor to be from the alimentary tube. The topographic alterations produced in the tract have usually indicated the intraperitoneal or retroperitoneal position of the mass and given strong presumption as to its origin, and in a large percentage of instances have added confirmation to the previous clinical suggestion or have alone supplied the data that indicated the origin of the mass. These observations, together with the clinical data, have allowed a high accuracy to the preoperative diagnosis and have also supplied valuable direction to surgical intervention. The authors believe that these collateral observations to gastro-intestinal roentgenology are valuable in abdominal diagnosis and should be emphasized.

**Therapeutic Abortion Produced by Roentgen Ray.**—Harris states that therapeutic abortion produced by roentgen irradiation offers a method without mortality or morbidity for ending a pregnancy in cases in which surgical intervention is contraindicated and in which future pregnancy cannot be countenanced because of serious and permanent systemic disease. The sterilizing effect of this form of treatment is of special benefit to patients suffering from chronic disease. Partial shielding of the ovaries will prevent amenorrhea in some cases. Of 138 patients treated, complete success was obtained in 129. Three of the six failures showed dead fetuses. The author has had four failures in the last 106 cases. The dosage is 60 per cent of a skin erythema dose into the gravid uterus. The roentgen apparatus must be accurately calibrated, especially for depth dose. There is usually no danger in waiting for expulsion of the fetus if the uterus has stopped growing and if there are no signs of toxic absorption. If failure is discovered before the pregnancy has advanced to sixteen weeks, the treatment may be repeated. If the patient becomes pregnant again at some later date, a second roentgen abortion should be done. The average interval between treatment and expulsion of the fetus is four weeks. The exact mechanism underlying the death of the fetus is not entirely clear. This procedure, when undertaken, demands close cooperation between the gynecologist and the radiotherapist.

## Annals of Surgery, Philadelphia

95: 321-480 (March) 1932

*Clinical Significance and Application of Histologic Grading of Cancers. W. C. Hueper, Philadelphia.—p. 321.
Bacteriologic Study of Chronic Ulceration in Relation to Carcinoma. E. W. Saunders, New York, with assistance of Mary A. Cooper.—p. 327.
*Study of Results of Operations for Cure of Cancer of Breast Performed at Johns Hopkins Hospital from 1889 to 1932. D. Lewis and W. F. Rienhoff, Jr., Baltimore.—p. 336.
Cancer of Breast: Thirty-Two Years' Experience. E. J. Ill, Newark, N. J.—p. 401.
*Results of Treatment of Mammary Carcinoma by Surgical and Irradiation Methods at Memorial Hospital, New York, During Decade 1916 to 1926. F. E. Adair, New York.—p. 410.
*Stereoscopic Roentgenography of Breasts: Aid in Establishing the Diagnosis of Mastitis and Carcinoma. W. W. Fray and S. L. Warren, Rochester, N. Y.—p. 425.
Sarcoma of Breast: Report of Seven Cases. B. F. Schreiner and A. A. Thibaudeau, Buffalo.—p. 433.
Cancer in Army Veterans. P. B. Matz, Washington, D. C.—p. 440.
*Gastrectomy: Experimental Study. F. C. Mann and A. S. Graham, Rochester, Minn.—p. 455.
Carcinoma in Duodenum Originating from Aberrant Pancreatic Cells. M. R. Bookman, New York.—p. 464.

**Histologic Grading of Cancers.**—Hueper emphasizes the fact that sections of cancers removed for grading must be taken from the peripheral zone of the tumor and must be properly prepared and stained and evaluated by a pathologist familiar with the method of grading. Grading is helpful in the selection of the type of treatment best suited in the individual case. The grade of malignancy must never interfere with the extent or intensity of treatment. The grade of malignancy indicates the proliferative and metastatic tendencies of a cancer. A reliable prognostication of a cancer must include at least three factors: the grade of malignancy, the extent, and the location of the tumor.

**Results of Operations for Cure of Cancer of Breast.**—Lewis and Rienhoff state that on the basis of their study of the results of operations for the cure of 950 cases of cancer of the breast the conclusion that the large majority of patients with carcinoma of the breast will succumb to this disease is unquestionably warranted. The study establishes the fact that a large number of patients are free from clinical cancer for a varying number of years following operation, but whether or not a patient is ever completely cured (in the pathologic sense) of carcinoma is open to question. Undoubtedly, if operated on properly the condition may be cured locally, and that is the only point for which the surgeon must hold himself responsible. It is, of course, always possible that the disease may still remain a localized process which has not spread beyond the limits of operability, and especially is this so in the very early cases that come under observation today. In view, therefore, of one's inability to foretell the exact limits to which the disease has spread, a thoroughly radical removal should be done in all cases whether early or late. It is a well known and proved fact that patients from whom the primary growth has been removed and who have lived without symptoms of clinical cancer for many years afterward, finally succumbing to some other malady, were found to have regional metastases in which microscopic carcinoma could readily be demonstrated. It would also seem that carcinoma may vary not only in its rate of growth but as well in its damaging clinical effects when the cells are removed from their primary site to a different type of tissue, such as a lymph node or another organ. This idea receives additional support from the observation that the postoperative longevity of patients without local recurrence is greater than of those with a reappearance of the growth in the operative field. This is true despite the fact that in both there may be remote metastases. Hence it follows that, regardless of the extensiveness of the disease, so long as it remains confined within possible operative limits, it is incumbent on the surgeon to perform the most radical and meticulous operative procedure, including a far wider exsection of skin than has been customary, in even the Halsted Thiersch graft procedure as performed in the majority of instances in the past, for it is only by this method that the proper amount of skin and subcutaneous tissue will be sacrificed. There alone exists the possibility of reducing local recurrence to a minimum.

**Results of Treatment of Mammary Carcinoma.**—Adair presents the results of a study of 199 primary operable cases of mammary carcinoma in which complete data for a period of not less than five years are available. On account of the importance of the debilitating diseases other than cancer, which diseases contraindicate radical surgical procedures, special examination is made of those cases in which the patients were treated by irradiation methods. Standard radical mastectomy in the good general hospitals of America yield from 32 to 39 per cent five-year cures. The author's criteria of operability are discussed. Obtaining a "five-year cure" by irradiation methods is accomplished along totally different lines than that by a surgical procedure. The latter is by a wide extirpation of the breast, its contiguous structures and its drainage basin, while the irradiation cures are produced by locking up the local disease in dense fibrous tissue, and starving the disease process by endarteritis, and the direct insult to the cancer cell which is produced by the rays. It is believed that external irradiation alone by radium packs and high voltage roentgen rays is, as a rule, not sufficiently potent therapy to effect cures in mammary cancer. The author considers breast carcinoma to be a relatively radioresistant form of cancer. Most cases of cures by irradiation have been accomplished by the combined interstitial insertion of radium together with external radium packs and high voltage roentgen rays. Of the thirty-seven patients treated by irradiation methods only, four died of intercurrent disease, twenty-one died of cancer, and twelve, or 36.3 per cent, are living over five years. Of the 137 patients treated by the combined irradiation and surgical method, nine died of intercurrent disease, eighty-five died of cancer and fifty-two, or 40.6 per cent, are living over five years. These improved results (40.6 per cent) appear to be due to the added factor of irradiation. On the basis of his observations the author concludes that irradiation, if properly applied, can be relied on to effect a cure in cases of mammary cancer in 36.3 per cent. It offers a substitute weapon but slightly less effective in five-year results than the combination of irradiation and surgery (40.6 per cent). In cases in which surgery is contraindicated, the combined interstitial and external irradiation is the most efficient agent.

**Stereoscopic Roentgenography of Breasts.**—Fray and Warren discuss the differential diagnostic roentgenographic features of mastitis and carcinoma which they have found helpful. They believe that this method imparts information not obtainable by other means known at the present time. Besides its diagnostic value, the method is of definite aid in establishing the prognosis before treatment and subsequent serial roentgenographic study will give important information concerning the response to treatment (as irradiation, and so on). This method is not offered as a substitute for or to replace any portion of the physical or other examination. The physical examination of the breast cannot be too exactingly carried out. The roentgenographic examination should serve, however, as a valuable supplement in establishing both the diagnosis and the prognosis. Most of the gross pathologic changes in the breast are as readily identified in stereoscopic roentgenograms as they are in the gross specimen at biopsy or necropsy. Stereoscopic roentgenograms of the human breast offer many advantages in establishing the diagnosis in suspected cases of malignancy, not obtainable by clinical methods. The earliest changes due to scirrhous carcinoma in the presence of a chronic mastitis are as difficult to identify as they are in the gross specimen. In addition to the diagnostic aid which this method offers, valuable information can be obtained concerning the prognosis before treatment. Serial study is of great importance in following doubtful cases and cases under radiation treatment. Cooperation between the surgeon and the radiologist is essential if the diagnostic accuracy is to be maintained at a high level.

**Gastrectomy.**—Mann and Graham developed a method for the total removal of the stomach of the dog. All gastric tissue was successfully removed from six animals, and they were observed for periods varying from eighteen months to almost six years. Anemia that could be ascribed to loss of gastric tissue did not develop in any of the animals.

## Archives of Dermatology and Syphilology, Chicago

**25:** 419-598 (March) 1932

*Effect of Arsenic on Rabbits: Microchemical Studies Following Administration of Arsphenamines and Tryparsamide. E. D. Osborne, E. D. Putnam and Blanche S. Hitchcock, Buffalo.—p. 419.
*Cheilitis and Stomatitis from S. T. 37 Toothpaste. H. J. Templeton and C. J. Lunsford, Oakland, Calif.—p. 439.
LXI. Lipids of Skin: Some Changes in Lipids of Epidermis During Process of Keratinization. D. J. Kooyman, St. Louis.—p. 444.
Microprecipitation Test (Rosenthal) in Syphilis. L. Tulipan and W. Director, New York.—p. 451.
*II. Superficial Lymph Glands in Early Syphilis. R. E. Michelson, with Collaboration of E. M. Rusten, Minneapolis.—p. 457.
Economic Aspects of Management of Syphilis. A. Keidel, Baltimore.—p. 470.
*Persistent Nodules in Scabies: Histologic Observations and Treatment. S. Ayres, Jr., and N. P. Anderson, Los Angeles.—p. 485.
*Unusual Clinical Manifestations Following Intravenous Administrations of Gold Compounds. B. Throne, J. Kingsbury and C. N. Myers, Brooklyn.—p. 494.
Hygiogenesis of Warts Disappearing Without Topical Medication. K. G. Zwick, Cincinnati.—p. 508.
LX. Effect of Thallium Acetate on Thyroidectomized Albino Rats. Zola K. Cooper, St. Louis.—p. 522.
Sporotrichosis: Report of a Rather Unusual Case. L. B. Mount, Albany, N. Y.—p. 528.

**Effect of Arsenic on Rabbits.**—Osborne and his associates note that arsphenamine given to rabbits in therapeutic doses is rapidly metabolized and eliminated, with no evidence of appreciable storage. No appreciable amount of arsenic is found in the parenchyma of the central nervous system of rabbits after the administration of arsphenamine, neoarsphenamine or sulpharsphenamine. Following the administration of therapeutic and lethal doses of tryparsamide to rabbits, the parenchyma of the brain and spinal cord shows appreciable quantities of arsenic. The suprarenals are not storehouses for arsenic. If harm is done, it is due to vascular damage caused during the period of circulation of the unmetabolized arsphenamine. The lack of any appreciable storage of arsenic in any of the organs, except the liver and the organs of excretion, suggests that most of the drug is in the vascular system prior to metabolism in the liver. In comparing the observation following the administration of arsphenamine, neoarsphenamine and sulpharsphenamine, the evidence points to neoarsphenamine as being the least toxic, since it is present in the liver in large quantities at one hour and at twenty-four hours following a lethal dose, and it is being metabolized in sufficient quantities to appear in maximum amount in the organs of excretion. Sulpharsphenamine appears to be the most toxic. At the one hour interval, following a lethal dose, something has occurred to prevent the liver from metabolizing the drug. No sulpharsphenamine appears in the organs of excretion, and little is found in the liver. At the end of twenty-four hours the liver contains a maximum amount of arsenic, but the organs of excretion contain relatively little. In lethal doses, tryparsamide apparently requires little or no metabolizing in the liver but is excreted rapidly by the kidneys and the entire intestinal tract. Over a period of forty-eight hours after the administration of a lethal dose, the liver takes up an increasing amount of arsenic, the amount of which seems to parallel the degree of damage to the liver. A discussion is given of the observation of arsenic in all the layers of the intestinal organs.

**Cheilitis and Stomatitis from S. T. 37 Tooth Paste.**—Templeton and Lunsford report six cases of acute cheilitis following the use of S. T. 37 tooth paste. They could not demonstrate which ingredient was responsible but suspected the altered or unaltered hexylresorcinol S. T. 37.

**Superficial Lymph Nodes in Early Syphilis.**—Michelson examined 145 lymph nodes excised from patients with early untreated syphilis. In approximately 27 per cent of the specimens, tuberculoid structure was present. The test with tuberculin, performed on fourteen patients whose lymph nodes showed tuberculoid structure, was positive seven times. The luotest was negative when performed on nine patients whose lymph nodes showed tuberculoid structure. Tuberculoid reactions found in the lymphatics in early syphilis are variable in type, and apparently the state of allergy is not the same as when this reaction is found in the skin. True gummas of the lymph nodes differ from the tuberculoid structure found in the nodes in early syphilis.

**Persistent Nodules in Scabies.**—Ayres and Anderson state that persistent nodular pruritic lesions which resist the usual sulphur medication may occur as a complication or sequela of scabies. They report five cases in which such a complication occurred. Serial sections of excised nodules in two cases failed to reveal the presence of parasites, ova, larvae or feces. In two cases there was a marked perivascular lymphocytic infiltration of the middle and deep cutis, and in another case there was, in addition, a marked plasma cell infiltration. Electrodesiccation or coagulation followed by curettage seems to be the treatment of choice.

**Unusual Manifestations Following Administration of Gold Compounds.**—Throne and his associates call attention to the fact that all gold compounds are toxic, some more so than others. Their use is attended with danger, but this danger can be minimized by the following procedure: 1. The patient should be examined for focal infections, and one should remove such foci before instituting therapy with gold compounds. 2. A preliminary analysis of the blood should be made: (*a*) a high sugar and low chloride content means a physiologic dysfunction. This should be eliminated by a preliminary course of injections of a freshly prepared solution of sodium thiosulphate. (*b*) In cases showing a high blood sugar content not associated with pancreatic deficiency or metallic retention, the doses of the gold compound should be comparatively small. On the other hand, patients with definite diabetes mellitus seem to tolerate treatment with gold preparations. 3. The first sign of intolerance, as manifested by dryness of the mouth and pruritus, is an indication for discontinuance of the gold compound and the use of sodium thiosulphate. In the authors' experience, these symptoms are invariably accompanied by an increase of the blood sugar, a decrease in the chlorides and frequently a marked decrease in the urea nitrogen. 4. Chemical examination of the blood at weekly intervals, by showing an increase in the sugar and a decrease in the chloride and urea nitrogen content, frequently enable one to foresee an intolerance to gold compounds and, by instituting proper eliminative treatment at once, to prevent reactions. 5. It is impossible to determine previously the tolerated dose for each patient. The initial dose should be small, not exceeding 25 mg. of the gold preparation. This dose can gradually be increased if it is well borne and is not effective, but it should be kept low as long as it shows a beneficial action on the lesions.

## Archives of Pathology, Chicago

**13**: 367-542 (March) 1932

*Secondary Nodules of Lymph Nodes, Their Relation to Chronic Inflammatory Processes. R. E. Miller, Hanover, N. H.—p. 367.
*Experimentally Produced Focal (Dental) Infection in Relation to Cardiac Structure. N. W. Jones and S. J. Newsom, Portland, Ore.—p. 392.
*Experimental Edema and Lipemia Produced by Repeated Bleeding. A. E. Kumpf, Hot Springs, S. D.—p. 415.

**Secondary Nodules of Lymph Nodes.**—General studies of the structure of the secondary nodules of lymphatic tissue were made by Miller on approximately 1,500 lymph nodes removed from 500 cadavers within four hours after death. The ages of the deceased varied from 6 months in utero to 88 years. Nodes were removed from all the regions in many cases; in others, only nodes from a visceral and a peripheral group were taken. Approximately 200 of the nodes were removed from the pyloric region of the stomach. Spleens in all the cases and submucous lymphatic tissue in many of the cases were studied. On the basis of his observations the author concludes that secondary nodules of the active type ("germ centers," the Flemming type of secondary nodule) are rarely found in lymph nodes of man beyond 30 years of age in the absence of long-standing, mild, chronic inflammatory processes. Secondary nodules of the active type are common (98.2 per cent of cases) in lymph nodes associated with chronic ulcerating lesions of the stomach in man beyond 30 years of age. This circumstantial evidence and the histologic picture indicate an etiologic relationship between the pathologic process in the gastric wall and the production of secondary nodules of the active type in the near-by lymph nodes. This evidence is offered in support of the contention that the secondary nodules of lymph nodes arise as the result of pathologic processes. These observations on human material support the conclusion, drawn from experimentation on animals, that the secondary nodules of lymphatic tissue are reaction centers, and should increase the skepticism with which Flemming's hypothesis is viewed.

**Experimental Focal Infection.**—Twelve dogs used in the experiments of Jones and Newsom were subjected to a rigidly followed operative technic, which may be summarized as follows: The dog was anesthetized with ether; the lower canine tooth, or teeth, was isolated with rubber dam and the parts swabbed with iodine. The distal half of the tooth was removed with dental saw and rongeur forceps. The pulp was then removed, the bleeding stopped, and the cavity dried. The cavity was then filled with a streptococcus culture and a pulp point put in place and covered with a small pledget of sterile cotton; a dental cement covering was then placed over the cotton and the tooth permanently filled with silver amalgam. Dental abscesses were demonstrated in all inoculated dogs. There were no other constant extracardiac structural changes. The hearts of inoculated dogs constantly showed very small vegetative or verrucose mitral and (or) aortic endocarditic lesions, patchy parenchymatous degeneration, nuclear changes, increase in the diameter of the muscle cell, and a slight round cell infiltration. A positive relationship between experimentally produced focal dental infection and cardiac hypertrophy as measured by diameters of muscle cells was noted. The authors believe that direct measurement of diameters of cardiac muscle fibers, under their experimental conditions, is a more reliable criterion of cardiac hypertrophy than ratios of heart weight to body weight or of heart weight to body surface area. Stress and strain in the absence of focal infection did not affect the gross or the microscopic characteristics of the heart.

**Experimental Edema and Lipemia.**—Kumpf produced edema in two of four rabbits by prolonged bleeding alone. All rabbits showed a marked and persistent lipemia. The increase in plasma lipoid was primarily in the neutral fat fraction, the sterol fraction as a rule being less increased. Total blood volume and plasma volume fell as the bleeding progressed. This occurred in both the edematous and the nonedematous animals, and was about the same in the two groups. The concentration of total plasma protein fell but slightly; that of the albumin was moderately lowered and that of the globulin at times greatly increased. Reversals of the albumin-globulin ratio were frequently encountered. The edematous rabbits showed a marked edema of the scrotum and anterior abdominal wall, massive ascites and hydrothorax. All edema fluids were high in protein. The urines of all the animals, both edematous and nonedematous, were high in fat. This was mostly neutral fat. There was a variable increase in the lipoid content of the kidney and liver in all instances. In the kidneys of the edematous rabbits there was a striking decrease in sterols, with an equally marked increase in neutral fat.

## California and Western Medicine, San Francisco

**36:** 145-216 (March) 1932

Chronic Polyarthritis: Its Group Treatment. Rea Smith, Los Angeles. —p. 145.
Goiter: Recent Advances in Its Treatment. C. L. Hoag, San Francisco. —p. 148.
Coronary Occlusion: Some Abnormal Rhythms: Review of Literature: Report of Cases. W. H. Leake, Los Angeles.—p. 153.
Patch Test: Its Use in Dermatology: Report of Cases. J. M. Graves, San Francisco.—p. 157.
Calculous Anuria: Report of Case. E. C. Lee, San Diego.—p. 160.
Perinephric Abscess: Complicating Polycystic Kidney: Report of Case. M. Vecki, San Francisco.—p. 163.
Contusion Hemorrhages of Brain. A. M. Moody, San Francisco.—p. 166.
Premedical Education. I. M. Thompson, Berkeley.—p. 167.
Psittacosis. G. S. Porter, Los Angeles.—p. 169.
Pyschiatry and Criminal. H. M. Adler, Berkeley.—p 170.
Leisure and Ethics. J. B. de C. M. Saunders, San Francisco.—p. 175.
Essays on History of Embryology. A. W. Meyer, San Francisco.—p. 176.

## Florida Medical Association Journal, Jacksonville

**18:** 401-446 (March) 1932

Results of Irrigation and Closure in Selected Cases of Nonpyogenic Arthritis. P. le Breton, St. Petersburg.—p. 409.
Some Observations on Treatment of Empyema of Children by Aspiration. A. W. White, Pensacola.—p. 412.
Essential Nature of Bronchial Asthma and Its Present-Day Management. K. Phillips, Miami.—p. 415.
Foreign Bodies in Food and Air Passages: Report of One Hundred Cases. W. J. Knauer, Jacksonville.—p. 417.

## Johns Hopkins Hospital Bulletin, Baltimore

**50:** 137-236 (March) 1932

*Basophil Adenomas of Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism). H. Cushing, Boston.—p. 137.
*Further Observations on Monro-Kellie Hypothesis. L. H. Weed and L. B. Flexner, Baltimore.—p. 196.
Physical and Roentgenologic Examination in Diagnosis of Pulmonary Disease. H. S. Willis, Northville, Mich.—p. 224.

**Basophil Adenomas of Pituitary Body.**—Cushing gives the following chronological recapitulation of the facts that have chiefly served to throw light on the subject of basophil adenomas of the pituitary body during the past twenty years: 1. Primary anterior pituitary disorders are commonly produced by adenomas. 2. Adenomas of the endocrine series are as a whole functionally active lesions. 3. Even minute adenomatous tumors of the parathyroids and pancreatic islets may lead to serious constitutional derangements of hypersecretory type. 4. Pituitary adenomas are of three principal varieties—neutrophil, acidophil and basophil, no constitutional disorder heretofore having been definitely ascribed to the last. 5. There is experimental evidence to suggest that the basophilic elements of the anterior pituitary secrete the sex-maturing hormone. 6. A polyglandular syndrome heretofore supposed to be of corticosuprarenal origin, characterized in its full blown state by acute plethoric adiposity, by genital dystrophy, by osteoporosis, by vascular hypertension, and so on, has been found at necropsy in six out of eight instances to be associated with a pituitary adenoma which in the three most carefully studied cases has been definitely shown to be composed of basophilic elements, the lesion in one instance having been clinically predicted before its postmortem verification. While there is every reason to concede that a disorder of somewhat similar aspect may occur in association with pineal, gonadal or suprarenal tumors, the fact that the peculiar polyglandular syndrome described may accompany a basophil adenoma in the absence of any apparent alteration in the suprarenal cortex other than a possible secondary hyperplasia will give pathologists reason in the future to scrutinize more carefully the anterior pituitary for lesions of similar composition.

**Monro-Kellie Hypothesis.**—Weed and Flexner carried out on dogs two series of experiments with records of the pressure of cerebrospinal fluid, of the sagittal venous pressure, and of the carotid arterial pressure. In the first series the cranial dura was widely exposed to the atmosphere, while in the second series the vertebral arches were removed throughout the thoracic and lumbar regions, thus exposing a large extent of the spinal cord directly to atmospheric pressure. With the cranium exposed, the alteration in the pressure of the cerebrospinal fluid, on abrupt tilting from the horizontal to the vertical tail-down position, was considerably less than the pressure alteration in this fluid in the intact animal on such a tilt. When such an animal was tilted from the horizontal to the vertical head-down position, the pressure alteration was of exactly the same magnitude as in the intact animal. In the series with the vertebral canal opened, the pressure changes in the cerebrospinal fluid, on tilting from the horizontal to the vertical tail-down position, were of exactly the same magnitude as in the intact animal. On tilting from the horizontal to the vertical head-down position, the pressure changes were considerably greater than in the intact animal. These experiments are taken to indicate that the intact character of the vertebral and cranial bony system is essential for the adequate protection of the central nervous system against pressure alterations in the cerebrospinal fluid, on tilting from the horizontal to the vertical position.

## Journal of Comparative Neurology, Philadelphia

**54:** 1-275 (Feb. 15) 1932

Intramedullary Course of Dorsal Root Fibers of First Three Cervical Nerves. S. W. Ranson, Helen K. Davenport and E. A. Doles, Chicago —p. 1.
Extensor Tonus After Spinal Cord Lesions in Cat. S. W. Ranson, J. C. Muir and F. R. Zeiss, Chicago.—p. 13.
Afferent Fibers in Cervical Sympathetic Trunk, Superior Cervical Ganglion, and Internal Carotid Nerve. D. A. Cleveland, Chicago.—p. 35.
Effect of Cerebral Destruction on Reasoning and Learning in Rats. N. R. F. Maier, Chicago.—p. 45.
Studies of Cerebral Function in Learning: VIII. Reanalysis of Data on Mass Action in Visual Cortex. K. S. Lashley, Chicago.—p. 77.
Development of Vestibular Righting Reflex in Cat. W. F. Windle and M. W. Fish, Chicago.—p. 85.
Absence of Painful Sensation in Cat During Stimulation of Spinal Accessory Nerve. W. F. Windle and L. C. DeLozier, Chicago.—p. 97.
Effect of Rotatory Stimulation in Movements of Head and Eyes in New-Born and Young Kittens. M. W. Fish and W. F. Windle, Chicago.—p. 103.
Function of Brain in Audition. L. E. Wiley, Chicago.—p. 109.
Secondary Vestibular Tracts in Cat. A. T. Rasmussen, Minneapolis. —p. 143.
Further Experiments on Development of Spinal Ganglions in Amblystoma. S. R. Detwiler, New York.—p. 173.
Plurisegmental Innervation of Neuromuscular Spindles. F. Cuajunco, Baltimore.—p. 205.
Comparative Studies on Nucleus Preopticus Pars Magnocellularis and Nucleus Lateralis Tuberis in Fishes. H. H. Charlton, St. Louis. —p. 237.

## Journal of Industrial Hygiene, Boston

**14:** 81-112 (March) 1932

Modern Problems in Industrial Medicine. L. P. Lockhart, Nottingham, England.—p. 81.
Recent Research into Causes of Industrial Accidents. E. Farmer, London, England.—p. 84.
*Factors in Production of Nervous Lesions Following Electric Shocks. O. R. Langworthy, Baltimore.—p. 87.
Measurement of Radiant Heat in Relation to Human Comfort. H. M. Vernon, London, England.—p. 95.

**Nervous Lesions Following Electrical Shocks.**—Langworthy describes experiments in which he noted that when the current from a 1,000-volt alternating or continuous circuit was allowed to flow through a rat for one second, abnormalities in the nerve cells of the brain or the spinal cord were demonstrated only in areas traversed directly by the current pathway. The electric current produced damage to nerve cells in experiments in which heat production was negligible. If a large current flows through the body for a considerable time, there is marked heat production which causes changes in nerve cells indistinguishable from those produced by the electric current alone.

## Maine Medical Journal, Portland

**23**: 41-66 (March) 1932

Foreign Bodies in Food and Air Passages. G. O. Cummings, Portland.—p. 44.

Fractures of Mandible and Maxilla, and Treatment. R. H. Hutchinson, Portland.—p. 53.

## Medical Bulletin of Vet. Adm., Washington, D. C.

**8**: 179-255 (March) 1932

Third or Chronic Stage of Epidemic Encephalitis, with Illustrative Cases. J. H. Baird.—p. 179.

Dispensary Care of Disabled Ex-Service Men. P. B. Matz.—p. 186.

*Undulant Fever. M. T. Moorehead.—p. 195.

*Massive Collapse of Lung. L. R. Jones.—p. 201.

Extrapleural Thoracoplasty: Report of Four Cases. W. M. Gay.—p. 209.

Thalamic Syndrome. M. Steinberg.—p. 215.

Dental Restoration in Gunshot Wounds of Superior Maxillary. W. D. Lanier, Jr.—p. 218.

**Undulant Fever.**—According to Moorehead, undulant (or Malta) fever probably exists in three or more closely related strains, namely: Brucella melitensis, Brucella melitensis-abortus, and Brucella melitensis (porcine). Undulant fever is of world-wide distribution; hence such titles as Malta fever seem inappropriate. Many cases have recently been reported from widely separated parts of the United States. It probably exists in all the states. Wherever searched for carefully, it has been found rather prevalent. Clinically, any patient showing a protracted and unexplained (or partially explained) fever in the face of a negative Widal test should be at once tested for the serologic reactions of undulant fever. There is nothing distinctive about the disease from the diagnostician's standpoint. Unusually mild subjective symptoms with the presence of a high fever, however, seem characteristic. A case of what appears to have been the Brucella abortus variety of undulant fever is reported by the author from the state of Oregon. The disease appears to be disseminated by contact with raw meat of pigs and cattle as well as by the milk of cows and goats. It probably should be classed with tularemia as an occupational hazard, complicating workmen's compensation acts. No specific therapeutic measure is known. Several fatal cases have been reported. Recognition of this as a common disease may clear up the etiology of heretofore obscure mild fevers.

**Massive Collapse of Lung.**—Jones believes that massive collapse of the lung should be made to include all conditions in which a considerable portion of a lung is so compressed as to exclude the air, except those cases in which the compression is being caused by air or fluid in the pleural cavity. It seems probable that spasmodic constriction of the bronchial tubes is the principal causative factor; that bronchial plugging may be the result of collapse rather than the cause of it. This condition should be kept in mind during examinations and roentgen studies of tuberculosis patients. In all cases in which there is extreme dulness in the chest accompanied by increased sound conduction, massive collapse should be eliminated by definitely locating the heart. Extreme contraction of scar tissue is probably the only condition other than massive collapse that will displace the heart to the affected side.

## Military Surgeon, Washington, D. C.

**70**: 313-424 (April) 1932

Medical Applications of Anticolibacillary Serum. H. Vincent.—p. 313.

Casualty Clearing Station. W. F. Lorenz.—p. 323.

Pulmonary Embolism and Abscess: Case Report. E. S. Segard.—p. 354.

*Injuries to Cartilaginous Structures of Knee. W. W. Lasher.—p. 358.

Enucleation Snare. F. H. Thorne.—p. 379.

Beginnings of Army Medical Service. L. C. Duncan.—p. 384.

**Injuries to Cartilaginous Structures of Knee.**—According to Lasher, fractures of the fibrocartilage of the knee usually occur under 40 years of age and are invariably due to twisting violence. The diagnosis must be based on the history and examination. Roentgen examination is of little or no value. The clinical picture is clear, unless associated with other joint conditions. Mucoid degeneration of the cartilage and the production of a villous arthritis soon follow injury. Early operation is indicated. A wide exposure is necessary to explore the joint. A mediolateral approach gives the widest exposure. Postoperative immobilization is unnecessary, and, in fact, contraindicated. Postoperative care should include early massage and special exercises. A study of the end-results indicates that 90 per cent of the patients make a complete recovery.

## New Jersey Medical Society Journal, Orange

**29**: 189-290 (March) 1932

*Treatment of Eczema in Infants by a Milk-Free Diet. J. Levy and A. S. Finkelstein, Newark.—p. 189.

Tumors Involving the Optic Chiasm, with Especial Reference to Signs That Aid in Differential Diagnosis. T. H. Johnson, New York.—p. 200.

Ocular Manifestations of Focal Infection. S. T. Hubbard, Hackensack.—p. 207.

Diphtheria Carriers Quickly Cleared Up by Roentgen Rays. L. H. Rogers, Trenton.—p. 213.

Value of Roentgen-Ray Examination in Diseases of Biliary and Gastro-Intestinal Tracts. R. P. Sturr, Philadelphia.—p. 214.

Trichinosis: Case. H. Halprin, Caldwell.—p. 217.

A Few Cases of Facial Paralysis. E. P. Cardwell, Newark.—p. 220.

Etiologic Conception of Disease Entity. H. B. Logie, New York.—p. 225.

Granulocytopenia with Necrotic Mouth and Throat Lesions Following Neoarsphenamine Administration. J. S. Lincoln and H. O. Bell, Belleville.—p. 231.

Building Together. W. J. Barrett, Camden.—p. 235.

In Memoriam: Robert Koch: Fiftieth Birthday of Tubercle Bacillus. F. Baum, Newark.—p. 238.

Success of Postgraduate Courses. H. O. Reik, Atlantic City.—p. 244.

**Treatment of Eczema in Infants by a Milk-Free Diet.**—The experience of Levy and Finkelstein with forty infants placed on a milk-free diet, in which the milk was replaced by a soy bean preparation over a period of from four to nine months, led them to classify thirty-eight infants as improved, two as unimproved. The eczematous condition of the skin began to show marked improvement after from one to two weeks under dietary management and, after observation for periods varying from not less than four months up to nine months, has not recurred. The infants took the soy bean preparation readily. The stools were of good consistency. There were no digestive disturbances. The babies gained satisfactorily. In the authors' experience, the use of a milk-free diet, in which the milk was replaced by a soy bean preparation, has proved valuable as a substantial therapeutic diet in infants with severe eczema.

## South Carolina Medical Assn. Journal, Greenville

**28**: 47-75 (March) 1932

Colossal Emphysema of Upper Extremities: Foreign Body in Lungs. E. W. Carpenter, Greenville.—p. 49.

Dysmenorrhea. M. E. Hutchinson, Columbia.—p. 49.

Gastro-Intestinal Features of Secondary Anemia. H. W. Corbett, Anderson.—p. 52.

Gonorrheal Vulvovaginitis and Ophthalmitis in Children: Report of Three Cases. W. Weston, Jr., Columbia.—p. 56.

Jacksonian Epilepsy. E. F. Fincher, Jr., Atlanta, Ga.—p. 57.

## United States Naval Med. Bulletin, Washington, D. C.

**30**: 151-295 (April) 1932

*Carbon Monoxide and Its Relation to Aircraft. J. J. White.—p. 151.

Traumatic Air Embolism in Submarine Escape Training. B. Polak and H. Adams.—p. 165.

Analysis of Accidents Occurring in Training with Submarine "Lung." A. R. Behnke.—p. 177.

*Renal Calculus. V. H. Carson.—p. 185.

Summary of Present Status of Radiation Therapy. O. B. Spalding.—p. 193.

Case Duration. Lena Willige.—p. 199.

**Carbon Monoxide and Its Relation to Aircraft.**—White calls attention to the fact that carbon monoxide, a product of incomplete combustion, is present in the exhaust of all types of airplanes. In some types of planes, depending on the type of exhaust leads, fuselage and so on, this gas is carried back to the cockpits of the plane in sufficient concentration to result in as much as 15 per cent saturation of the blood of the pilot and other occupants of the plane. Although the highest saturation of blood obtained during the author's investigation (15 per cent) is not sufficient to render a person unconscious or to be a direct cause of a crash, it is known that the absorption of even minute amounts of carbon monoxide is highly undesirable, owing to the probable adverse effect on the efficiency of the pilot. The fact that exposure to a low concentration over a long period is more harmful than a brief exposure to a very high concentration increases the importance of eliminating all traces of carbon monoxide. Comparatively simple and inexpensive modification of the exhaust leads has eliminated carbon monoxide from the area where it is absorbed by the pilot or other occupants of the plane.

**Renal Calculus.**—Carson submits data on forty-six patients operated on for renal calculus, this group representing fifty-five operations. Spinal anesthesia was the anesthesia of choice and was used with complete satisfaction. Pyelotomy is the operation of choice for kidney stone and lessens the chance of recurrence as compared to nephrotomy. Indications for operation were diminished kidney function, urinary obstruction, infection, persistent hematuria, and pain. Studies of renal function show that when nephrolithotomy is performed in the presence of heavy infection a loss of function with recurrence almost surely follows. There were no deaths following the fifty-five operations for kidney stones.

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## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Archives of Disease in Childhood, London

7: 1-58 (Feb.) 1932

*Benign Tuberculous Infiltration of Lung (Epituberculosis). J. C. Spence.—p. 1.
*Rickets in Sydney, Australia. K. Maddox.—p. 9.
Congenital Obstruction of Female Urethra. O. Addison.—p. 25.
*Lymphocytic Leukemia Causing *Pontile Hemorrhage.* J. C. Hawksley.—p. 29.
Tumor of Suprarenal Cortex in Infant of Eighteen Months. R. Lightwood.—p. 35.
*Umbilical Diphtheria. A. G. Signy and R. D. Bruce.—p. 43.
*Effect of Ammonium Chloride Administration on Metabolism in Infantile Tetany and Rickets. N. Morris and Olive MacRae—p. 47.

**Benign Tuberculous Infiltration of Lung.**—Spence reports three cases of benign tuberculous infiltration of the lung (*epituberculosis*). The chief point of interest in these three cases is that clinically they resembled one another, the patients being tuberculous children, each with a massive lesion of the lung which was benign in character and lasted for a year or more, without much disturbance of the general health beyond some pallor and loss of weight in the early stages. In the first two the evidence that the lesion was tuberculous was only presumptive. In favor of this view are the facts that both had positive skin tuberculin reactions and one a history of contact with a tuberculous parent. Any other explanation of the nature of the consolidation is difficult. The children had not had pneumonia, and the complete disappearance of the lesion after it had been present for a year, and the recovery of the lung without signs of fibrosis or bronchiectasis, exclude bronchial obstruction as the cause. In the third case recorded the child was infected at an early age, shortly after birth, so that the failure to gain weight in the first six months of his life had had a more evident effect on his general condition. Otherwise the physical signs of the lesion and the progress resembled those in the first two cases. In the third case the tuberculous nature of the process has been proved beyond doubt by recovery of tubercle bacilli directly from the lung at two sites and on two occasions. The first exploration was made at a point which might conceivably have been the primary tuberculous focus, small in size and central in site. The second exploration was made at a point near the periphery of the consolidated area, as far as possible from the point of the first exploration. Tubercle bacilli were obtained in equal number and with equal facility from the two parts of the lesion. It is clear, therefore, that in this case the infant was infected shortly after birth with a large tuberculous lesion affecting almost the whole of the upper half of the lung, yet causing comparatively little disturbance to his health and no fever, and permitting a gain of weight. The author emphasizes the value of careful examination of material obtained in the syringe needle when exploring the chests in cases of this type. Of the cases described, the chief point of clinical importance is that they demonstrate that even an infant has a great power of recovery from tuberculous lesions of the lung.

**Rickets.**—In a series of 218 outpatient children of Sydney between the ages of 6 months and 2 years, examined for signs of rickets, Maddox found sufficient clinical evidence, according to a specified standard, for a diagnosis of past or present disease in 52 per cent, the higher incidence falling between the ages of 9 to 12 months. Of these children, 129 were examined roentgenologically. Signs of active rickets were found in 12.4 per cent, and of healed rickets in 31 per cent. With seven doubtful cases, the whole roentgen incidence amounted to 50 per cent. On the whole, the infants were well nourished and the disorder was of a mild to moderate degree and of an occult character. Correlation between the clinical and roentgen observations showed that marked rib beading and ligamentous laxity with abdominal and hepatic enlargement were the most frequent clinical signs in a small series of roentgenologically active patients. Symptoms of irritability and spasmophilia were rare; craniotabes and epiphyseal enlargement were notably absent. Apparently only a cautious reliance should be placed on alterations in the size of the fontanel and delay in teething or walking. Dentitional bronchitis is common. Examination of the diets of these children showed that on theoretical grounds evidences of vitamin A and D deficiency could be anticipated in 43 per cent. The diet in forty-one of ninety-six nursing mothers was deemed unsatisfactory from this standpoint. Breast-fed infants provided over a third of the roentgenologically active and a half of the healed cases of rickets. Fresh Sydney milk, which is mostly from the country, seems to have a good protective effect, better at least than insufficient amounts of cod liver oil. The cause of this high incidence among the hospital class is possibly partly attributable to insufficient ultraviolet irradiation, which should correct a dietetic vitamin shortage. Certain suggestions are made toward prophylaxis mainly based on the principle of making positively sure that each infant receives an adequate daily amount of direct sunlight or of ingested vitamin D.

**Lymphocytic Leukemia Causing Pontile Hemorrhage.**—According to Hawksley, the symptoms and signs associated with lymphocytic leukemia are numerous and depend principally on five factors, which may be thus summarized: (1) changes in the circulating blood; (2) pressure from enlargement of lymphoid structures, or from deposits and infiltrations of lymphoid cells; (3) infiltrations of various organs interfering with their functions; (4) hemorrhage, which may be due to blood changes, weakening or infiltration of the vessel walls, and (5) metabolic disturbances not covered by the factors mentioned already, such as pyrexia, and due probably or possibly to the poisonous effects of the disease itself. Such pyrexia will occur with new growths, such as carcinoma and sarcoma, as well as in leukemias. In consideration of the relative commonness of leukemia and the extensive literature on it, it is none the less apparent that involvement of the nervous system is among its rarer manifestations. It is for this reason, and also because of the typical syndrome which was produced, that the author reports a case of hemorrhage following leukemic infiltration of the pons varolii and compares it with other examples of disease of the central nervous system due to leukemia.

**Umbilical Diphtheria.**—Signy and Bruce state that diphtheria occurring apart from the nasopharynx is an unusual occurrence and is frequently fatal, owing to the false membrane not being recognized as diphtheritic in origin. Umbilical diphtheria occurs in the new-born and in infants up to 3 weeks of age. Of the thirty authentic recorded cases, many of the earlier ones were fatal, but in those occurring in more recent times the infants have been treated with antitoxin and have recovered. In a case reported by the authors, diphtheria was not considered in the original diagnosis, the appearance being that of a severe cellulitis with sloughing. The main features to be used as a guide in the diagnosis of umbilical diphtheria would appear to be (1) the well nourished appearance of the child who is sucking well and is putting on weight normally; (2) an inflamed umbilicus with false membrane formation; (3) a normal temperature almost throughout the disease, quite out of proportion to the severity of the umbilical lesion, which, if coccal, should be associated with fever, and (4) confirmation by bacteriologic examination, which should be sought in every infection of the umbilicus, particularly in children during the first month of life. The treatment in these cases is the early administration of serum intramuscularly, to combat the toxemia and prevent the onset of cardiac or neurologic complications.

**Effect of Ammonium Chloride on Metabolism.**—The administration of ammonium chloride by Morris and MacRae to three patients with active rickets and latent tetany, and to one patient with early healing rickets, produced no apparent signs of acidosis. In the tetany-rickets group there was a definite increase in the retention of calcium and phosphorus, a subnormal increase in the output of titratable acid, and a marked retention of the excess chlorine. In healing rickets there was a definite decrease in the retention of calcium and phosphorus, but a retention of the excess chlorine *slightly above normal.*

One patient who was given ammonium chloride over a period of five weeks showed roentgen and metabolic evidence of healing, although the dietetic and environmental conditions were kept unchanged. The observations are discussed and it is concluded that there is no evidence of any tendency to acidosis in rickets.

## British Journal of Urology, London

**4:** 1-104 (March) 1932

- *Uses and Interpretation of Urethrogram. G. Parker.—p. 1.
- Carbuncle of Kidney. D. J. MacMyn.—p. 11.
- Late Results of Peters Operation for Exstrophy of Bladder. G. S. Foulds and T. A. Robinson.—p. 20.
- *Metastatic Growths of Ureter: Brief Review of Literature and Report of Three Cases. D. W. MacKenzie and M. Ratner.—p. 27.
- Intravenous Urography: Preliminary Observations on Recovery of Iodine as Test of Renal Function Following Injection of Uroselectan. D. P. Cuthbertson and A. Jacobs.—p. 36.

**Uses and Interpretation of Urethrogram.**—Parker believes that urethrography has a definite clinical value in cases of stricture, as, by this method of investigation, the exact situation and extent of the stenosis can be accurately gaged and so the type of operation determined beforehand. Iodized poppyseed oil 40 per cent is the optimum fluid for urethrography because it gives the clearest definition. The sitting position used by the author is the best as a routine in urethrography, as the urethra is projected with almost uniform magnification along its whole length on the plate, and there is in particular no apparent compression of the posterior urethra with urethrograms taken in this position.

**Metastatic Growths of Ureter.**—According to MacKenzie and Ratner, true metastatic growths of the ureters are extremely rare conditions. One should not confuse metastatic growths of the ureter with those resulting from direct extension of tumors of adjacent organs. In metastatic growths of the ureters, malignant cells can always be demonstrated in the perivascular lymphatic spaces or blood vessels about the ureter. A diagnosis of a new growth of the ureter, whether primary or metastatic, is almost always made at operation or in the postmortem room.

## Journal of Laryngology and Otology, Edinburgh

**47:** 161-228 (March) 1932

- Analysis of One Hundred and Twenty-Six Cases of Malignant Disease of Upper Air Passages Treated During a Period of Ten Years, 1921-1930. L. Colledge and R. Peacock.—p. 161.
- *Vincent's Disease. L. S. Dudgeon.—p. 188.

**Vincent's Angina.**—Dudgeon states that in Vincent's angina the infection may be limited to the gums, which are red, swollen and tender, and which may exude pus at the gingival margin and lead to the formation of single or multiple ulcers, which vary in size. In those cases with considerable tissue reaction a yellowish membrane is formed on the surface of the ulcers, and, if it is detached, bleeding freely occurs. In these cases, gangrene seldom supervenes. Similar ulcers may occur on the tongue, throat or pharynx and present a similar appearance. The ulcers, when situated on the tongue, may be exquisitely tender, and the patients often feel extremely ill. The severity of the illness usually depends on the extent of the infection and the pain associated with the ulceration. The breath is offensive but varies in different cases according to the intensity of the necrosis or gangrene. Some of the worst cases the author has seen of this infection have followed extraction of teeth, especially when there has been much laceration of the gums. There may be evidence of infection around the remaining teeth. In other instances the gums are pallid at the outset and show little or no evidence of tissue reaction, and it is in such cases that gangrene is likely to occur. The tonsils, especially, are likely to be affected, and the infection may extend to the mouth and pharynx. Here, again, as already described in the mouth infections, shallow ulcers may be seen, with a bright red reaction in the walls and covered by a yellow membrane. In the severest cases of Vincent's angina, the ulceration is situated on one or both tonsils and may spread rapidly in various directions; such ulcers are deeply excavated, do not bleed readily, are covered by a purply brownish slough, which is friable, and have a very offensive odor. The margins of these ulcers are pallid, and apparently there is but little reaction. The ulceration may extend deeply into the tissues and severe hemorrhage may occur, especially when there is slight reaction to the infection and rapid extension of the gangrenous process. In these cases of Vincent's angina one sees the severest of all the infective processes which occur in the mouth and throat. As in many other acute infections, the degree of pyrexia is not an indication of the severity of the illness; it may be at a high level for a few days in a simple acute case, or there may be little or no pyrexia. Enlargements of the submaxillary and cervical lymph nodes may be slight or considerable, depending on the severity of the infection, but it seldom reaches the degree encountered in severe diphtheria. The rapidity of the pulse and the degree of toxemia are the surest indications of the severity of the illness. Investigations should be made to exclude any concurrent illness in cases of Vincent's angina.

## Journal of Pathology and Bacteriology, London

**35:** 149-300 (March) 1932

- *Spleen in Streptococcal Infections: Histologic Study of Changes in Experimental Infections of Rat. J. W. Orr.—p. 149.
- Completely Healed Dissecting Aneurysm of Aorta with Obliteration of Sac. T. Shennan.—p. 161.
- Some Observations on Anticomplementary Serums. R. D. MacKenzie and R. S. Marshall.—p. 175.
- *Natural Immunity to Staphylococcal Toxin. Lucy M. Bryce and F. M. Burnet.—p. 183.
- Some Observations on Cellular Immunity to Snake Venom. C. H. Kellaway and F. Eleanor Williams.—p. 193.
- Cellular Immunity and Antibody in Tissue Spaces. F. M. Burnet, C. H. Kellaway and F. Eleanor Williams.—p. 199.
- *Toxicity of Irradiated Ergosterol: II. J. B. Duguid, Margorie M. Duggan and J. Gough.—p. 209.
- Disease in Relation to Carcinogenic Agents Among Sixty Thousand Experimental Mice. J. M. Twort and C. C. Twort.—p. 219.
- Some Properties of Immune Serums Active Against Fowl-Tumor Viruses. C. H. Andrewes.—p. 243.
- *Staphylococcal Toxin and Antitoxin. H. J. Parish and Winifred H. M. Clark.—p. 251.
- Two Parathyroid Tumors Without Osteitis Fibrosa: One Associated with Acromegaly. G. Hadfield and H. Rogers.—p. 259.
- Carcinoma of Pituitary Gland with Abdominal Metastases. Mary D. Gilmour.—p. 265.
- Relative Incidence of Human and Bovine Types of Tubercle Bacilli in Human Tuberculosis in Scotland. A. S. Griffith and W. T. Munro. —p. 271.
- Immunity to Jensen's Rat Sarcoma Produced by Tumor Extracts. Helen Chambers and Gladwys M. Scott.—p. 283.
- Foot-and-Mouth Disease Lesions in Ear Epidermis of Inoculated Guinea-Pigs. T. Hare.—p. 291.
- Intra-Epithelial Spread of Squamous-Celled Carcinoma. H. E. Harding. —p. 295.

**Spleen in Streptococcal Infections.**—Orr gives a histologic account of the course of the reaction in the spleen of rats infected with various strains of hemolytic streptococci. The earliest changes are observed in the lymphoid and reticulo-endothelial elements, and those appear to precede any demonstrable infiltration of the spleen with polymorphonuclear leukocytes. The greatest primary activity is found in the perimalpighian zone, at the boundary between the lymphoid follicles and the pulp. Proliferation of reticulum cells with disappearance of lymphocytes is followed by marginal accumulation of neutrophil leukocytes. When the animal dies—in all cases with streptococcal septicemia—focal necroses are found in the perimalpighian region. Subsequent changes in the pulp are congestion, infiltration with polymorphonuclear leukocytes and multiplication of reticulum cells and later of lymphocytes and plasma cells. There is progressive decrease in size of the malpighian bodies. Some of the macrophages may be derived from lymphocytes.

**Natural Immunity to Staphylococcal Toxin.**—Bryce and Burnet state that the distribution according to age of staphylococcal antitoxin in human serum is similar to that obtaining for diphtheria antitoxin. In about 50 per cent of cases, the blood of an infant at birth contains the same concentration of antitoxin as the mother's blood; but gross divergences are not uncommon and point to a considerable lag in the passage of antitoxin across the placenta. Natural staphylococcal antitoxin is frequently present in domestic rats and evidence is presented which indicates that its occurrence is a true response to contact with the specific antigen. The authors believe that the "Dick type" reaction intradermal injection of staphylococcal filtrates in many human beings is not a manifestation of the activity of the staphylococcal toxin.

**Toxicity of Viosterol.**—Duguid and his associates found viosterol to be more toxic to rats fed on a certain synthetic vitamin-free diet, of high calcium content, than to rats fed on a normal diet. The absence of vitamins and the high calcium content were considered as possible agents in determining the toxicity, and the high calcium content was found to be the more powerful of the two. After reduction of the calcium and also the phosphorus content of the diet, some evidence was deduced suggesting that the absence of vitamins also contributed, but this evidence is not accepted as convincing. The toxicity was estimated chiefly on the finding of arterial and renal calcification. The reliability of these lesions as criteria was discussed. Arterial lesions are accepted as reliable indications of poisoning in the rat. Renal lesions were noted to occur in viosterol poisoning in two forms; namely, as calcification of the renal arterioles, and as calcareous cast formations in the renal tubules. The former appeared as part of a general arterial involvement and, as such, was taken as a reliable indication. The latter was found to be a lesion of too common occurrence in the rat, independently of the administration of viosterol, to be admitted as reliable evidence of toxicity.

**Staphylococcal Toxin and Antitoxin.**—According to Parish and Clark, staphylococcus septicemia is a comparatively rare and extremely fatal disease. Toxins of staphylococcus can be prepared in an atmosphere containing 25 per cent carbon dioxide in Parker's 4 per cent peptone buffered broth, on Burnet's 0.8 per cent agar plates, and in Winchester bottles containing 0.8 per cent agar to which Parker's broth is added after forty-eight hours' growth. The toxin kills rabbits, guinea-pigs and mice when given intravenously, produces skin lesions in rabbits and guinea-pigs, and is actively hemolytic. It is rapidly converted into toxoid by formaldehyde. Horse antitoxin can be prepared which protects rabbits against a lethal dose of toxin injected intravenously. It is best titrated by injecting mixtures of toxin and antitoxin intradermally into guinea-pigs, and by testing its antihemolytic power. The antitoxin can be concentrated by ammonium sulphate precipitation. When given intravenously to rabbits prior to a certainly fatal dose of virulent living culture, it prolongs and in some cases saves life. The favorable results that have attended its use in a small number of patients justify more extensive clinical trial.

## Journal of Physiology, London

**74:** 231-342 (March 7) 1932

Nerve Supply to Lucas's Alpha Substance. W. A. H. Rushton —p. 231.
*Effect of Washing on Resistance of Erythrocytes to Hypotonic Solutions. G. Saslow.—p. 262.
Vasoconstrictor Action of Acetylcholine on Rabbit's Pulmonary Circulation. U. S. v. Euler.—p. 271.
Action of Cyanide on Isolated Mammalian Kidney. L. E. Bayliss and E. Lundsgaard.—p. 279.
*Rhythmic Contraction of Spleen. J. Barcroft, L. C. Khanna and Y. Nisimaru.—p. 294.
Cause of Rhythmic Contraction of Spleen. J. Barcroft and Y. Nisimaru. —p. 299.
Undulatory Changes of Blood Pressure. J. Barcroft and Y. Nisimaru. —p. 311.
Action of Splanchnic Nerves of Spleen. J. Barcroft, Y. Nisimaru and S. R. Puri.—p. 321.
Observations on Structure and Function of Certain Blood Vessels in Spleen. Y. Nisimaru and F. R. Steggerda.—p. 327.
Reappearance of Glycogen in Muscles of Decerebrate Cat After Its Removal During Tetanic Contraction. R. A. Cleghorn and J. M. Peterson.—p. 338.

**Effect of Washing on Resistance of Erythrocytes to Hypotonic Solutions.**—Saslow was unable to confirm the observations of Brinkman and van Dam that washed and untreated rabbit red cells differ in resistance to hypotonic solutions. The resistance of these cells to a given hypotonic solution seems, within limits, independent of the $p_H$, buffering capacity or salt balance of the isotonic washing fluids used to prepare the suspensions for the experiments.

**Rhythmic Contraction of Spleen.**—Experiments described by Barcroft and his associates do not support the view that the spleen has two essentially different rhythms, a specific rhythm with a period of a minute or more, and a Traube-Hering rhythm with a shorter period. The period of the splenic rhythm, shown on plethysmographic tracings, is usually between twenty-five and fifty seconds; but when the spleen is in a bad condition, or the general blood pressure is low, the period of the splenic rhythm is often over sixty seconds.

## Journal of State Medicine, London

**40:** 125-186 (March) 1932

Health Education of Citizen. H. R. Kenwood.—p. 125.
Welfare of Tuberculous Citizen. P. Varrier-Jones.—p. 138.
Hygiene Research and Chemical Industry. A. von Weinberg.—p. 147.
Survey of Position of Experimental Research on Tuberculosis. L. Haendel.—p. 150.
*Hygienic Problems of Reduced Air Pressure (Mountain and Air Sickness). Koelsch.—p. 160.
German Social Insurance and Trade Diseases. H. Betke.—p. 172.

**Hygienic Problems of Reduced Air Pressure.**—Koelsch believes that in estimating the effect on health and the clinical manifestations arising from sojourning in zones where a reduced atmospheric pressure exists, one must bear in mind altitudes and metereological conditions, active or passive ascent, the speed of ascent and descent, and physical and psychic stress. The principal factors in the biologic disturbances are the reduction of the oxygen content and of the oxygen tension, as well as the reduced atmospheric pressure with increasing altitude. Other factors are cold, wind and radiation. As a consequence of these various factors, characteristic ailments, viz., mountain, balloon and airplane sickness, arise. In connection with mountain sickness, which sets in at about 2,000 to 3,000 meters, active ascent is of special importance; however, the modern suspension railways may also be injurious to delicate persons, as the ascent is relatively rapid. Journeys by balloon or dirigible may endanger health, especially in persons previously not perfectly healthy. The greatest biologic strain results from airplane flying, especially at altitudes above 5,000 meters. This strain is indicated by distinct alterations in respiration, activity of the heart, blood pressure, metabolism, and urine secretion. In the central nervous system particularly, far-reaching inhibitory phenomena and defects occur; the eyes and ears may also suffer. It is noteworthy that the static function of man is inadequate to maintain equilibrium, space orientation being chiefly carried out by the eyes; when these cannot function (dense fog, and so on) orientation in space becomes impossible. Airplane sickness proper—denied by some authors—consists in the main of emaciation, disorders of the intestine and the heart, neurasthenic troubles in conjunction with psychic depression and the like; the causes are said to be a chronic deficiency of oxygen in the tissues, excessive strain on the circulation, unsuitable mode of life or inadequate recuperation. Apart from technical safeguards (oxygen appliances, special clothing, and so on), preventive measures chiefly consist in a proper selection of individuals according to their physical and psychic fitness and hygienic mode of life.

## Kenya & East African Medical Journal, Nairobi

**8:** 301-330 (Feb.) 1932

Education of Backward Peoples. A. R. Paterson.—p. 302.
Ocular Manifestations in Syphilis. Najmudean.—p. 316.

## South African M. Assn. Journal, Cape Town

**6:** 69-104 (Feb. 13) 1932

Some Personal Experiences and Reflections. F. Napier.—p. 69.
General Anesthesia in Ear, Nose and Throat Operations. G. W. B. Daniell.—p. 76.
Some Results of Radium Treatment. D. de V. Hugo.—p. 81.
Seaweed as Food. G. J. M. Melle.—p. 83.

**6:** 105-140 (Feb. 27) 1932

Sterilization of Mentally Defective. H. E. Brown.—p. 107.
Sterilization of the Unfit. J. T. Dunston.—p. 112.
"Our Opposition." P. F. H. Wagner.—p. 118.
Music and Medicine. F. G. Cawston.—p. 119.
Comments and Suggestions. A. Frew.—p. 120.
Dassiepis and Klipsweet. W. Froembling.—p. 121.

## Japanese Journal of Experimental Medicine, Tokyo

**10:** 1-71 (Feb.) 1932

Spirochaeta Morsus-Muris Appearing in Peritoneal Fluid of Mouse. K. Saisawa and K. Taise.—p. 1.
Id.: Second Report. K. Taise.—p. 21.
Id.: Third Report: Agglomeration Phenomenon of Spirochaeta Morsus-Muris. K. Taise.—p. 27.
Results of My Investigations on Streptothrix. T. Yamanouchi.—p. 29.
Toxins of Tubercle Bacilli; Cellular and Humoral Reactions in Tuberculosis; New Conception of Pathogenic Processes of Tuberculosis and of Tuberculous Allergy. Jean Albert-Weil.—p. 35.
Cellular Reactions in Tuberculosis: Cellular Factors of Dispersion and of Localization of Tuberculous Infection; the Problem of Bacteriopexy. Jean Albert-Weil.—p. 43.

## Annales de Médecine, Paris

**31:** 201-296 (Feb.) 1932

Phosphorus Metabolism in Diabetes Mellitus. M. Labbé and M. Fabrykant.—p. 201.
*Test for Galactosuria in Icterus. N. Fiessinger, F. Thiébaut and J. Dieryck.—p. 219.
Aplastic or Hypoplastic Anemia: Iron Content of Blood and Treatment of Anemia with Tryptophan and Histidine. L. Langeron, M. Paget and Mlle T. Senellart.—p. 246.

**Test for Galactosuria in Icterus.**—Fiessinger and his co-workers describe two tests for determining the passage of monosaccharides through the organism. The amphorotatory test consists in administering a solution of two sugars, one levorotatory, the other dextrorotatory, in proportion such that the mixture is inactive to polarized light. The urine is then tested for polarization; if it is dextrorotatory, the dextrosugar has diffused first, and if levorotatory, the levosugar has diffused most easily. It is found that levulose diffuses better than dextrose, and galactose more easily than levulose. The arteriovenous test consists in the comparative study of the passage of dextrose and galactose. After the administration of 50 Gm. of dextrose or 40 Gm. of galactose, the curve for the sugar of the venous and arterial blood is determined. It is found that tissue retention for galactose is much less than for dextrose. Therefore galactose was chosen as the test substance for hepatic function. For the actual examination, the patient fasts after midnight, voids the urine at 7:45 a. m., and at 8 a. m. ingests 40 Gm. of galactose dissolved in 200 cc. of warm water; he watches his diet for the next twenty-four hours, being careful not to drink more than 1,500 cc. of water. The urine is collected in four portions, at 10 a. m., 12 m., at 6 p. m. and the night urine at 8 a. m. The portions are examined immediately for volume and sugar; the amount of galactose is determined chemically and polarimetrically and a control test is performed by determining the amount of galactosazone. The authors believe there is a relationship between the hepatic cellular lesions, the diuresis and the galactosuria. The diagnosis and the prognosis depend on the concentration and not on the absolute quantity of galactose eliminated. The discussion includes various types of toxic-infectious icterus, lithiasic icterus and neoplastic icterus. Since icterus is due either to retention in the excretory routes or to a fissuration in the trabeculae, the authors explain the phenomena by the notion of trabecular effraction caused by parenchymatous lesions. They also incorporated an index of cleavage (I. C.), which is the ratio of polypeptide nitrogen to total nitrogen, and also an azotemic ratio of urea nitrogen to total nitrogen. The index of cleavage is elevated only in marked glycopexis. The hepatic origin of the disturbance in nitrogen metabolism is more certain when there is an increase in the index of cleavage together with a decrease in the azotemic ratio.

## Lyon Médical

**149:** 181-216 (Feb. 14) 1932

Intraspinal Tumors and Tumors of Spinal Cord. L. Bériel.—p. 181.
*New Method of Roentgen Therapy in Fibromas and Metrorrhagia of Menopause. M. F. Arcelin.—p. 194.
Secondary Delirium Subsequent to Pyretotherapy in Dementia Paralytica. Larrivé and Mestrallet.—p. 198.
Operative Indications Based on Hematuria in Prostatic Hypertrophy. E. Perrin.—p. 200.
Physiopathology in Chronic Infantile Decerebrate Encephalopathy with Disturbance in Respiratory Rhythm: Case. Péhu, J. Dechaume, G. Morin and Weigert.—p. 202.
So-Called Roentgen Forms of Pulmonary Tuberculosis. A. Dufourt, J. Angirany and H. Despeignes.—p. 208.

**Roentgen Therapy in Fibromas and Metrorrhagia of Menopause.**—Arcelin undertook research to find a minimum dose of roentgen rays that would arrest menstruation, suppress ovarian function and lead to regression of fibromas of the uterus. He used a tension of 200,000 volts, a Coolidge tube and a filter of 1 mm. of copper and 2 mm. of aluminum. The right and left ventral ovarian regions were irradiated every six days and the rays inclined in such a way that the uterus was irradiated each time. The treatments, in order, were 800 r, 600 r, 400 r and 200 r. At the end of the month, the same ovarian regions were irradiated on the dorsal side and the same series of decreasing irradiations were used. In both series of treatments, while one side was irradiated, the other side was protected by a thick layer of india rubber or lead and the median line for several centimeters did not receive any irradiation. In 95 per cent of the patients treated, the fibroma was reduced and did not give further difficulty. Good results were also obtained in utero-adnexal congestion with hemorrhage in the period of menopause. Roentgen therapy influences the ovarian function rather than the fibroma. Women between 40 and 50 are more usually benefited than younger women. Exact diagnosis should govern treatment: Malignant myomas, necrosing or degenerating fibromas, and calcified fibromas should be left to the surgeon; irradiation is contraindicated in a pregnant uterus or extra-uterine pregnancy; to the surgeon should also be left all lesions such as cysts and tumors of the ovary, salpingitis, pelviperitonitis and in general all inflammatory lesions of the genital tract.

**149:** 249-280 (Feb. 28) 1932

Infantile Epilepsy with Intracranial Calcifications. Péhu, J. Dechaume and J. Boucomont.—p. 249.
*Acute Hemorrhagic Pancreatitis in Child Aged Five Years. Desjacques.—p. 255.
Two Cases of Sigmoiditis: Intestinal Resection. Puthod.—p. 259.
Localized Hypertrichosis Superposed on Zone of Muscular Atrophy Subsequent to Anterior Poliomyelitis. Barbier and Thévenon.—p. 260.
Tuberculosis, Acute Articular Rheumatism and Cardiopathies. A. Pic.—p. 262.
Venesection from Veins of Ear as Cause of Impotence in Man. M. Lannois.—p. 276.

**Acute Hemorrhagic Pancreatitis in Child Aged Five Years.**—Desjacques describes a rare case of acute hemorrhagic pancreatitis in a child aged 5 years. Secondarily there was a necrotic pseudocyst of the head of the pancreas. The author noted an umbilical ecchymosis and a blue sign of the umbilicus, which is a common hemoperitoneal sign. The case reported is a hyperacute pancreatitis since death occurred on the seventeenth day in spite of two interventions.

## Presse Médicale, Paris

**40:** 353-368 (March 5) 1932

Principles of Nonspecific Intestinal Bacteriotherapy. A. Besredka.—p. 353.
Some New Facts in Physiopathology of Digestive Tube. F. Ramond and J. D. Popovici.—p. 354.
*Drawing Blood from External Jugular Vein. P. Grellety Bosviel.—p. 356.

**Drawing Blood from External Jugular Vein.**—Grellety Bosviel states that venesection has again been incorporated in treatment, but he believes that it may be performed on the external jugular vein instead of the arm. He discusses three personal observations of asystole: a myocarditis with total cardiac insufficiency and venesection in the external jugular with a bistoury, an acute asystole in the course of pneumonia, an acute edema of the lung and alcoholic hypertension; also two observations, one personal and one from literature, in which there was compression of the superior vena cava. Venesection of the external jugular is indicated when edema renders venesection in the arm difficult and in cerebral disturbances in the course of asystole and compression of the superior vena cava. The author discusses the anatomopathologic factors and the technic in venesection (with a needle or bistoury) from the external jugular vein and concludes that bloodletting from the external jugular vein as practiced in olden times is justified in cases of asystole or compression of the superior vena cava accompanied by cerebral disturbances. In acting directly on the cerebral stasis, the action is more intense and more rapid than that in venesection of the arm.

## Schweizerische medizinische Wochenschrift, Basel

**62:** 249-272 (March 12) 1932

*Dangers of Nicotine. E. Waser.—p. 249.
Registration of Frequency Fluctuations in Pulse, Respiration and in Falling Drop. A. Fleisch.—p. 254.
Physiologic and Natural Purgative Remedies and Their Action Mechanism E. Lenz.—p. 256.
Sprue: Case in Temperate Zone. H. Sedat.—p. 260.

**Ridiculous Tobacco Advertisements.**—Since the production and marketing of foods and stimulants are regulated by laws, Waser thinks it unusual that for tobacco, probably the most widely used stimulant, Switzerland does not yet have such regulations. He considers it necessary to protect the public against misleading advertisements of some tobacco products. He discusses the efforts of certain institutes to cultivate types of tobacco that either have a low nicotine content or are entirely free from it. After comparing the nicotine content of various tobacco products and discussing the toxicity of nicotine, he shows to what extent the smoking process influences the nicotine and what portion of it enters the organism. He discusses what factors produce the stimulating effect of tobacco, and the influence of nicotine on the nervous system and the circulatory organs. He evaluates various methods that have been recommended to reduce the nicotine content. As most effective he considers the artificial cultivation of types of tobacco that have a small nicotine content or are free from it. He shows that most of the methods that have been recommended to extract the nicotine or to make it harmless are ineffective, for examination of many brands of tobacco products that were advertised as having a reduced nicotine content revealed that they had the usual content or even an increased content. He ridicules and severely criticizes misleading advertisements and demands that these should be curbed by laws to protect the health of the public and also to prevent exploitation by charging exorbitant prices for products that do not fulfil the claims made for them.

### Archivio di Ostetricia e Ginecologia, Naples

**19:** 97-146 (March) 1932

Action of Insulin Treatment on Female Genitalia and Thymus. Adriana Longo.—p. 97.
Metabolism of Maternofetal Fats. A. Piccardo.—p. 117.
*Deviation of Complement in Chronic Gonorrhea of Women. G. Feraco.—p. 137.

**Deviation of Complement in Chronic Gonorrhea of Women.**—Feraco states that many scientists have experimented with the immunity reaction of the blood in individuals with gonorrhea in order to ascertain and control the biologic diagnosis. There are differences of opinion regarding the specificity of the gonorrheal reaction. The majority of investigators, however, take the affirmative stand. The author's research is based on the blood serums of 126 women with chronic gonorrhea of the genitalia. The technic employed, the Wassermann test, revealed a high percentage of positivity. The reaction proved especially valuable for the etiologic diagnosis of cases of chronic adnexal diseases. A control test was made of the blood of forty women who never had gonorrhea or had only a history of previous infection. This revealed a negative reaction in subjects not infected with the gonococcus and in which no gonococcus antibodies existed. The author concludes that: 1. The gonococcus reaction is useful in chronic forms of gonorrhea (91 per cent positive). 2. In practice it is necessary to obtain the proper antigen. 3. The clinician can receive the same assistance from the test for gonorrhea as he receives from other laboratory tests for other diseases.

### Boll. e Memorie d. Soc. Piemont. d. Chir., Biella

**2:** 127-192 (Feb. 6) 1932

Renorenal Reflexes. M. Sacchi.—p. 131.
Dislocation-Fracture of Shoulder and of Elbow: Two Cases. B. Anglesio.—p. 137.
*Renal Pseudocalculus from Calcified Echinococcal Cyst. P. Crovery and F. Placeo.—p. 149.
Technic of Peridural Anesthesia. A. Bertocchi.—p. 163.
*Total Hernia of Small Intestine Through Transverse Mesocolon and Gastrocolic Omentum in Old Gastro-Enterostomy Patient. R. Pecco.—p. 177.
*Isolated Chronic Torsion of Transverse Colon with Rotation of Stomach. L. Caporale.—p. 183.

**Renal Pseudocalculus from Calcified Echinococcal Cyst.**—Crovery and Placeo point out that the diagnosis of a completely calcified echinococcus cyst of the kidney is especially difficult when hematologic and biologic signs are lacking that indicate a parasitic infestation and when roentgen examination in itself is not sufficient, since, with the complete calcification of the cyst, the peculiar characteristics of such a lesion are absent.

**Hernia of Intestine Through Transverse Mesocolon and Gastrocolic Omentum in Gastro-Enterostomy Patient.**—Pecco emphasizes that in this man, aged 37, there were no symptoms of occlusion but only vague diffuse pains in the abdomen, especially in the epigastrium, arising particularly after meals, and eructations, regurgitation of sour and bitter fluids, and, finally, vomiting, all the disturbances being referable to the stenosis due to the position of the intestinal loops. The symptoms disappeared following intervention, and nine days later the patient's nutrition was without embarrassment.

**Isolated Chronic Torsion of Transverse Colon with Rotation of Stomach.**—Caporale did not find a case of isolated chronic torsion of the transverse colon discussed in the literature. His patient, a woman aged 41, on being admitted to the clinic, was subjected to various examinations to rule out ulcerative or neoplastic lesions of the digestive tract. These, especially the roentgen examination, pointed to anomalies of position, which were confirmed at operation. There being no indications of adhesions, the organs being all in situ, and the intestinal tract presenting a normal development, the author's teacher concluded that a pexy of the colon followed by gastropexy would be the logical intervention. Colopexy was carried out, after detorsion anticlockwise, and sutures were applied between splenic and hepatic angles of the transverse colon and wall of the parietal peritoneum. The stomach was fastened with linen sutures between the gastrocolic juxtapyloric omentum and the parietal peritoneum of the right flap of the laparotomy incision, so as to leave sufficient mobility to the stomach, but preventing it from moving too much. The postoperative course was uneventful.

### Policlinico, Rome

**39:** 243-282 (Feb. 15) 1932. Practical Section

Constipation. P. Alessandrini.—p. 243.
**Hepatic Tympanism as an Early Symptom of Perforated Gastroduodenal* Ulcer. G. Pieri.—p. 253.
Treatment of Toxic States in Intestinal Occlusions and in Acute Peritonitis by Means of Hypertonic Solutions of Sodium Chloride. C. Colucci.—p. 256.
Retroperitoneal Subcutaneous Traumatic Rupture of Duodenum. G. V. Brizio.—p. 261.

**Hepatic Tympanism as an Early Symptom of Perforated Gastroduodenal Ulcer.**—In eleven cases of peritonitis due to perforation by gastric or duodenal ulcer, Pieri found, in making the objective examination, in every instance tympanism apparently due to the escape of air from the stomach into the peritoneal cavity through the perforation. The author thinks that this symptom, which is verifiable from the first hours of the perforation, may have a notable clinical value for the early differentiation of acute peritonitis due to perforation of an ulcer from the peritonitis due to appendicitis. In the latter the disappearance of the hepatic dulness is found usually in the terminal stage through the interposition of the meteoric intestine between the liver and the abdominal wall, or through the development of gas due to anaerobes within the peritoneal cavity.

**39:** 113-160 (March 1) 1932. Medical Section

Further Relations Between Reticulated Tissue and Fibrosis of Lungs in Pneumothoracic Collapse. E. Antoniazzi.—p. 113.
Hormones and Renal Function with Reference to Diabetes Insipidus. L. Villa and M. Gavazzeni.—p. 128.
Extramedullary Spinal Tumors. E. Jacarelli.—p. 139.
*Gradual Occlusion of Coronary Arteries. G. Cataldi.—p. 152.

**Gradual Occlusion of Coronary Arteries.**—Since the American school has cleared up the syndrome of acute occlusion of a principal branch of a coronary artery, Cataldi has chosen to write on gradual occlusion. The case literature is quite limited. In gradual occlusion of the right coronary, a large collateral circle is established, constituted by anastomosis in the descending branch of the left coronary, the anterior descending branches of the right and correspondingly in the terminal branches of the posterior interventricular branch of the right coronary as well as the terminals of the posterior collateral branch of the left. The most serious myocardial lesions are found in the left ventricle. The increase of the force of systolic contraction and the hypertrophy of the left ventricle produce most intense inhibition of the blood circulation in the myocardium of the left ventricle. Gradual occlusion is more frequent in the right coronary. There are three types of coronary circulation habitually found in: (1) dogs, with a prevalence of the left coronary; (2) equines, with a prevalence of the right coronary; (3) man, with a prevalence of the left coronary. Gradual occlusion is determined either by extrinsic causes by an aortic process, above all a syphilitic aortitis, or by intrinsic causes, and by alterations of the vascular tunics in the initial tract of the coronary. The majority of cases are of extrinsic causation. All authorities agree on the diversity of anastomosis as to size and number. Anastomosis normally exists but cannot maintain a compensatory circulation when a coronary occlusion occurs in the acute stage. If gradual occlusion occurs, capillary and precapillary anastomosis have a greater possibility of development. The territory of the occluded coronary cannot be directly nourished by the blood contained in the cardiac cavity. The author holds that in the alteration of the coronary in its initial tract, either as a myocarditis with or without anginoid phenomena or as angina pectoris without myocarditis, it is impossible to make a diagnosis because (1) one can only suspect the disease and (2) it is useless to think of prognosis and cure.

## Archiv für Hygiene und Bakteriologie, Munich

**107:** 127-242 (Jan.) 1932

Estimation of Fatigability of Vision by Means of Determination of "Convergence Stability" and of Reserve Accommodation. D. A. Silber and J. I. Trumpaitz.—p. 127.
Stability of Antiscorbutic Substance (Vitamin C) and Its Relation to Natural Copper Content of Canned Foods. E. Remy.—p. 139.
*Bacterial Content and Disinfection Possibilities of Tooth Brushes. K. Viefhaus.—p. 155.
Stimulating Action of Coffee and of Substances Contained Therein on Central Nervous System. G. Joachimoglu and N. Klissiunis.—p. 177.
Variability of Incubation Period in Typhoid. M. Knorr and F. Lenz.—p. 186.
Bacteriologic Content of Meat Products as Indicator of Hygienic Conditions Under Which They Are Produced. Brekenfeld.—p. 193.
Vitamin Content of Dried Figs and Dates. M. Ali.—p. 219.
Methods for Demonstration of Fecal Colon Bacilli in Water. G. Lind.—p. 234.

**Bacterial Content and Disinfection of Tooth Brushes.**—Viefhaus found that newly purchased tooth brushes, whether they have a protective covering or not, are not sterile, for he detected many bacteria, some of them pathogenic. Because of this he considers the sterilization of newly purchased tooth brushes absolutely necessary. Most of the methods that have been recommended for the disinfection of tooth brushes he found to be ineffective, such as sodium chloride even when used in a concentrated form, also formaldehyde vapors that develop at room temperature. However, formaldehyde vapors that are developed under the influence of heat, when potassium permanganate acts on a formaldehyde solution, effect complete sterilization in a comparatively short time. This reliable although somewhat complicated method is not suited for daily use but should be resorted to whenever it is necessary to sterilize tooth brushes of patients with such conditions as alveolar pyorrhea or with parodontitis. It is also suitable for hospitals and sickrooms, and it has the advantage that it does not in the least impair the tooth brush.

## Archiv für Kinderheilkunde, Stuttgart

**96:** 1-64 (March 4) 1932

*Treatment of Acute Encephalitis in Children by Means of Large Quantities of Serum from Adults. E. Kramár and G. Petrányi.—p. 1.
Factors Influencing Prognosis of Pneumonia During Childhood. R. Kochmann.—p. 14.
Micromethod for Erythrocyte Sedimentation Reaction. L. Feuerstein.—p. 26.

**Treatment of Acute Encephalitis in Children.**—Kramár and Petrányi discuss treatment with convalescent serum and then cite the case of an infant in which they obtained favorable results with injection of blood from the mother. This induced them to try blood from adults in other cases, but because too large quantities (200 cc.) were required, which might cause complications when injected, they decided to inject only the serum (from 30 to 40 cc.). Of thirty-three children with encephalitis that have been treated by the authors since 1925, twenty were treated according to the usual method (lumbar puncture, quinine, methenamine; iodine preparation and sulphur injections), and thirteen were treated only with large quantities of serum from adults (from 30 to 117 cc.). Of the thirteen who were treated only with serum, two died, whereas of the twenty who were treated according to the older methods, eight died. From this the authors conclude that serum from adults, when given in large quantities, is valuable in the treatment of encephalitis in children. They consider it possible that there are great individual variations in the therapeutic value of the serum of different persons and they think that this may explain their two failures, as well as the fact that in some instances the injection is followed by a sudden improvement, while in other cases the improvement is only gradual. They hope that eventually it will be possible to estimate the therapeutic value of the serums and to be able to select the most effective serum, and even to store effective serum for cases of emergency.

## Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

**90:** *259-400 (Feb.) 1932*

Endocarditis During Pregnancy and Puerperium. N. Alders.—p. 259.
Diagnostic Significance of Position of Fetal Chin According to Gauss. W. Haupt.—p. 277.
Course of Confinement in Case of Narrow Pelvis: Complications and Therapy. P. W. Sharov.—p. 284.
*Significance of Submammary Elevation of Temperature in Pregnancy and Puerperium. L. Bickel.—p. 304.
Rapid Diagnosis of Pregnancy from Urine. K. Ehrhardt.—p. 316.
Diagnosis and Therapy of Far Advanced Extra-Uterine Pregnancy with Living Fetus. N. P. Mariantschik.—p. 320.
Treatment of Inflammatory Condition of Female Genital Organs by Means of Saturated Polyvaccine. L. J. Bublitschenko.—p. 334.
Clinical Manifestations of Glandular Hyperplasia of Endometrium. K. Adler.—p. 340.
Serology of Carcinoma and of Pregnancy Toxicoses: Serologic Pregnancy Reactions. E. Englehart.—p. 349.

**Submammary Elevation of Temperature During Pregnancy and Puerperium.**—On 100 women, in whom during the last four weeks of pregnancy the axillary and the submammary temperatures were determined every day, Bickel observed regularly an increase in the submammary temperature of from 0.1 to 1.2 C. He found that the greater the increase in the submammary temperature during the last weeks of pregnancy, the greater was the milk production during the first seven days of the puerperium. In women in whom the submammary temperature increase averaged less than 0.2 C., the milk production was usually subnormal, whereas in cases in which the temperature increase was more than 0.2 C., the milk production was normal or more than average. The author further states that in evaluating the submammary temperature the shape of the breast has to be considered. If, in case of a pendulous breast, the submammary temperature increase is slight, the probability of hypogalactia is especially great. On the other hand, considerable differences in temperature in case of globular breast indicates a greater milk supply than would the same increase in case of pendulous breast. During the first months of pregnancy, increases in the submammary temperature are observed in only about one third of the cases, and the majority of these women show secretion of colostrum. Examinations in nonpregnant women revealed in 20 per cent of the cases an increase in the submammary temperature. This percentage is small when compared with that of gravidas and puerperas, yet it nevertheless decreases the value of the submammary temperatures for the determination of the secretory capacity of the mamma. If fever exists during the puerperium, a certain reserve is necessary in the evaluation of the submammary temperatures.

## Münchener medizinische Wochenschrift, Munich

**79:** *375-416 (March 4) 1932*

*Serology of Syphilis. E. Meinicke.—p. 375.
Iron Metabolism of Premature Infants. O. Beck.—p. 378.
After-Examination in Twenty-Seven Cases of Postvaccinal Encephalitis. O. Kudelka.—p. 379.
Significance of Sugar in Urine of Gravidas. H. Nölle.—p. 380.
Placental Malaria Infection, Congenital Malaria and Inoculation Malaria. E. Thonnard-Neumann.—p. 382.
Progress in Recognition and Treatment of Most Important Intoxications. E. Leschke.—p. 383.
Sample of Hand Writing and Pass Picture for Case Record of Every Patient. A. Bingel.—p. 386.
Roentgen Treatment of Internal Diseases. F. Salzmann.—p. 387.
Cardiac Action of Calcium. A. Zarcinas.—p. 391.
Hypertension a Chronic Allergic Animal Protein Toxicosis. Bienstock.—p. 397.

**Serology of Syphilis.**—Meinicke shows that research during the last fifteen years has brought the serodiagnosis of syphilis to a high point of efficiency and that it has reached a certain finality. He thinks that differences in the reactions of various tests are only quantitative, that is, relative. If they appear to give contradictory results, this is only because a test is less definite. For practical purposes, that is, as a foundation for diagnosis and as a guide in therapeutic measures, the author recommends the modern precise flocculation reactions.

## Wiener klinische Wochenschrift, Vienna

**45:** 289-320 (March 4) 1932

Treatment of Cancer of Cervix Uteri by Surgery and Irradiation. L. Adler.—p. 289.
*Pathogenic Connection Between Acute Articular Rheumatism and Tubercle Bacillemia. C. Reitter and E. Löwenstein.—p. 293.
Climate and Asthma. L. Hofbauer.—p. 298.
So-Called Parenchymatous Hemorrhage of Stomach. A. Ciminata.—p. 299.
*Diathermy Treatment of Ulcer of Leg. S. Szandicz.—p. 300.
New Antigen for Complement Deviation in Gonorrhea. I. Jacobsohn and J. Schwarz.—p. 306.
Treatment of Relapsing Otitis. J. Schnierer.—p. 306.
Specific Therapy and Prophylaxis in Diphtheria and Scarlet Fever. J. Siegl.—p. 307.
Significance of Initial Hemoptysis. A. V. Frisch.—p. 307.
Therapeutic Measures Advisable in Injuries of Fingers and Hand. E. Gold.—p. 308.

**Acute Articular Rheumatism and Tubercle Bacillemia.**—Reitter and Löwenstein report observations in eighty-two cases of acute polyarthritis. In the majority of cases they were able to demonstrate a tubercle bacillemia, but they consider the mere fact of a simultaneous occurrence of a tubercle bacillemia and of acute polyarthritis as not sufficient proof for a pathogenic connection between the two. However, in addition to the tubercle bacillemia they also found increased vascular permeability and an increased allergy, especially toward tuberculin. On the basis of clinical and bacteriologic observations, the authors conclude that acute rheumatism is an exudative inflammatory phase in the course of a tuberculous reinfection. On the basis of this theory they hope to develop an etiologic therapy. They point out that the treatment with salicylates is neither etiologic nor specific but only an extremely valuable symptomatic treatment. They admit that for the present the salicylates cannot be dispensed with, since they reduce exudation, pains and fever. The disadvantage of the salicylate treatment is that it does not prevent relapses and cardiac complications. As yet the authors do not have a definite therapeutic procedure to offer, but they give suggestions as to what factors have to be considered; namely, to make the tubercle bacilli in the blood harmless, to remove all factors that lead to impairment of the vascular walls (removal of septic foci) and desensitization by means of tuberculin.

**Diathermy Treatment of Ulcer of Leg.**—Because ulcers of the leg, especially varicose ulcers, still represent a therapeutic problem, Szandicz decided to try diathermy treatment. After mentioning various reports that had appeared in the literature about this method, he relates his own experiences. In eleven of sixteen varicose ulcers that had existed many months or even several years, and which had proved refractory to nearly all therapeutic measures, systematic diathermy treatments produced objective results (narrowing of the ulcer or even complete epithelization). However, in three of these cases the healing was only temporary. After medical supervision had ceased for a while, and several weeks after the patients resumed their work, the ulcers opened again. This shows that neither is the therapeutic effect of diathermy always permanent nor does it prevent the formation of new ulcers. In five of sixteen cases, diathermy treatment accomplished nothing: three of these were torpid ulcers with callous margins, one was a crateriform thrombophlebitic ulcer, and one was a varicose ulcer that under the influence of diathermy treatment became erethistic. The diathermy therapy effected improvement in one case of roentgen ulcer and in one case of perforating ulcer of the foot. One ulcer in idiopathic atrophy of the skin was not influenced. In twelve cases of ulcer of the leg the pain was lessened considerably, two remained uninfluenced, and in three cases an estimation was impossible. Five cases of moist dermatitis of the leg, some of which showed infiltrates, were improved in a comparatively short time and some healed completely. One case of artificial thrombophlebitis, in the region of a spontaneous thrombophlebitis that had taken its course, was favorably influenced by diathermy treatment. The author realizes that his material is rather small, but in view of the therapeutic experiences in diffuse inflammations of the skin, he considers his report justified and the treatment deserving of further trials. In evaluating the diathermy treatment for cases of varicose ulcers of the leg the author does not advocate it as the standard method of treatment, for its objective results are not essentially better than can be produced by the usual methods. However, occasionally it may be employed as an adjuvant to other therapeutic measures; for instance, when there is hope that by loosening the marginal portions a stationary process may be made active again, but especially when painfulness disturbs the sleep and impairs the working capacity. Painfulness is counteracted in a large percentage of cases.

**45:** 321-352 (March 11) 1932

*Modification of Growth of Bone by Ferment Action. Carla Zawisch-Ossenitz.—p. 321.
Aspects of Cholecystography in Functional Disturbances. W. Unverricht and E. Freude.—p. 326.
Subcutaneous, Traumatic Tearing of Poplitcal Artery. G. H. Bartsch.—p. 328.
Acetonuria in Exophthalmic Goiter. E. Lichtmann.—p. 331.
Significance of Specific Peptones for Diagnosis and Therapy of Allergic Diseases. K. P. Eiselsberg.—p. 332.
Modern Methods of Anesthesia. H. Steindl.—p. 334.
Complications in Course of Artificial Pneumothorax and How to Avoid Them. J. Sorgo.—p. 340.

**Modification of Growth of Bone by Ferment Action.**—Zawisch-Ossenitz reports animal experiments with an aqueous extract from the growth zones of the bones of calves. That the results obtained with this extract are not due to a nonspecific protein action is proved by the fact that the deproteinized extract had the same effect as the raw extract. The necessary concentration of the extract is done by simply isolating the globulin fraction that contains the largest amounts of the substance. The chemical nature of the extract is not yet definitely known, but certain qualities, especially its thermolability, speak more for a ferment character than for a hormone character. Because the extract is sterilized with tricresol, it is suitable only for subcutaneous and intravenous injection, since intramuscular injection is extremely painful. The author further discusses the dosage and her methods of determining the efficacy of the exact and shows curves that indicate the effects produced by the extract. She further describes the histologic changes in the bones and reaches the conclusion that the administration of the bone ferment containing substance produces bones that are not only quantitatively but also qualitatively superior.

## Zeitschrift für klinische Medizin, Berlin

**119:** 551-796 (Feb. 24) 1932

Chemical Foundation of Ehrlich's Diazo Reaction in Urine. P. Sachs and H. Kloss.—p. 551.
Clinical Aspects and Pathologic Metabolism of Latent Hepatopathies. F. Stroebe.—p. 564.
Position of Liver in Intermediate Metabolism. K. Paschkis.—p. 581.
Psychologic Work Tests in Patients with Circulatory Disorders. F. Meyer.—p. 599.
Recognition of Arrhythmia by Means of Pulse Time Recorder. A. Fleisch, E. Masing and R. Beckmann.—p. 618.
*Influence of Digitalis on Ventricular Complex in Cardiac Insufficiency. M. Winternitz.—p. 632.
Disturbances of Decomposition of Hemoglobin in Cutaneous Hemorrhages of Patients with Circulatory Disturbance and with Engorged Liver. S. Feher and E. Zak.—p. 656.
Celiac Disease. A. Meyer.—p. 667.
Undercooling Centrifugation Method: Method to Obtain Platelet-Containing and Platelet-Free Plasma Without Adding Substances Preventing Coagulation. A. Fonio.—p. 687.
*Percental Distribution of Various Sizes of Erythrocytes in Different Types of Anemia. A. Kaemmerer.—p. 701.
Treatment of Inflammatory Diseases of Urinary Passages by Means of Methenamine. F. Bartelt.—p. 711.
Action of Isolated Fractions of Hormones of Posterior Lobe of Hypophysis on Motility of Gallbladder. K. Nissen.—p. 722.
*Free Choice of Foods in Adult Patients with Diabetes Mellitus. E. Kestermann.—p. 727.
Extra-Insular Glycosuria and Diabetes Mellitus. L. Wislicki.—p. 745.
Babinski's Reflex as Sign for Differentiation in Insulin Intoxication. H. Sehestedt.—p. 754.
Threshold of Blood Sugar and Its Position in Diabetic Patients. K. Faber and J. E. Holst.—p. 760.
Increase of Blood Sugar Following Administration of Dextrose in Diabetes Mellitus and in Persons Without Diabetes. J. E. Holst.—p. 777.

**Influence of Digitalis on Ventricular Complex in Cardiac Insufficiency.**—According to Winternitz, effective digitalis treatments lead frequently but not always to changes in the initial complex and in the final deflection. These changes may be the only manifestation of digitalis treatments that otherwise appear clinically ineffective. The most frequent change in the ventricular complex is a heightening of its deflections. This change is independent of secondary and of extracardial factors and it can be traced to inotropic digitalis action. By it the "low voltage" electrocardiogram can be overcome in a large number of cases, and the outlines of the arborization block become similar to those of the bundle branch block. The low voltage electrocardiogram in patients without edema indicates unfavorable functional conditions of the myocardium. For the prognosis it is important to differentiate between a reversible low voltage electrocardiogram and a nonreversible one. The electrocardiogram of the so-called arborization block indicates the same anatomic changes as bundle branch block. The final deflection in case of a hypertrophic heart is almost as reliable an indicator of the size of the various portions of the heart as the initial complex. Negativity of $T_1$ indicates a pronounced hypertrophy of the left heart, and of $T_3$ a hypertrophy of the right heart, but these aspects indicate neither coronary sclerosis nor degeneration of the myocardium. During decompensation the ventricular complex frequently loses its original outline, which corresponds to the relative sizes of the two sides of the heart, but after digitalis treatment it is frequently restored. Certain characteristics of this process are considered as a proof that digitalis influences primarily the hypertrophic and insufficient portion of the heart. The depression and deformation of the T deflection that is not dependent on the direction of the initial complex is observed in about one fourth of the patients that are treated with normal doses of digitalis. If toxic doses are given, it is more frequent. Intraventricular conduction disturbances develop rarely following digitalis medication, and if they exist before digitalis treatment is begun they generally do not become aggravated, and consequently they are no contraindication to an energetic digitalis therapy. Functional conduction disturbances may improve considerably under the influence of digitalis. Notching and splintering often undergo characteristic changes, which is probably the result of improved conduction. The author reports a case in which by changes in the position of the diaphragm the electrocardiogram of the right bundle block was changed into that of the left bundle block.

**Distribution of Various Sizes of Erythrocytes in Different Types of Anemia.**—Kaemmerer studied the distribution of the various size groups of erythrocytes in fifteen cases of anemia of various origin. He employed the Price-Jones method, and his results corroborate those reported by McCormick, namely, that in secondary anemia the smaller size groups predominate, which consequently reduces the average diameter below the normal, whereas in pernicious anemia there are more large cells or more large and small cells, which has the result that the average diameter is increased. This test method has clinical value in that it may corroborate an otherwise doubtful diagnosis, and also in that it demonstrates the efficacy of an antianemic treatment.

**Free Choice of Foods in Patients with Diabetes Mellitus.**—Induced by Stolte's report (*Med. Klin.* **27**:831 [June 5] 1931; abstr., The Journal, Sept. 5, 1931, p. 748) on favorable results obtained with an unrestricted diet in the treatment of children with diabetes mellitus, Kestermann tried this method in adults. He concludes that a liberal diet is advisable in older diabetic patients, especially when the diabetes is complicated by some other serious disorder; also in younger patients when the food intake is limited because of a febrile disease. He also found that in many severe, chronic, progressive cases of the younger age groups in which insulin treatment is resorted to, a free diet with high carbohydrate and with moderate protein and fat content produces metabolic equilibrium and improves the well being and the general condition much more effectively than a more restricted diet. In cases of medium severity in which insulin injections are given, the free choice of food is likewise advisable since it improves the physical well being and betters the carbohydrate tolerance. The latter factor permits a gradual reduction of the insulin doses. Moreover, the beneficial psychic influence of a free diet should not be underestimated. For the mild cases of diabetes mellitus, however, dietary measures still remain the foundation of the treatment since the inconveniences caused by the dietary restriction are not comparable to those of a continued insulin therapy with several injections daily.

## Zeitschrift für Tuberkulose, Leipzig

64:1-126 (March 4) 1932

Clinical Significance of Discovery of Tubercle Bacillus. E. von Romberg.—p. 3.
Robert Koch. F. Sauerbruch.—p. 7.
Discovery of Tubercle Bacillus and Some Results. R. Philip.—p. 9.
Significance of Discovery of Tubercle Bacillus for Pathologic Anatomy. P. Huebschmann.—p. 17.
*Demonstration of Tubercle Bacilli in Sputum and Diagnosis of Pulmonary Tuberculosis. L. Bernard.—p. 24.
Work of Robert Koch in Its Relation to Modern Experimental Research on Tuberculosis. B. Lange.—p. 31.
*Tubercle Bacillus and Invisible Elements of Tuberculosis Virus. A. Calmette.—p. 38.
Culture of a Tubercle Bacillus Strain (Typus Humanus) for a Period of Forty-One Years. E. R. Baldwin.—p. 42.
Significance of Discovery of Tubercle Bacillus for Social Hygiene. W. von Drigalski.—p. 46.
Decrease in Tuberculosis Mortality in Last Fifty Years. B. Möllers.—p. 51.
Diagnostic and Therapeutic Significance of Tuberculin. O. Roepke.—p. 56.
*Evaluation of Tuberculin by Intracutaneous Test on Tuberculous Guinea-Pigs. E. Kuster and W. Strempel.—p. 67.
Chemistry of Tubercle Bacilli. E. R. Long.—p. 78.
Significance of Discovery of Tubercle Bacillus for Combat of Tuberculosis in Domestic Animals. B. Bang.—p. 87.
Combat of Tuberculosis in Cattle. H. Miessner.—p. 100.
Types of Tubercle Bacilli in Lupus. A. S. Griffith.—p. 108.
Remarks on Problem of Tubercle Bacillemia. E. Löwenstein.—p. 120.

**Diagnosis of Pulmonary Tuberculosis.**—Bernard discusses the clinical consequences of Koch's discovery so far as they concern the symptomatology of pulmonary tuberculosis. He shows that although the presence of tubercle bacilli in the sputum is the only scientific proof for the nature of the process, it cannot always be practically utilized, for it is inconstant. The elimination of bacilli in the sputum may be sparse, it may be intermittent and it may even be absent in patients who actually have tuberculosis. This shows that the diagnosis cannot be based only on the elimination of bacilli in the sputum. But, on the other hand, bacilli should be carefully searched for, and, if they are not found, the diagnosis pulmonary tuberculosis should be made only if several other factors indicate its existence and other conditions can be excluded. Yet even if the practical significance of Koch's discovery for the estimation of the tuberculous sputum has been somewhat limited, it remains evident that his discovery has been the source of an inestimable progress, not only in that it added to the knowledge about tuberculosis, but also by making a more precise diagnosis possible, which in turn is valuable for prophylaxis and therapy.

**Tubercle Bacillus and Invisible Elements of Tuberculosis Virus.**—Calmette shows that modern methods make it possible to observe the development of the filtrable elements of the tuberculosis virus to the fully developed tubercle bacillus, but he also shows that there are certain gaps in this knowledge that have to be filled by further investigations. It is the task of the clinicians to differentiate between the disease producing action of the ultravirus and that of the tubercle bacillus. The author believes that many infections in which a few acid-fast bacilli but no tubercles are found, namely, such conditions as erythema nodosum, purpura rheumatica, and certain skin diseases that are accompanied by serous or articular effusions (pleurisy, pericarditis, meningitis and so on), are probably caused by the filtrable elements of the tuberculosis virus, and he suggests that all these conditions be grouped together as "prebacillary granulemias." The group of true bacillosis would then include only the generalized or localized diseases in which formation of tubercles takes place and which generally take a much slower course. The classic example of this category is chronic pulmonary tuberculosis. In the conclusion the author pays tribute to Robert Koch, who with his discovery of the tubercle bacillus opened this wide field of investigation.

**Evaluation of Tuberculin.**—Küster and Strempel describe an intracutaneous method for testing tuberculin. By making the test on three series of animals, an exact evaluation is possible. The main purpose of the test is to detect those tuberculin preparations that are most suitable for cutaneous and for intracutaneous use. The method is based on the simultaneous, qualitative and quantitative observation of all reaction manifestations twenty-four, forty-eight and seventy-two hours after intracutaneous injection. The tuberculin preparation that is to be tested is compared with the standard tuberculin on the same animal.

### Zeitschrift für Urologie, Leipzig

**26:** 153-224, 1932

Partially Calcified Ductus Deferentes. H. Hofer and H. Lossen.—p. 153.
*Critical Evaluation of Direct Filling of Urinary Passages with Contrast Medium and Experiences with New Medium (a Thorium Dioxide Preparation). E. Meyer.—p. 157.
Urology of Children in Whom Cystoscopy Is Impossible. E. Ruge.—p. 171.
*Simple Method .for Localization of Suppuration in Urinary Tract. R. Roth.—p. 182.

**Filling of Urinary Passages with New Contrast Medium.**—After differentiating between positive and negative contrast mediums, Meyer discusses the necessary qualities of the positive contrast mediums and shows to what extent the various mediums meet these requirements. He then describes his experiences with a thorium dioxide preparation, which he employed in 200 cases. He considers this preparation the most suitable positive contrast medium for the ureters and the renal pelvis. It absorbs more roentgen rays than do sodium iodide and lithium iodide in the same concentration, and it can therefore be used in a lesser concentration. For the mucous membrane it is indifferent and painless, and if it enters the blood stream it is relatively nonpoisonous. If it is retained in a cystic kidney even for several weeks, there are no reactions. It mixes readily with the urine contained in the organs and thus makes the organs readily visible. It does not flake out and consequently does not lead to obstruction. It only has the disadvantage of a certain viscosity, but this can be overcome by a suitable technic. Of the negative contrast mediums the author prefers oxygen, which, when it enters the blood stream, causes less disturbances than air. To the question whether positive or negative contrast mediums are preferable the author does not answer directly but states that if size, shape and outlines of the hollow organs are to be visualized, only the positive contrast mediums are suitable. If the filling of the cavity is done for the purpose of demonstrating a foreign body that has the same absorption coefficient for roentgen rays as have the surrounding tissues, and consequently gives no shadow, a positive or a negative contrast medium may be advisable, depending on the difference in size between the foreign body and the surrounding hollow organ. If the calculus is in a narrow space, a positive medium is advisable. However, filling with oxygen is preferable if a calculus is in a comparatively wide hollow organ and also for the demonstration of adenomas of the prostate.

**Simple Method for Localization of Suppuration in Urinary Tract.**—Roth states that whereas the two-glass test and the three-glass test indicate only whether the pus contained in the urine comes from the urethra, the bladder or the prostate, he employs a method that reveals whether the pus comes from the upper urinary passages or whether these passages are free from pus. He has the patient evacuate the bladder into two or three glass receptacles. If these urine specimens do not indicate definitely the origin of the pus, the bladder is irrigated with sterile water until the irrigating fluid is clear. Then the bladder is completely evacuated. After that the opening of the catheter is closed for several minutes, until sufficient urine has collected for a new examination, after which the catheter is removed. If this last portion of urine is clear, that is, if it does not contain pus, it can be concluded with certainty that the specimen of urine containing the pus does not come from the upper urinary tract, but if the last portion of urine does contain pus, the source of the pus must be in the upper urinary passages.

### Zentralblatt für Chirurgie, Leipzig

**59:** 577-640 (March 5) 1932

*Anatomic Localization and Treatment of Painful Shoulder Erroneously Designated as Chronic Subacromial Bursitis (Duplay). J. Dollinger.—p. 579.
Incision in Operations on Biliary Passages, with Especial Consideration of Postoperative Hernia. W. Rieder.—p. 583.
Nephropyelotomy. M. Zondek.—p. 588.
Injuries of Cerebral Sinuses. P. Drossart.—p. 591.
*Severe Swine Erysipelas in Human Beings. H. Domrich.—p. 593.
Appendicitis as Secondary Disease in Carcinoma. F. O. Mayer.—p. 597.

**Anatomic Localization and Treatment of Painful Shoulder.**—Dollinger shows that the cause of painful shoulder, a condition that has been referred to erroneously as periarthritis humero-scapularis, as chronic subacromial bursitis or as subdeltoid bursitis, is not an inflammation of the bursa but rather an inflammatory infiltration, a muscular hardness, of the supraspinatus which is caused by overexertion. Because of the deep, protected position of the supraspinatus, the author employs a special method of examination. With the four fingers pressed together, he exerts a strong pressure on the muscle and thus intensifies the pain. As a control examination he exerts the same pressure on the same region of the other shoulder but here produces only the feeling of pressure. In six cases that came under the author's observation it was the supraspinatus that was painful, but in one of them the deltoid muscle was likewise involved. After the pain has been localized, massage of the painful muscle is begun in order to effect resorption of the exudate. Usually the pain in the shoulder is considerably reduced after the first treatment. The stiffness of the shoulder requires longer mechanical treatment, but brisement forcé exacerbates the condition. Since the trouble is of purely local nature, internal treatment is superfluous.

**Severe Swine Erysipelas in Human Beings.**—Domrich, after reviewing the literature on swine erysipelas in human beings, describes the clinical history of a woman, aged 24, who, while working on foods, cut her finger slightly. Subsequently the finger became red and a few days later all the other fingers of the same hand became involved. Several weeks later the hand and the lower part of the arm showed bluish discoloration, and light red areas appeared on the upper arm. There also was considerable exfoliation of the skin. Erysipeloid was thought of, but treatments with ointment bandages, blood injections, quartz lamp irradiation and painting with iodine proved ineffective. The patient had fever, and the red discoloration spread over larger areas of the body. Injections of calcium and of sulphur did not check the further spread of the disease. Bacteriologic examination of the patient's skin revealed the presence of typical erysipelas bacilli; however, the blood was free from these bacilli. Erysipelas serum was now administered, and the fever and the cutaneous manifestations disappeared promptly. When after several days the fever increased again the serum injection was repeated, but this time it was followed by a severe anaphylactic shock, which subsided again in two days. After six days there was another attack of fever, and an exanthem developed around the cutaneous wheal. However, this lasted only several hours. Signs of impairment of the cardiac valves were not detectable. This and the absence of erysipelas bacilli from the blood show that this case of erysipelas was not like the septic endocarditis of swine. In the summary the author emphasizes that this form of erysipelas of human beings has not been described before. It is characterized by a disease of the skin which develops in successive crops over the entire body, also by toxic impairment of the cutaneous capillaries, which leads to bluish discoloration of the skin and finally by septic temperatures that are higher in the morning than in the evening. Serotherapy is the only effective treatment for this form.

### Polska Gazeta Lekarska, Lwów

**11:** 173-192 (March 6) 1932

*Etiology of Influenza (C'cn). M. Gieszczykiewicz.—p. 173.
*Arrest, or Change of Symptoms of Shock in Blood Transfusion, by Previous Impregnation of Red Blood Cells of Different Type. M. Gedroyć.—p. 175.
Hydrogen Ion Concentration on Surface of Skin. (C'td.). J. Stopczański.—p. 180.
*Sex Hormones and Their Therapeutic Application. L. Gerhardt.—p. 183.

**Etiology of Influenza.**—With regard to the rôle of Bacillus influenzae in influenza there are two hypotheses: 1. Pfeiffer described it as specific. 2. Scott, Strümpell, Donaldson and others attributed to it only secondary infections in influenza. Gieszczykiewicz states that the second hypothesis is nearer the truth because it explains without additional suppositions the known facts. To explain the prevailing absence of the influenza bacilli at the beginning of a pandemic, Pfeiffer's theory requires additional hypothetic interpretations. Aphanozoon coryzae and Enigmoplasma influenzae are discarded as exciting causes of influenza by recent investigations on the etiology of this disease. Bacterium pneumosintes is known to be a semisaprophytic micro-organism, frequent in normal flora of the respiratory organs. Thus, concludes the author, the etiology of influenza remains unknown.

**Arrest of Shock in Blood Transfusion by Previous Impregnation of Red Blood Cells of Different Type.**—In previous research, Gedroyć demonstrated that autogenous blood may be changed by impregnation into a different type. He then reversed the experiments and found that also a different type of blood, after proper impregnation, may become similar. The method used was as follows: Erythrocytes from fresh defibrinated blood were washed from five to eight times in order to remove traces of serum and hemolyzed by distilled water in the proportion 1:5 or 1:10. Next, the hemolyzate was rendered isotonic and then cleaned by centrifugation. To this hemolyzate erythrocytes from the donor's blood were added and impregnated at room temperature or in an incubator at 37 to 38 C., for one hour. Epinephrine at times was added in a 1:25,000 or 1:40,000 solution, as an index of eventual hemolytic processes. After impregnation, the erythrocytes were washed several times, mixed with physiologic solution of sodium chloride and injected intravenously, from 0.5 to 5 cc. per kilogram of animal body weight. The first series of experiments showed that heterogenic erythrocytes (which when transfused cause symptoms of shock, fall of blood pressure, noncoagulability and leukopenia), after impregnation with autogenous hemolyzate, change their group character in such a way that the transfusion does not cause shock or fall of blood pressure. The second experimental series demonstrated that, in cases in which transfusion of isogenic and heterogenic erythrocytes did not cause shock, the impregnation of these erythrocytes with the recipient's own hemolyzate changed their character in such a manner that they provoked marked symptoms of shock. The author remarks that, in contradiction to the prevailing belief, the hemolytic processes alone do not cause symptoms of shock after the transfusion of blood. He concludes that by proper selection and proper impregnation of morphologic elements of a donor's blood it becomes possible to foresee occurrence or inhibition of shock and its character.

**Sex Hormones and Their Therapeutic Application.**—According to Gerhardt, since Zondek's investigations two kinds of female sex hormones have become established: (1) those of the ovary and (2) hormones of the anterior pituitary lobe. The ovary produces two hormones, folliculin and lutein. The anterior pituitary lobe produces four hormones: prolan A, prolan B, the hormone of growth, and the hormone influencing metabolism. Of the latter only prolan A and prolan B are related to the organs of regeneration. Thus there are four female sex hormones: folliculin, lutein, prolan A and prolan B. Folliculin, chemically, is probably an oxyketone. It was obtained in crystalline form first by Doisy and Butenand. It is produced by the cells of the stratum granulosum and of the theca interna folliculi in the ovarian follicles, during the first sixteen to eighteen days of the menstrual cycle. By its action the uterus and its mucosa thicken. This action involves also the ovaries; when folliculin is introduced from without, small doses stimulate and large doses depress them. Lutein was obtained in pure form by Corner in 1929. It is produced by the yellow cells of the corpus luteum from the sixteenth or eighteenth day of the menstrual cycle until two or three days before menstruation. Lutein causes reduction in thickening of the uterus and its mucosa, with menstruation as a result. It also exerts an inhibitory action on the growth of the graafian follicles. Prolan A and prolan B are antagonistic in their action on the ovaries. Prolan A causes maturation of follicles, ovulation and secretion of folliculin. Prolan B changes the graafian follicle into a corpus luteum and causes production of lutein. From the described mechanism of hormonic action follows the therapeutic application of hormones. In his clinic the author uses, with great caution, the hormonic therapy in all functional diseases of the ovary. To stimulate the ovaries prolan is given intramuscularly, from 100 to 200 units daily, for from ten to twelve days, combined usually with folliculin. When inhibitory action is desired, as in excessive hemorrhages from the uterus, or for the purpose of hormonic sterilization, prolan is given in larger doses, intravenously and for a considerably longer time. Lutein is also used for inhibitory action on ovaries. Folliculin in doses not over 500 units stimulates; in larger doses it depresses. The author administers prolan and folliculin in amenorrhea and scanty menses, and lutein and large doses of folliculin in excessive menstruation. He warns against the indiscriminate use of hormonic therapy and adds that, so far, good results have been reported in menopausal disturbances treated with folliculin.

## Arkhiv Biologicheskikh Nauk, Leningrad

**31:** 429-492 (No. 5) 1931

Localization of Differential Response. P. S. Kupalov and A. M. Ushakova.—p. 429.
Variability of Mitogenetic Irradiation of Blood in Accordance with Physiology of Organism. S. N. Braines.—p. 432.
Fecundity and Lactation in Relation to Hypovitaminosis in the Female. (Rats). O. M. Bogolubova.—p. 438.
Reaction to Bivalent Mercury in Vessels of Isolated Rabbit's Ear. G. I. Tsobkallo.—p. 452.
Influence of Camphor on Cardiovascular System (II). V. S. Zolotov. —p. 459.
*Movement of Cerebrospinal Fluid in Central Canal. P. N. Ulyanov. —p. 464.
*Scarlet Fever with Primary Metastasis in Lungs. E. I. Savrimovich. —p. 468.
Faults in Benzidine Microtest of W. C. Stadie and E. C. Ross. V. M. Kipyan.—p. 476.

**Movement of Cerebrospinal Fluid in Central Canal.**—Ulyanov reports further studies on movement of cerebrospinal fluid in dogs injected with dialyzed india ink. Injections were made into the fourth ventricle of six dogs. In three the ink penetrated only into the central canal, collected in the pelvicocentral portion, and was absent in the ventricles; in two instances it penetrated into the central canal as well as into the ventricles, and in one instance it penetrated into the ventricles only. Injection into the subarachnoid spaces of five dogs proved that the penetration was only in the region of the neck and sometimes the thorax; it never reached the pelvis; there were small quantities throughout the central canal, especially in the caudal portion. The lymphatic vessels in the region of the nerves of the tail and the lymph nodes between the vertebrae of this region were in all cases filled with ink. The author concludes that these and other experiments that he has made prove that the fluid in the cerebrospinal central canal normally moves in the caudal direction.

**Scarlet Fever with Primary Metastasis in Lungs.**—Savrimovich cites three instances of scarlet fever in children who died from the fourth to the seventh day of the disease and in whom, aside from the exanthem, the primary manifestation was a necrosis in the lungs and bronchial lymph nodes, while changes were not observed in the throat or tonsils. The clinical facts point to a rapid localization in the lungs. The microscopic changes are discussed in detail.

**31:** 493-623 (No. 6) 1931

Dynamics in Internal Secretion: I. E. S. London.—p. 493.
Id.: II. E. S. London and N. P. Kochneva.—p. 504.
Id.: III. E. S. London and N. P. Kochneva.—p. 511.
Conditions for Combination of Veratrine with Muscle Proteins. P. I. Borisov, A. M. Petruñkina and M. L. Petruñkin.—p. 512.
Physiology of Salivary Secretion. S. M. Dionesov.—p. 517.
Influence of Some Factors on Glycemia in Chicken Embryo. G. E. Vladimirov.—p. 528.
Influence of Quinine on Mitogenetic Irradiation of Blood. E. S. Billig. —p. 540.
Cerebral Cortex and Epilepsy. V. S. Galkin.—p. 544.
Experimental Epilepsy Brought About by Partial Freezing of Cerebral Cortex. V. S. Galkin.—p. 559.
Tuberculosis of Organs of Abdominal Cavity. I. A. Pigalev.—p. 572.
*Hemorrhage from Vessels of Neck During Scarlet Fever. T. A. Shtein. —p. 577.
Antidiuretic Activity of Pituitary Extract Injected Subcutaneously in Dogs. S. I. Ordinskiy.—p. 597.
Question of Identity of Pressor and Antidiuretic Substances in Pituitary Extract. S. I. Ordinskiy.—p. 605.
*Antidiuretic Activity of Pituitary Extract Introduced into Stomach. S. I. Ordinskiy.—p. 610.
Reversible Hemolysis. V. A. Belitser.—p. 618.

**Hemorrhage from Vessels of Neck During Scarlet Fever.**—Shtein discusses fifteen personal observations of hemorrhage from the blood vessels of the neck during scarlet fever and concludes that hemorrhage in scarlet fever is not frequent. A diffuse phlegmon originates in the suppurating lymph nodes and then spreads to the blood vessels in contact with the abscessed regions. More of the hemorrhages are arterial (ten instances) than venous (five instances). There is a close relationship between the hemorrhage and the abscess: hemorrhage from a deep temporal artery was related to cervical abscesses; abscesses in the subcutaneous tissue caused hemorrhage from either the temporal artery (one instance) or the external maxillary artery (two instances); other hemorrhages from vessels in proximity to abscesses were noted from the common carotid (two instances), internal jugular vein (three instances), anterior jugular vein (two instances) external carotid artery, superior laryngeal artery, and the ascending palatine artery. Hemorrhage occurred not earlier than the fourteenth day of the disease and not later than the thirty-fourth day. In half of the patients, death occurred several minutes after the onset of the arterial hemorrhage; in the other half a small hemorrhage was followed after several hours by another and fatal hemorrhage. Venous hemorrhage was not as serious and occurred several times in one day. Death usually occurred several hours after the venous hemorrhage had ceased. The author describes four types of changes in the walls of the blood vessels studied histologically: (1) a necrosis of the wall of the vessel and the surrounding tissue due to a fusospirochetal gangrene, (2) necrosis due to both streptococci and Bacillus fusiformis, (3) superficial necrosis due to streptococci alone, and (4) a displacement of the vascular wall by granulation tissue. The pathologic changes vary from diffuse necrosis to the development of granulation tissue, with changes involving leukocytic infiltration intermediate between the two. In most of the cases studied the streptococcus was found alone or associated with a bacillus (in one case Pfeiffer's bacillus).

**Antidiuretic Activity of Pituitary Extract.**—Ordinskiy studied the water exchange in dogs with chronic fistula in the urinary bladder; these dogs received 250 cc. of distilled water and either subcutaneous injections of concentrated solutions of pituitary or intra-intestinal administrations of pills of pituitary alone or together with the water. The pituitary preparations were made in accordance with the international bureau of pharmaceutic standards. The pills in some instances were covered with phenyl salicylate. The author concludes that powdered pituitary in pills covered with phenyl salicylate is antidiuretic in doses of from 0.5 to 3 mg. (0.47 to 2.82 international units) per kilogram of body weight in the dog. The action begins the second or third hour after its introduction into the stomach. This dose is from thirty to fifty times larger than the dose injected subcutaneously. The antidiuretic effect is not due to the histamine present in the pills, since histamine salts in doses of 2 mg. per kilogram of body weight did not inhibit diuresis. The observations in the case of a man (the author himself) who received from 10 to 15 mg. in pills not covered with phenyl salicylate showed some antidiuretic action from the pituitary extract. The author believes that pituitary extract in pills covered with phenyl salicylate could be utilized in the treatment of diabetes insipidus.

## Norsk Magasin for Lægevidenskapen, Oslo

**93:** *225-352 (March) 1932*

*Features of Modern Surgery of Sympatheticus. E. Platou.—p. 225.
*Respiratory Paralysis as Only Symptom of Paralysis of Acute Poliomyelitis. Y. Ustvedt.—p. 251.
*Colony Types in Dysentery Bacilli Type III and Different Relations to Normal, Active Serum. T. Thjøtta and E. Waaler.—p. 258.
*Preparation and Storing of Bacterial Antigens, Particularly Gonococcus Antigen, by Drying. T. Thjøtta and E. Waaler —p. 275.
*Value of Sedimentation Reaction in Dermatovenereology. P. L. Rotnes. —p. 280.

**Features of Modern Surgery of Sympatheticus.**—Platou says that in spastic conditions in which Stoffel's operation is ineffective he has obtained such good results by gangliectomy according to Royle and Hunter that further application of the method is justified. Of his eleven cases of sympathectomy, with fourteen operations, five were instances of Little's disease.

**Respiratory Paralysis as Only Symptom of Paralysis in Acute Poliomyelitis.**—In three cases observed by Ustvedt in 1929, a respiratory paralysis with rapidly fatal outcome developed after sudden onset of fever, without establishment of other paralysis. In the fourth case reported, fully resembling the first three, the diagnosis of acute poliomyelitis was verified at necropsy. The fifth case, regarded as an encephalitis, was at necropsy found to be an acute poliomyelitis; while there was no difficulty in respiration during the course of the disease, the sudden death is attributed to a respiratory paralysis.

**Colony Types in Dysentery Bacilli Type III and Different Relations to Normal, Active Serum.**—Thjøtta and Waaler found both smooth and rough colonies in primary cultures from the stools of patients with dysentery due to dysentery bacillus type III. They say that the S type soon dissociates into the R Type, which is stable and found in all old cultures of this micro-organism. The S and R types present the characteristics described as typical for these variants in other bacilli. Further, the R type is sensitive to the action of normal serum and in bactericidal tests rapidly dissolves, while the S type is resistant to the serum.

**Preparation of Gonococcus Antigen.**—Thjøtta and Waaler prepare the gonococcal antigen for application in the complement fixation test in gonorrhea by drying the emulsions in an exsiccator; they then store it in the dry condition. The appropriate dose is fixed by titration before the drying. To use, they emulsify the antigen by adding distilled water until the original volume is restored, and add the saline solution required for the necessary concentration. Large quantities can thus be prepared at a time, and stored without danger of spontaneous inhibition. Dysentery and typhoid antigens have also been successfully treated by them in this way.

**Value of Sedimentation Reaction in Dermatovenereology.**—In his review of the relation of this reaction in venereal diseases and the most important dermatologic disorders, Rotnes shows that while the reaction does not play a significant part in dermatovenereology it may occasionally be of help both in differential diagnosis and in therapy and prognosis.

## Ugeskrift for Læger, Copenhagen

**94:** *215-248 (March 3) 1932*

*Ovarian Cycle Hormone, Folliculin, with Especial Regard to Conditions of Resorption and Elimination. T. Kemp and K. Pedersen-Bjergaard. —p. 215.
*Administration of Parathyroid Hormone in "Infiltrations" of Subcutaneous Tissue and Muscles. O. Horn.—p. 221.
*Conception of "Subcutaneous Infiltrations." H. Jansen.—p. 228.
Case of Exceedingly Grave Exophthalmic Goiter with Roentgen Treatment. T. Eiken.—p. 233.

**Ovarian Cycle Hormone, Folliculin.**—Kemp and Pedersen-Bjergaard compared the investigations of others on the fate of folliculin in the organism with their own observations. They conclude that the resorption of folliculin, even after the administration of large doses, is probably fairly complete and rapid from the intestinal canal, only small quantities (in their tests, about 6 per cent) being eliminated in the urine and still less in the feces; only when the folliculin content of the blood is extremely high, as in pregnancy, is there a large elimination in the urine, somewhat less being eliminated in the feces. The resorbed folliculin circulating in the blood is destroyed relatively fast; if there is regular administration over a longer period of time the elimination is therefore slight, while the specific effect is greater. The comparatively pure folliculin preparations are presumably resorbed rapidly from the alimentary canal and thus are less effective than less pure preparations, and the use of many small doses is more effective than the application of a few larger doses. In hormone analysis, determination of the folliculin content of the urine affords only incomplete information on the relation in the blood, and examination of the hormone content of the feces is as a rule unnecessary.

**Administration of Parathyroid Hormone in "Infiltrations" of Subcutaneous Tissue.**—Horn asserts that subcutaneous injections of the parathyroid hormone has a favorable effect on the so-called infiltrations of the subcutaneous tissue (subcutaneous fibrositis, cellulitis) and the frequently concomitant myalgias. In many but not all cases a peculiar euphoria was noted, which must be regarded as a specific effect of the hormone. Scattered orientating laboratory investigations on the total blood calcium, diffusible blood calcium, sedimentation reaction, total blood protein, blood picture, osmotic resistance and blood phosphate in patients with infiltrations failed to give certain evidence of pathologic changes.

**Conception of "Subcutaneous Infiltrations."**—Jansen says that the diagnosis of "Subcutaneous infiltrations" is made only when there is tenderness in the subcutis. The cause of this tenderness is a neurasthenic condition. He objects, for practical reasons, to the term "subcutaneous infiltration" and "cellulitis" and prefers "adiposalgia." His statements do not concern pathologic connective tissue nodules that may be found in the subcutis.

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# THE FAMILY DOCTOR AND PIONEER PHYSICIAN OF THE WEST

## CHAIRMAN'S ADDRESS

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As one's memory wanders back to earlier years, the first question likely to present itself is, what influence created one's desire to study medicine? The particular impulse or deciding factor in the life of each of us has probably been different. I wonder, however, if many of us, especially the older ones, cannot look back on pleasant contacts in our late boyhood days with some fine character in the medical profession whose influence largely molded our decision.

It has always been a source of great pleasure to me to have lived just early enough to have been intimately acquainted with some of the group of early medical men who typify the fast disappearing family doctor. It is of him and his immediate predecessor, the pioneer physician of the West, that I have chosen to speak.

Probably the pioneer physician of the West was not much different from the same character in the East, but the West is still comparatively young, and the inspiring and unselfish lives of such men still linger in our memories. They lived under conditions so vastly different from those now prevailing that I feel it a duty to stir your recollections of their type in the hope that the memory of their real reactions on the life of their day may still influence the lives of future medical men, as they have both those of the present and those of the immediate past.

Such recitals as Dr. Pusey's life of his father in the seventies and eighties should be an inspiration to every young medical man. I dare say that many who have read it felt the same kindred feeling as I, that it could easily have been the life history of one's own father.

I have always been grateful that my early experience belonged to the horse and buggy days, because it makes me feel that I had at least a touch of the life of the country or pioneer physician. It helps one to appreciate what they accomplished and the great handicaps under which they practiced compared with today.

The early medical men who played their part in the pioneering of the West came to the particular locality where they settled, either because of some religious conviction or because they were caught up by the gold rush or were brought by the spirit of adventure. Later, as the news of the wonderful western climatic conditions spread, some came seeking better health.

As one reads Dr. Henry Harris's "Story of California Medicine," from which I have here borrowed freely, or the life of the early medical men in the pioneer days of Colorado, Utah and other Western states, one is impressed with the generally high character of the early pioneer physician. True, there were a few medically minded bandits and impostors, but fortunately they lived only a brief life in our medical history.

I cannot believe that many of our early medical men moved West because of failure elsewhere, which seems to have been the case in many instances in recent years. The majority of our pioneer physicians were well educated, cultured, and in many instances, men of rather exceptional medical training. Not a few had spent one or two years in European clinics and brought to the new West the most modern of medical practices.

As one reads Dr. Harris's biographic sketch of such men as Gibbons, Cole, Toland, Cooper and Lane, one realizes that medical progress in the wild and exciting West was from the first destined to be rapid and on a high standard. The establishment of hospitals, inadequate though the first ones were, the foundation of medical societies and schools, the interchange of opinions and the publication of reports and treatises on medical problems were some of the accomplishments of these energetic and progressive professional men in the early fifties and sixties.

Medical men of the early West were not solely concerned with health problems but showed keen interest and participated in educational and civic development. Many were leaders in politics, and some edited the first newspapers. This was not only the case in California but also in the intermountain states. Dr. Willard Richards, my grandfather, was the first editor of the *Deseret News* in Salt Lake City in 1850. Dr. John M. Bernbisel was Utah's first representative to Congress in 1853. Dr. William F. Anderson, a well trained army surgeon who came West during the Mexican War, settled in Yolo County, California, in 1849. After several years of practice there during those wild days of gold rush history, he migrated back to Salt Lake in 1857 where, as recorded in his journal, "He hoped he might practice medicine among his peers in a more civilized and law abiding community." Dr. Anderson's life typifies that of many of our pioneer doctors, in that he held many positions of civic as well as of professional responsibility, besides taking care of an active practice over a large area of sparsely settled country. He was the president of the first medical society in Utah in 1870.

Many personal incidents as examples of the kindly feeling of the earlier medical men to the recent graduate are told in the sketches of the lives of these men. They were not jealous of the recent and rapidly progressive

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type of medical training which younger men brought home with them. Even such radical teaching as Pasteur's germ theory of disease and Lister's antiseptic surgery were quickly accepted by many. Others, more stubborn and prejudiced, refrained for years from acknowledging the truth of such revolutionary theories. Belittling young new comers to the laity was of rare occurrence. The experience of the older physicians easily dovetailed with the better training of the younger ones and often resulted in partnerships beneficial to both. One could truthfully say that Ross' motto, "No doctor's reputation gives him the privilege of being careless of the young doctor's rights," typified this relationship. Consultations were common, were usually initiated by the doctor and were held with much dignity and formality.

Medical ethics was rigidly observed. Any attempt at unethical advertisement was severely criticized. Seldom does one see in medical announcements of today the dignity of California's first medical announcement on Nov. 3, 1847, which read, "Dr. Fourgeaud has the honor to offer his professional services to the citizens of San Francisco and vicinity, Office at Jones Hotel."

The instruction given to students in the early days of California's first medical schools was usually sound, and some excerpts should interest us today. For example, Dr. Toland, in his address to a graduating class in 1865, stressed the advisability of service and courtesy to the poor: "Some who were poor a few years back are rich now and do not forget those who ministered to them when they were in distress."

Robert Louis Stevenson showed his appreciation of the services of a pioneer physician, Dr. William Bamford, to whom he sent a copy of his "Travels With a Donkey," inscribing in it this tribute:

> You doctors have a serious responsibility. You call a man from the gates of death, you give health and strength once more to use or abuse. But for your kindness and skill, this would have been my last book and now I am in hopes that it will be neither my last nor my best.

The medical profession was confronted in our early history with their responsibilities toward the social problems of their respective communities. It was apparently just as difficult then as now to obtain a united opinion from the medical group. The doctors, therefore, lacked the unity necessary to obtain favorable legislation in health and sanitation. It is recorded, however, to their credit, that they depended much more on education than on legislation for the control of social ills. The abuse of alcohol and attempted legislation to control its use early demanded the attention of the medical profession. Temperance societies were formed as early as 1850, and the therapeutic value of alcohol in medicine was a very live question.

Laws governing prostitution and making it a crime to disseminate information leading to abortion were social problems of interest to the doctors as well as to the laity in the late fifties.

One of the difficult problems in early medical practice was that of transportation. Little can we picture in our days of efficient travel the difficulties encountered in pioneer days, especially before the advent of the railroad. The highways were never good, and in certain seasons they were often next to impassable with any kind of vehicle. Distances that had to be covered were great and weather conditions often anything but pleasant. The surest means of reaching one's destination was frequently on horseback. I doubt whether those pioneers would have agreed with Henry Morse Stevens who once said, "Transportation is Civilization."

These trips, especially in the mountain districts, did not permit the cultivation of such diversions as those enjoyed by Dr. Francis Adams, the famous doctor and scholar of Aberdeen, who read much Greek and Latin as he made his daily rounds on the back of his horse. It usually required a doctor's undivided attention as he rode to keep warm, and in certain districts it was necessary to keep an eye open for attacks by bandits or Indians. It is interesting to note in this connection, however, that a doctor captured by either of these groups seldom suffered bodily harm. Medical men held a peculiar and privileged relationship to the bandit element, which frequently indulged in shooting and knifing affrays. Because the services of a doctor were often necessary, the usual haunts and hiding places of these gentry were made known to him, and no shrewd bandit ever knowingly molested him. The medical men enjoyed a relative immunity from the usual holdups. A Dr. Eichelroth of early California records a common dialogue:

Bandit: Hands up and hold 'em high.
Doctor: What the hell do you want of me?
Bandit: Oh, it's you, Doc? Go ahead.

The type of practice followed by all the pioneer physicians was necessarily general. In the early days most of the obstetrics was performed by midwives, who called for the doctor's assistance only when complications arose. It was generally taught and practiced by the better trained physicians that meddlesome interference in obstetrics was dangerous, and that in most cases, if left alone, delivery would occur successfully.

In medicine they were called on to treat almost the same group of diseases as seen today, except for those that have almost disappeared—thanks to modern medicine. In early California, when mining was almost the sole industry, diseases resulting from food deficiencies were common. Cholera also invaded early California at rather frequent intervals. These diseases were seldom encountered in the inland states where agriculture was the main pursuit. Respiratory diseases were common in the winter months and gastro-intestinal infections in the summer. Contagious diseases reaped a heavy toll, particularly among the children.

Sudden deaths are often mentioned but usually attributed to apoplexy or heart failure. Angina pectoris or coronary thrombosis may have been the cause of some of these deaths, but all reference to them is lacking.

There is no account of any of the diseases later described as indigenous to the West, such as Rocky Mountain spotted fever. The history of the Mormon pioneers relates many cases of mountain fever, which, however, do not fit the picture of spotted fever.

Apparently there existed in the early days, as now, those doctors who gave much medicine and those whose observations enabled them to select the drugs which had proved of most value in their treatment of various symptoms and diseases.

Early surgery consisted almost entirely of the traumatic type. Shooting and knifing were altogether too common and were responsible for much of the emergency surgery. Amputations of limbs were often necessary as results of common accidents. History records the exceptional skill which these early men developed in this particular line of surgery. The surgeon's kit of those days, containing his saw and a series of amputation knives, is probably familiar to all of you. What a fertile culture medium the beautiful plush lining of those kits must have been. In the preaseptic days, the only concern in the care of instruments was to prevent rust and protect the edge of the knives. Fractures occurred frequently and were generally handled with great confidence except when compounded. This type usually became infected and was a common indication for an amputation. I dare say that the stories of their usual good results in dealing with the simple fractures, as I have heard some of the older men relate with pride, could partly be accounted for by the absence of roentgenograms.

When the happy day of anesthetics came, chloroform was the one usually employed, and it is remarkable how few accidents occurred from its use until a later period when it was used for long operations.

The carbolic spray must have been a vicious thing when used promiscuously. Some terrible sloughs and scars resulted from its use.

I recently enjoyed an afternoon listening to the delightful reminiscences of Dr. Driver, who is still practicing in Ogden, Utah, at the age of 84. He is a man whose vocabulary is sufficiently picturesque to paint a very vivid picture of many of his early experiences, which apparently typified the routine life of the early medical men. He showed me a prescription book which he prizes very highly. In it, he has copies of the ordinary prescriptions for almost every disease and symptom commonly encountered in his practice since the early seventies. As was the custom then, he compounded and dispensed most of his medicines.

He related a bit of philosophy, which he thinks has helped him out of many difficult positions: "Common sense means good sense, and most successful medical therapy is common sense."

A habit of his that probably saved many of his patients from infections in the days before the value of asepsis or antiseptics was known was the care he used in washing his hands with soap and water, followed by alcohol as a means of washing off the alkali of the soap.

I was interested in his use of water glass and a bandage before the days of adhesive plaster, without which we feel today we can hardly keep house.

The majority of the earlier medical men in frontier life did not allow the question of diagnosis to weigh too heavily on their consciences. Their laboratory methods and physical equipment, on which we of today rely, possibly too largely, were almost nil. Necessity made them keen observers, and their own mental faculties were rather alert. I think generally there was seldom much doubt in their own minds as to what ailed their patients. Since their therapy was largely symptomatic and seldom specific, the finer differential diagnosis probably made little change in the outcome of a case.

I feel quite certain that the modern medical man, in spite of his better training through which he is able to save more lives, is not held in the same almost exalted esteem as was the pioneer doctor, nor does he enjoy quite the same love and affection of the families he serves. Even the early doctor's dress and the dignity with which he carried himself were characteristic and inspired confidence. He prided himself on the type of horse and carriage he drove, which usually distinguished him in his community. In the early days it was almost as easy to pick out the doctor of a community as it was the preacher or the sheriff. His opinion was not as likely to be questioned by his patients as it is today. His visit to the home of the sick was considered an event and was often shared by most of the nearby friends and relatives.

I have had some of my older patients say to me, "It was your father's visits and not his medicines that did us so much good; and you younger men never seem to have time for that."

Recently I received a letter from Dr. Stoddard, now living at Spanish Fork, Utah, and enjoying good health at 83. In speaking of his impressions of his long medical career, he writes:

> One cannot live so close to the hearts, the inner lives, the joys and sorrows of a people as I did for several generations, if he be worth his salt, without making for himself a warm place in their affections.

This pioneer physician has been a keen observer and a constant student and has watched with great interest the medical development in the last sixty years. He recalls very vividly some of the trying experiences of his earlier years when he felt keenly the loss of some patient, whose life he realizes now could easily have been saved by the skill of our modern young doctor, with the help of our up-to-date hospital. He wonders, however, just what this same well trained young doctor of today would have done had he been called on to meet the same emergency out in the "wild country," as he refers to it. He pleads for tolerance in the minds of the young before they pass judgment on the older practitioners. This venerable old man feels that our modern medical training and elaborate equipment may fail to develop in the doctor of today an independence and resourcefulness on which the earlier men without modern facilities had to rely.

Let us hope that our high degree of medical training and specialization may not spoil our young men by making of them merely additional cogs in the wheels of modern medicine in this present machine age, but rather that modern methods and physical equipment may be valuable adjuncts to a well trained medical mind, which can still be just as resourceful, as self reliant and as humane as was that of the medical man of pioneer days.

May I, in conclusion, draw for you a word picture of this fine old character, the pioneer family doctor? More often than not he was middle-aged or elderly. Book learning beyond that of most of his fellow pioneers had not puffed him up with vain glory but had made him tolerant and kindly; and experience in healing not only the bodies but the souls of the members of his sparsely settled community had made him wise and resourceful in service and counsel. In manner, he was grave but cheerful. His eyes were keen and observant but always kindly, and on occasion could twinkle most contagiously, and now and then, in stress of the sadness of others, which he made his own, could brighten with unshed tears. His manner was often brusque, but his hands were always gentle, though he knew only too well that swift pain was often most merciful. His dress was occasionally rough and coarse, but clean and neat. His big gold, hunting-case watch with its massive chain was almost a badge of his profession and a quieting wonder to the ailing child who sat on his knee and forgot the pain in the delight of hearing the cheerful tick-tick-tick and watching the revolutions of the busy second hand.

But it was in times of life or death crisis that the old family doctor was at his best. Then he became general and army all in one. He literally took off his coat, detached his cuffs, rolled up his sleeves and assumed command not only of the patient but of the sick-room and the whole terrified family. There were no nurses to carry out his orders. He made up his mind what to do and did it, if it took all the rest of the night and all the next day as well. His day's work was as long as pain and suffering called. His charity was as broad as the wide territory he served. He loved children and the faithful horse that carried him on his rounds of mercy. There was a man who *practiced* his ideals of service, under conditions never easy and comfortable and sometimes barren and grim to the extreme, and yet kept faith with himself and his people. A homely hero he was—nothing less.

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# PREVENTIVE MEDICINE IN GENERAL MEDICAL PRACTICE

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A good doctor thinks primarily of his patient, and with this the patient is enthusiastically in accord. This traditional attitude of the practicing physician has made the doctor an intense individualist. It has made the doctor the partisan champion of the welfare of his patient against all opposing interests. It has inspired the confidence, affection and admiration of patients for their doctor. I trust no one would change the substance of this relation between doctor and patient. It is important to note that this feeling is entirely personal, and many patients who are devoted to their own doctors may often be quite cold to the medical profession, to organized medicine and to abstract mass medical procedures which we usually call public health measures. Likewise, many doctors are to a considerable extent cold to any procedure that modifies in any way this personal relation between them and their patients. Hence it has naturally followed that doctors have often been instinctively and unconsciously unsympathetic with such annoying bookkeeping details as the registration of births, the reporting of certain diseases, the accurate recording of the causes of death, etc. Perhaps partly for this reason another type of medical man has frequently been introduced to do this work. This type of medical man is mass-minded rather than individual or patient minded. This type of man can think in terms of a pure water supply, remote from the individual patient, and is keenly interested in safeguarding other foods and drinks and in controlling sewage, industrial hazards and the like. He gets satisfaction and comfort from statistics, rather than from the case of Mr. Smith. This is the familiar and older type of public health official—sometimes in the past a versatile man who was also a good practitioner, but nowadays, by the drift of general agreement, a somewhat specialized type of medical man and perhaps not always a doctor of medicine.

But this is only a small part of the present view of preventive medicine. The general practitioner of all time has always been concerned with the personal preventive side of medicine. In that he has had the complete cooperation of the patient. Very little has been written about this until recently, and there has been no established technic. It has been one of those things that has long existed, but has only recently come into the field of consciousness. Consequently it is frequently hailed as a new discovery. But just as physicians have practiced psychotherapy since the beginning of time and long before the word was invented, so doctors and the laity have understood certain causative connections, for example, between green apples and stomach ache, in which there were preventive possibilities. Indeed, if one wished to be subtle and delve into psychology and symbolism, one could go back to the preventive possibilities that are to be recognized of the earliest recorded and most famous apple.

The idea has slowly been developing that it is in this field of the intensely personal relation of doctor and patient that offers the best fruits of endeavors for preventive medicine. The feats of public health in the mass are now accomplished achievements, and they have been great. But the prevention of the present great scourges, such as degenerative heart disease, arteriosclerosis and nervous instability, lies apparently largely in individual hygiene. With the present knowledge and equipment, the prevention of venereal disease and of most infections of the upper respiratory tract, the control of cancer, etc., depend largely on the personal attitude of the individual patient. This personal attitude of the patient is best developed by the continuous close relation of doctor and patient. Doubtless many lay people learn much from reading, lectures, radio talks and the like. But not infrequently this so-called education needs control and testing in personal interviews between patient and doctor.

The general practitioner and his somewhat showy, perhaps more imposing but also less substantial, brother, the internist, is nowadays frequently consulted for apprehension in regard to heart disease or again indigestion, to use common examples. The activating impulse may be an annual examination, the death or illness of a friend or relative or so-called public health publicity. The old family doctor knew the family and past history and the habits and constitution of the patients and could start at that point. The present general practitioner may or may not have that advantage. Often, now, the general practitioner and nearly always the internist must dig out these data. The actual examination may be a small part, but it must be adequate. If the earlier details of the family history, past history, habits and constitution are neglected, the examination must be much more extensive and yet may be misleading. And furthermore, in such an event the opportunity for constructive personal preventive measures is lost. Likewise, it must be pointed out that in a large clinic, either private or public, this preventive medical aspect may easily be lost. The segmental scrutiny of the patient has its disadvantages in this respect.

The laity is prepared to accept the idea of personal preventive medicine with enthusiasm. Patients no longer feel that they must wait for obvious and marked incapacity before seeking medical service.

The personal preventive measures have already been considerably developed in certain specialties. The dental specialty has been keenly alive to these possibilities, and while it is passing through an experimental era in regard to many of the details of preventive dental medicine and while perhaps there is not yet sufficient grasp and indeed sufficient data regarding some of the more fundamental aspects of preventive dental medicine, nevertheless, the general idea of preventive work in dentistry has been accepted with enthusiasm by the public.

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At the present time the large emphasis in the practice of pediatrics is preventive in the same personal sense. The parents employ a pediatrician (or a general practitioner as the case may be, but the highest development is usually seen in pediatric practice) shortly after the birth of the child, and the pediatrician regulates the food and every other habit of a well baby. He makes routine physical examinations of the well baby, and then of the well child. Furthermore, the pediatrician or family physician performs vaccination against smallpox, arranges for diphtheria and other immunization, etc. The careful pediatrician or family physician is the one who refers the baby or child to the dentist, oculist and, if necessary, to the nose, throat and ear specialist. In addition, the pediatrician or family physician helps in the decision in regard to school, outside activities and the like. The mother who was carefully observed during her pregnancy is quite prepared for this.

And yet grown men and women are not as a general rule receiving the supervision and guidance that are in any way comparable to those received by babies and children. The schools and colleges are now beginning to take up in a somewhat mass fashion the preventive work begun by the pediatricians and general practitioners among the babies and children. Curiously enough, students in medical schools have been, at least until recently, allowed to be unhygienic to a shocking degree, with disastrous results, most notably, perhaps, in regard to tuberculosis. The example of personal preventive medicine in the group of medical students is, of course, the best education for future physicians in preventive medicine.

It is true that many medical men already do such work to a varying degree. But a more acute consciousness on the part of doctors of the preventive side of practice is needed. And perhaps of more importance is the collection of data dealing with normal physiology and psychology, as, for example, a knowledge of the effect of exercise on healthy persons as well as on patients with cardiac disease, on convalescents or on the orthopedic patient, and a knowledge of dietetics, not only for obese or undernourished patients, patients with gastric ulcer, costive patients or diabetic patients, but also for the maintenance and betterment of health. Within a generation the importance of focal infections as the underlying cause of varying systemic disturbances has been established. We are now on the threshold of the elucidation of the relation of perhaps symptomless physiologic disturbances of the gastrointestinal system to health. Again researches in the realm of endocrinology offer ground for the belief that the future may furnish the necessary data and equipment to make life better and fuller even if life may or may not be prolonged.

Thus far disease has been studied backward from the autopsy table and from the well developed and essentially incurable stage. The beginnings of disease ought to be studied, since in that stage many diseases may possibly be entirely cured, and thus the chronic manifestations of these diseases may be prevented. In any event, in the early stages of disease one is nearer the actual causes, and if cure is impossible, nevertheless, the abdominal condition may be controlled to the extent that life is not shortened and normal activity during life is not seriously limited. There are many instances of this, of which I shall just call to your attention one, arthritis, in its manifold varieties.

It is, then, in this field of personal or private living and environment that one looks to see the advances of preventive medicine, and here the general practice of medicine must play an important part. It must from its knowledge, investigations and experiments give more information concerning the effect of the various habits and environments on the maintenance and betterment of health. It must put into the actual practice of medicine all this information. Personally, I feel that this is the duty and prerogative not of another specialist, but of the general practitioner or internist. Just as the occasional superspecialist in heart disease, blood disease, diabetes or gastric ulcer may be useful, perhaps an occasional specialist in exercise, dietetics, recreation and the like may be advantageous, but I trust they will not be many. I believe that the general practitioner or internist is entirely competent to deal with this most important aspect of preventive medicine.

Of course, adjustments will have to be made which will involve changes in the methods of medical practice. I believe that these changes will generally tend to benefit the doctor professionally and materially. There will be always the inevitable and disturbing emergency sick calls of many kinds. But the substitution of orderly preventive work under good conditions for much of the harassing hectic sick calls under unfavorable conditions will lead to greater medical effectiveness and higher professional standards with less physical and nervous drain on the doctor and with, I trust, more adequate remuneration. I believe that the start already made shows that the public, now receptive, will be really enthusiastic and will be as appreciative of the preventive art as it is of the healing art.

264 Beacon Street.

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# PRESENT-DAY TRENDS OF PRIVATE PRACTICE IN THE UNITED STATES

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Consider the practitioner of medicine in 1875. His complete equipment, in most instances, consisted of his five senses developed to extraordinary degree, and such medicaments as he could carry in his saddle bags. In the diagnosis of disease he took, first of all, a history. Since the time of Hippocrates, great practitioners have recognized the importance of a knowledge of the natural history of disease or the course that a disease usually follows. After taking a suitable history, he proceeded to confirm his diagnosis by physical observations. The temperature was estimated by placing the hand on portions of the patient that seemed to be hot. By sight the doctor tried to tell the difference between a blush and a fever. He gazed on the tongue. The eruptions associated with various exanthems were to him an open book. Even the sense of smell was employed, and many a disciple of Aesculapius gambled on his ability to diagnose diphtheria or typhoid with his nose alone. The odds in that day were far easier than at present. Then it was safe to say that one case in five was typhoid; today the disease has been so largely eliminated as to constitute a curiosity, viewed with amazement by medical students. The sense of touch and the sense of hearing were main reliances. Palpa-

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tion, percussion and auscultation were the three gods of physical diagnosis.

Then came the great shift from brains to glassware. Away from the bedside and into the laboratory turned the center of interest. Every secretion and excretion of the human body became the subject of weird chemical manipulations which yielded astounding information. The practitioner sat with his eye glued to the ocular of the microscope, searching for casts, counting red and white blood cells, studying mitoses, and delighting in strange crystalline conformations.

Next came the roentgen ray, and the unseen was made visible. The old time practioner might hear the râles; the modern practitioner sees the cause of the râles. Not only were the x-rays in themselves to constitute a valuable source of exact knowledge, but soon advances in technic enhanced their usefulness. The Graham test enables visualization of the gallbladder; the use of iopax permits gross changes in the kidney to become apparent; by the injection of air, the brain, the spinal cord and the contents of the abdomen are outlined with the x-rays.

Before the coming of the modern era, the physician had no way of knowing exactly the ability of organs to function. When it began to be realized that the body is a great physical-chemical mechanism in which reactions constantly go on, means were developed for measuring these reactions and thereby for determining functional efficiency. Moreover, actions involving motion within the body are translated into scrolls visible to the naked eye. Thus medicine has by application of inventions in mechanics and electricity progressed more and more into a science. The microscope, the stethoscope, the ophthalmoscope and all the other scopes associated with various organs project the human eye into dark and impenetrable cavities. The sphygmograph, plethysmograph and electrocardiograph bring the heart beat on a screen, determine the nature of its action, and indicate means for restoration of disordered function. Not all of these great contributions to the science of medicine have come from the clinic. The minute physiologic investigations on the frog, the ameba, the dog and the cat have been translated into procedures applied to human beings for the prevention, the diagnosis and the treatment of disease.

### THE RISE OF SPECIALIZATION

Thus the five physical senses of the old time practitioner have been prolonged, projected and intensified thousands if not millions of times. But common sense has been little changed—and may have decreased. Knowledge has accumulated so vastly that no longer is it within the compass of one man to learn and to apply all the knowledge or the technical procedures that are available. The physician of an earlier day has evolved into the multiple specialties of the present. The specialties themselves have been divided and subdivided into technicalities beyond the comprehension of the man in the street. For example, the first of the divisions was the removal of diseases of the eye, ear, nose and throat into a specialty. Shortly thereafter, ophthalmology and otorhinolaryngology became separate specialties. Gradually a few otologists discontinued laryngology and rhinology and began to concern themselves solely with the ear. Moreover, some of the laryngologists began to confine themselves largely to bronchoscopy or peroral endoscopy.

Indeed, the most remarkable examples of fission have taken place in what was formerly called surgery. The first splitting that occurred resulted in general and abdominal surgery; then came gynecology. Thereafter general surgeons began to limit themselves to the head, to industrial surgery and to intrathoracic surgery, and the ultimate result of these repeated parthenogeneses is not yet in sight.

In 1925 the American Medical Directory listed 15,000 specialists; by 1928 the number had increased to 19,000; today there are 160,000 physicians in the United States, and at least 40,000 are specialists. In 1915, 30 per cent of all graduates became specialists; by 1920, 51 per cent of graduates were becoming specialists; today three fourths of the young men undertaking medical education have chosen their specialties before the senior year.

### THE GROWTH OF THE HOSPITALS

It became apparent, just as soon as the practice of medicine began to require great expenditures for accessories and equipment, that individual physicians could not in most instances supply themselves with all the necessary space and apparatus to carry on the multiple activities of modern medicine. Furthermore, the earlier equipment was such that it could not be readily transported to the patient's bedside. Of course, this fact in itself was a great stimulus to American inventors. Today the cumbersome x-ray machines, electrocardiographic devices and basal metabolic apparatus of an earlier day have been developed into portable machines that can be carried to the patient's bedside. But in 1905 it was necessary to place the apparatus in an institution and to bring the patient to the machine. This condition helped toward the tremendous increase in the number of hospitals. From 1900 to 1930 the number of hospitals in the United States increased from over 1,000 to more than 7,000; the number of beds in these hospitals increased from 421,065 in 1900 to 950,000 in 1930. At the same time, attempts were made to overcome the cost of staying in a hospital by the development of x-ray and clinical laboratories which undertake diagnostic procedures. By 1920 there were 3,000 clinical laboratories in the United States, and by 1930 the number had increased to more than 4,000.

The hospitals first built were frequently merely places providing beds and the minimum amount of laboratory service. Gradually hospitals began to provide complete x-ray departments, clinical laboratories and physical therapy services. By 1920 there were 2,500 x-ray departments in hospitals, and by 1930 more than 5,000. Today more than 75 per cent of hospitals are properly equipped with x-ray departments and clinical laboratories.

Another significant factor during this period has been the entrance into medicine of suitable nursing service. In 1890, 400 nurses graduated from available nurse's training schools. In 1930, 20,000 nurses graduated from such schools, and it is estimated that, if conditions continue with the same type of education and training that existed in the past, 65,000 nurses will graduate in 1950.

The coming of the hospital into medical practice, while adding greatly to the cost of medical care, has vastly improved the quality of the care. Medical service can never be judged by price; it can only be judged by quality. Inefficient medical service is expensive at any price and leads only to further expense.

### THE NATURE OF DISEASE

The Commission on Medical Education just a few years ago made a survey of the nature of medical practice in a typical New England community. It was found that 90 per cent of disease was seen and treated by the general practitioner. Of the patients seen, 55 per cent were attended in their homes, 35 per cent in the physician's office and 10 per cent in the hospital. Of the 160,000 physicians in the United States, more than 100,000 have today an affiliation with a hospital. Even though they may not be members of the staff, they have access to the use of the operating room, x-ray department, clinical laboratory and hospital beds. It must be constantly borne in mind, however, that 90 per cent of all disease seen by physicians represents the type of disease that any good general practitioner can diagnose suitably and treat suitably with the amount of equipment that he can carry in a handbag. It is the remaining 10 per cent of disease that gives serious concern to the sociologists, the economists, the philosophers, the philanthropists and all of those who in recent years have participated in the discussions of the cost of medical care.

The coughs, the colds, the minor digestive disturbances, the occasional rheumatic twinges, headaches, the minor gynecologic and most obstetric procedures come within the purview of suitable control by the general practitioner. Such cases as tumor of the brain, acute hemorrhagic pancreatitis, hypertrophy of the prostate or Raynaud's disease may demand consultation with specialists or their technical services. Any good general practitioner ought to be able to outline suitable artificial feeding for most babies in health and in disease. A pediatrician may be required for celiac disease or pyloric stenosis. The otorhinolaryngologist may offer to the patient with a vasomotor rhinitis comfort beyond what the general practitioner may give him, the allergist may seek more successfully the cause of hypersensitivity which turns out to be a reaction to leopard's dandruff, and the psychoanalyst may extract more efficiently the psychosis underlying a cardiospasm. But the vast majority of wage earners are too busy in these modern times attempting to provide their families with the $10 necessary each week to feed a family of five to develop any of these exceedingly interesting but after all quite extraordinary complaints. To the wage earner who is attempting, with his family, to subsist on $30 a week, a pain in the epigastrium is just cramps and not allergic abdominal migraine.

### THE QUALITY OF MEDICAL CARE

Hardly a decade has passed since one of our great sociologists initiated the circulation of the striking statement that the rich and the poor received the best medical care, and that our great middle class is not receiving satisfactory medical service for a price that it can afford to pay. All of us will agree that good medical service is essential to human happiness and that therefore good medical service should be available to all human beings for what they can afford to pay. But good medical care differs greatly from the best medical care. In view of the advances of modern medical science, it is questionable whether or not the best medical care can ever be furnished to all the people at a price they can afford to pay. It would seem rather that we must work toward the period when all of mankind in this country will receive the best medical care that they can be furnished for what they can afford to pay. Thus, the person who seeks transportation to New York travels by bus, by day-coach, by pullman, and in the pullman he has a lower, an upper, a compartment or a drawing room, according to what he can afford to pay. He may indeed choose rather to make the trip by airplane. No economist has suggested, however, that drawing rooms be provided for all who care to make the trip at a fixed price. Indeed, it is rumored that even in Soviet Russia, under the five year plan, there are varying prices for those who wish to sleep en route as contrasted with those who seek to torture themselves through the night on the hard seats of the coaches.

### EXPERIMENTS IN MEDICAL PRACTICE

In response to the demand for the finer refinements of medical science applied to the 10 per cent of serious diseases that has been mentioned, the hospitals, the x-ray departments and the clinical laboratories began to function. Then came some of the experiments already in effect for distributing the cost of these refinements over a considerable number of patients, and thereby lowering the expense to the individual. These experiments have involved the development of groups, such as the Mayo Clinic, and several hundred replicas thereof on a smaller scale, throughout the country. The desire to utilize such refinements caused the organization of commercial clinical laboratories, which provide laboratory service at fixed fees, sometimes the laboratories being the property of physicians and, in other instances, owned by business men who employ physicians to carry out the work. The American Medical Association has wisely refused to recognize on its approved list any laboratory not under the direction of a reputable physician.

Coincidental with the advancement in medical science came the expansion of the curriculum of the medical school, the raising of requirements for admission, and the demand for hospital internship subsequent to medical education. With these requirements it became impossible to conduct a medical school as a profit making venture or without endowment. Increasingly medical educators went to the state or to great philanthropies in search of funds to meet the deficits. Since a sufficient number of beds for teaching purposes is essential to a well conducted medical school, hospitals were built as portions of medical schools. These hospitals were conducted at first as part of the service to the poor, which medicine has ever rendered uncomplainingly and without payment.

As has been shown, the increased cost of medical care began to be reflected in the daily cost of hospital beds. This cost increased gradually from $1.25 daily per bed until it reached a figure as high as $11 to $12 daily per bed in some institutions. There are few medical institutions with sufficient endowment to meet such burdens. Soon institutions began to cast about for means of supplementing the endowment. Then arose as a part of the educational scheme, but incidentally as an attempt to answer the problem of the cost of medical care for the middle class, the conception that full time teachers in the clinical department of university medical schools might earn funds for the school through the fees paid by patients, these sums to be applied to the conduct of the hospital. Thus, available information indicates one full time professor of surgery in a class A medical college who receives a salary of $18,000 a year and earns $125,000 a year for the institution that employs him.

In the meantime, it is well to recall, American communities have been supporting many forms of organized medical practice which have long been recognized by competent observers to be unsatisfactory, inadequate, uneconomic makeshifts. Lodge practice is the curse of small communities consisting largely of people of foreign parentage. Mutual benefit schemes have been sold by fly-by-night promoters to American wage earners. Organized clinics have entered into contractural arrangements with labor unions or unorganized groups of workers to provide a type of medical service that is by no means a sufficient service. Insurance companies sell health insurance policies for high premiums, which are required because an exceedingly small minority of the population purchase such policies. Moreover, all of the power rests with the company, and both patient and physician must in many instances resort to the courts to benefit by the policy. Finally, many industrial corporations, department stores, banks and similar businesses have evolved schemes of medical care for employees and also in some instances for the employee's family.

### PREVENTIVE MEDICINE

And then there are the health departments! From the beginning, medicine has been an individualistic profession. With the coming of the great plagues in the fourteenth and fifteenth centuries, man began to organize against disease. The first great public health council was held in the middle ages to take measures against the plague. With the establishment of modern knowledge of infectious diseases, it is recognized that there are some forms of prevention of disease in which the state or municipality can do more for the individual than he can do for himself. Typhoid, for instance, is largely controlled by the community as a whole. Its control depends on pure water supply, proper disposal of sewage, clean food and the isolation of the typhoid carrier. No doubt, the application of community sanitation and hygiene to the prevention of infant mortality, the elimination of smallpox, and the control of typhoid and the acute infectious diseases has been largely responsible for the increased longevity of which we proudly boast. However, it remains to be established that heart disease, diabetes, cancer and other degenerative disorders, which constitute the chief causes of death in the present decade, are to be controlled by any procedure applied to the community as a whole. The recognition, the prevention and the treatment of these disorders is distinctly a problem affecting the individual and in which only another individual can function satisfactorily as a diagnostician and therapeutist. It remains to be established that any organization or corporation can undertake periodic physical examination to better advantage than can the family physician. The disorders of middle life demand individualization above everything else. The physician who knows the patient, his family history, his business career, and the social and mental aspects of the patient's life, is best fitted to advise him concerning prophylaxis against decay.

Here, then, is the current scene—a sketchy map of the present status of medical practice. The system reveals most medical care in the hands of general practitioners and specialists working in a vast number of hospitals. By this means the majority of our people are receiving medical care that must be of considerable adequacy because certainly our morbidity and our mortality rates compare favorably with those of other civilized countries, with or without systems of compulsory health insurance or state medicine.

Nevertheless it would be folly to claim that the best type of medical care is available to all the people for a price that they can afford to pay and that seems to be the ideal that is sought. Health departments are greatly concerned with preventive medicine, and the majority of private practitioners, especially the specialists, but slightly. Hence there proceed innumerable experiments in changing the nature of medical practice and, from many social leaders, cries for a revolution.

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It is, of course, reasonable to believe that our methods of medical practice will change to accord with changing times. We are concerned with retaining all that is good from the past and with preventing mistakes in the future. It is important that the change in medical practice come by evolution rather than by revolution. Never was there a revolution which did not swing too far and, like the pendulum, be forced to swing beyond the midline before arriving finally at the logical center.

The prophets who endeavor to predict the nature of medical practice for the future divide themselves into two groups. On one hand are those who feel that the individualistic practice of medicine, as it has existed in the past, must be supplemented by forms of organized medicine which will offer modern scientific medical care on terms that make it economically and psychologically easy of attainment. On the other hand are those who feel that, for the good of both the public and the practice of medicine, there should be no further evidence of governmental control or interference in the field of health and of medicine until sufficient study has been given to assure the retainment in medical practice, under any new plan, of those factors which have brought modern scientific medicine to its present estate.

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Even the Russians have not been so foolhardy as to endeavor to eliminate the personal factor in medical practice. "There have been many suggestions for the suppression of private practice," writes Grossman[2] of Smolensk, "but the National Public Health Commission has taken no direct action. The psychologic factor in sickness demands the better qualified and specialized physician and he is in private practice."

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The principles that have produced some 50 per cent of specialists in a profession in which 85 per cent of the work to be done could be done by general practitioners are, no doubt, the same principles that apply in every other human occupation. The rewards of the specialist, the hours of work, the interest of his occupation are such as to make for specialization an appeal greater than that of general practice. When the rewards of the general practitioner and the interest of his work become such that general practice can compete as an attraction with the specialties, more physicians, being human beings, will become general practitioners.

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It has become apparent that the general practitioner of the future will depend largely for his existence on the practice of preventive medicine as well as on the treatment of disease. Strangely there has developed—no doubt, largely by the effects of demonstrations, the actions of public health authorities and the preachings of social workers—the idea that only curative medicine is to be paid for: that preventive medicine is the duty of the state, and that it is a function which the state

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### CONTROLLED EXPERIMENTS

It has been well emphasized that the medical profession has led in the field of research in science but that it is among the most conservative of groups when considering possible experimentation in the fields of social organization. Scientific physicians demand laboratory study for confirmation of the value of any remedy before applying that remedy to their patients. They demand suitable controls before they are willing to accept evidence. They feel, no doubt, that the criteria which apply to the judgment of a scientific experiment should be used in evaluating experiments in social fields. They are unwilling to accept the word of the promoter of a demonstration that the demonstration has been an unqualified success. They are inclined to wait until the subjects of the demonstration, namely, the physician and the people of the community, submit their evidence in the matter. They are unwilling to accept the unsupported statement of the economist that the best medical care must be given to all the people at a price that they can afford to pay, until the economist can show that such care can be provided at a price that people can afford to pay, and until the economist can work out systems for controlling the supplies of food, fuel, clothing and suitable homes for these same people. Already it has been established that disease is not always caused by germs—that sometimes housing and food play vital parts in its prevention.

The medical profession has been averse to experiments which do not seem to have been properly organized or directed, and which do not take into account correctly the medical factors that are significant. Far too often, experiments in changing the nature of medical practice have been conceived, outlined and put into effect by lay directors without suitable medical advice. Such experiments not infrequently lead to the degradation of the profession of medicine. Evidence is available to indicate that several such experiments have succeeded financially only because they exploited both the patient and the physician who were concerned. It is not surprising that any self-respecting profession should refuse to become party to such plans. As essential factors in experiments in medical practice, physicians must be permitted a voice in determining the conditions of the experiment, and the final voice in determining the medical conditions.

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[1] Simons, A. M., and Sinai, N.: The Way of Health Insurance, University of Chicago Press, 1932.

[2] Grossman, P.: Sovetskiy Vrach, 1930, number 1, p. 10.

[3] Gubinskiy, I. M.: Vestnik Sovremennoi Meditsini, 1928, number 5, p. 302.

Following is a typical conversation that ensued between a mother and the family doctor:

"Doctor, do you believe in giving of toxoid to prevent diphtheria?"

"Yes, indeed."

"Do you use the same serum that the health department uses?"

"Yes, indeed."

"What do you charge, doctor?"

"Five dollars."

"Doctor, does the health department give the same treatment that you give?"

"Yes."

"Do they charge anything?"

"No. They take the funds out of the taxes."

"Well, doctor, wouldn't I be a simpleton to pay you $5 when I can get the same service from the health department for nothing?"

And being an honest doctor, he encouraged her to get the service from the health department because he recognized the importance of the preventive procedure. The physician in private practice cannot compete in the field of preventive medicine with state-owned and tax-paid-for services of this character.

### THE PHYSICIAN IN INDUSTRY

If every steel mill, department store and similar industry employs salaried physicians to provide medical service to employees, three fourths of the people in this country who earn money will be removed as a possible source of income from private practitioners. Then, by the laws of nature, practitioners will no doubt disappear.

There would seem to be no reason why any great industry that wishes to safeguard the health of its employees should not provide physicians to be consulted by these employees in emergencies, to advise them regarding the prevention of disease, and, *if necessary*, even to give them medical care. But industrial physicians should not compete unfairly with other physicians in the community; they should not employ methods for the promotion of their practices beyond the methods available to other physicians. They should not, for a bare living salary, endeavor to treat employees and their families, because they cannot do justice to their patients and thereby they degrade the profession that they serve.

### UNIVERSITY PRACTICE

It is reasonable to believe that universities and medical schools will continue to conduct hospitals in which patients will be treated for pay. It is not conceivable that such institutions will be able to finance their hospitals without fees from patients. In conducting hospitals, however, universities should limit, as far as possible, competition on an unfair basis with the men that it educates and places in the community. These graduates have a right to fairness. The size and expansion of a university clinic should be limited to the number of beds necessary for teaching purposes. The fees established by the university, when it takes care of the wealthy, should not be markedly less than the usual fees in the community. It seems doubtful, although I believe Mr. Michael Davis has expressed the hope, that great expansion of university clinics will in any measure answer the cry for suitable care of the great middle class and the wage earner. The function of the university and the medical school should be teaching and research, not the practice of medicine.

### THE TREND OF PRIVATE PRACTICE

Our present social organization is complicated. It varies greatly from city to city, from village to village, from state to state; it varies tremendously from person to person, from industry to industry. It is inconceivable that any single plan will be developed for a system of medical practice applicable to every inhabitant of our country. The problem of providing funds for medical care is, after all, not a medical problem; it is a problem for bankers, economists and statesmen. Insurance is a means of saving for an emergency, for the replacement of lost property and lives. Insurance may be compulsory or voluntary. The American people should never consent to compulsory health insurance —but in some of our states they may. Then the remaining states will be able to watch the experiment. True, there are available excellent reports of the experiments abroad. The books by Simons and Sinai, and by Newsholme,[4] and the report of Rappleye for the Commission on Medical Education have shown that thus far not one system has attained complete satisfaction. Conceivably a system might be devised that will provide free choice of physician, insure adequate practice of preventive medicine, place responsibility on the patient for maintaining the insurance and on the physician to the patient, stimulate initiative and research among physicians who participate, and be free from political manipulation, graft and other weaknesses usually associated with state control. But, alas, such a system has not appeared abroad, and the history of American statesmanship and government control in other fields does not indicate its likelihood among us.

### HEALTH EDUCATION

There remains the necessity of teaching the people the importance of saving for sickness as they now save in anticipation of postponed pleasure or death. Great insurance companies spend immense sums on education of their policyholders with a view to causing those policyholders to live longer and thereby to postpone the date of final payment on their life insurance. With the establishment of health insurance abroad, the amount of money spent on medical care increased from three to five times. The reports of the Committee on the Costs of Medical Care indicate that we shall have to spend much larger sums than are now spent to give to all our people the best type of medical care. It has been shown that advance in medical science has made modern diagnosis and treatment in the

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[4] Newsholme, Sir Arthur: International Studies on the Relation Between the Private and the Official Practice of Medicine, Baltimore, Williams and Wilkins Company, 1931.

10 per cent of serious disease exceedingly costly. We have the physicians and the equipment to provide the best, but apparently the people do not have or will not save the money to pay for it.

An extensive campaign of education in newspapers, in magazines, directly by mail, through lectures and over the radio in behalf of voluntary sickness insurance might result in causing a sufficient number of people to apply for such insurance if it can be offered at a price that could be met by the wage earner. Simons and Sinai consider any voluntary system merely a short bridge to a compulsory plan.

People know that death is inevitable. In teaching preventive medicine, we have emphasized that sickness may be prevented. Today we know that some sickness for every family is just as inevitable as death, and unless obstetrics continue to be inevitable there will be no population for the future. Let us, therefore, teach the worker that 2,000,000 people are sick every day in 120,000,000 population, and that this number is not likely to change greatly in the future, even with considerable advance in the application of preventive medicine. Even should disease itself be largely outlawed from the human race, degeneracy and decay and ultimately death must be the lot of all of us. Associated with death and decay come inevitable illnesses that must be provided for; the need for the physician and for curative medicine will never disappear.

### SUMMARY

To recapitulate, great progress in medical science has substituted for the family physician a complex system including hospitals, laboratories, technicians, dieticians, nurses, and a greatly increased equipment and personnel.

The family physician will always be the most economic and practically the most satisfactory physician for 90 per cent of human ailments.

The remaining 10 per cent of human ailments require hospitalization and specialization.

Modification of the curriculum or abbreviation will not lead to a greater number of general practitioners. The rewards of general practice must be made attractive in comparison with the rewards of specialization.

The general practitioner must become increasingly a practitioner of preventive medicine, and people must learn that preventive medicine is, like curative medicince, to be paid for, particularly because it is always worth more than it costs.

Organized medical practice in the form of groups, university clinics, industrial medicine, insurance practice and contract practice may have definite fields in medical practice. For the good of the public and for the advancement of medical science, they should limit themselves to the fields for which they are fitted.

People must learn to save for sickness as they now save for luxuries or in anticipation of death.

If the people cannot be educated to saving for sickness, voluntary health insurance or even compulsory health insurance will probably come.

The physician in private practice will not disappear. Under every compulsory health insurance system, and even in Soviet Russia, he persists because only a personal physician can function efficiently in a vast number of types and cases of disease.

Until human bodies and minds are standardized—an antibiologic conception—individual mutual responsibilities between patient and physician must be maintained.

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# ORGANIZED MEDICINE AND PUBLIC HEALTH

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Neither an attitude of smug complacency nor a smoke-screen of tradition affords a proper method of approach for the solution of the many knotty problems now facing organized medicine. The solvent searchlight of science, playing for the past two or more generations on many of Nature's hidden secrets, has served to dissipate the veil of mystery in which many professional theories and traditional practices have formerly been wrapped. Speculative hypotheses no longer appease the modern materialistic mind which now clamors loudly for a type of medical service that will protect its physical body from the ravages of disease proved through scientific discovery to be preventable. So precipitous, so speedy has been this shift, and so insistent have been the demands made that, with reason enough, the medical profession, with tap-roots dipping deep down into the centuries, has had difficulty in adjusting itself to this changing order.

Life as it is lived today is not, from a sociologic standpoint, the simple, ameba-like thing it was a few generations ago, and all factors contributing to its make-up—not the least of which is medicine—must so adjust their activities as to conform to this changed life. Herein lies the medical profession's problem today; 'tis one largely of adjustment, or better, possibly, of readjustment. Granted this premise, let us proceed, in a brief fashion, to draw therefrom certain logical conclusions:

Any readjustment in medicine, to be successful, must spring spontaneously from within rather than be forced from without. Not merely the preservation and development of the profession of medicine depend on the success of this readjustment but, to a greater extent than one is wont to realize, the preservation and development of the human race depend on it.

It is precisely because medicine is the father of philanthropy and the sine qua non of social uplift that every new experiment in government, social economy or social betterment, seeks to absorb medicine and to make of it a tool in the prosecution of its enterprises. Organized medicine has met disease in open combat and won decisive victories over it; now it must develop and control statesmanship, as well as its cunning cousin, political intrigue, in order to meet these human forces on equal terms.

Public health has, within the last twenty-five years, come to a place of usefulness in furnishing much of the machinery by which organized medicine is enabled to cope with disease. Demonstration clinics, the function of which, in a last analysis, is educative, have served to create a new interest in medical supervision and thereby to bring many patients to the offices of physicians for continued treatment. The free laboratory services, now in operation in most states for the use of physicians, make diagnosis easier and more exact and thereby materially increase the confidence of the patient in the physician. The powers inherent in this new piece of machinery are likewise the object of covetous regard by sociologic and industrial enterprises. It is

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Read before the joint meeting of the Section on Practice of Medicine and the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

conceivable that public health agencies, were it not for their firm and scientific moorings to organized medicine, might be absorbed in an effort to utilize them in a struggle to control medicine.

Public health forces, particularly the health officer, are by the very nature of their activities brought into intimate and constant contact with forces that are competing for power and managerial control over certain types of medical service. For example, workmen's compensation boards, the sociologic aspects of venereal disease problems and the economic factors of tuberculosis control, all inevitably lead to such contacts. Inherent in these and other like instances are to be found the vested interests of a corporation, an industrial enterprise, or a merger which combines the interests of several such members. These vested interests frequently, and perhaps usually, are subversive of free and untrammeled exercise of the prerogatives of a personal physician. His age-old motto, "consideration of the patient's welfare first," gives way to one well understood but seldom expressed: "insofar as the patient's welfare coincides with advantage to the corporation, let it come first." The physician's efforts to render expert medical service, under these circumstances, are likely to be cast in a mold, fashioned by an efficiency engineer whose real objective is mass production of merchandise which can be sold at profit. Such a system places a higher premium on returning a laborer to his job than on returning a contented individual to the community or a healthier and happier parent to his family.

Some of the voluntary health agencies, though ostensibly free from the taint of vested interest, exhibit an arrogant assumption that "we know best what is good for the public weal." Every artifice of publicity and propaganda is utilized to influence the lay mind in ways that tend to uphold interests of the voluntary agency and to overthrow the dignity and usefulness of the medical profession. Physicians must meet the conditions created by this complex alinement of artifice against artistry and science. These conditions cannot be met, nor the problems solved, either by an attitude of resentment or by one of indifference. Neither can a solution be reached by a campaign of vituperation. Only a constructive policy of leadership within the ranks of organized medicine can bring order out of chaos and fulfil the prophecy of Descartes: "If ever the human race is raised to its highest practicable level intellectually, morally and physically, the science of medicine will perform that service." René Descartes died in 1650, but his challenge to scientific medicine comes down through the ages, reverberating from peak to peak of victorious achievement.

But not all of the achievements of organized medicine, even the victorious ones, which we traditionally glorify, have been without their undesirable cumulative effects. The average modern doctor still hugs to his bosom the thought of a long list of dependent families for whom he cares as a matter of course, almost as if they were members of his own family. Might he not do well to contemplate such gratuitous service in the light of distorted modern psychology, which asks, "How can we get something for nothing?" Does not a logical question immediately present: "How far can organized medicine, together with the rest of society, be held responsible for fostering such an attitude?" Apparently, it is but a short step in the thinking of otherwise self-respecting persons to "Why pay personally for medical and hospital service when others can be found to do this for us?" The village doctor, so beautifully portrayed by Balzac, in the traditional rôle of "Good Samaritan," was a character in keeping with the social order of a century ago. But, who will question that the present maelstrom of contending social forces are bent on bettering the human race through medical and public health services, without considering very seriously what the leaders of these services think as to how these ends may and may not be advantageously sought? More than anything else, at this time, an authoritative voice is needed.

Unquestionably such a voice should emanate from organized medicine, while public health forces should operate as a broadcasting service, corroborating, interpreting and demonstrating the feasibility of a plan of administration that recognizes the fundamental soundness of conserving the welfare of scientific medicine, as secondary only to the welfare of the human race. Indeed, the intrinsic worth of the former may be said to be inherent in the latter.

Without effort either to define or discuss the forbidding vagaries of "state medicine," one must realize that no sane approach can be made to the problem that ignores the important fact that in any moot, sociologic and economic question, be the decision right or wrong, the voice of the people will ultimately prevail.

If this is granted, what are the possibilities now confronting organized medicine?

As a first possibility, various types of medical service may be designed according to the intellectual lights or pecuniary interests of nonmedical groups to meet the needs of complex, modern [illegible] will unquestionably operate without a due regard to the views, interests and leadership of organized medicine. It is probable, also, that they will be administered without a due regard to rights of private citizens to select their own physicians.

The fact that organized medicine may not be accorded the privilege of deciding for itself what are the highest types of service it can render to society will constitute an additional defect in such a plan of operation. With the voice of scientific medicine thus silenced or ignored, how can the avenues for the bestowal of medicine's highest gifts be kept open?

In contrast to the manifest disasters foreshadowed in the foregoing paragraphs, a readjustment both acceptable and workable to all concerned might be had through a firm fusion of all of the powers of leadership now to be found in the professions of medicine and of public health. Such a readjustment, it is believed, might be perfected with every due regard both to the general public and to the professional ideals and interests of organized medicine.

Public health activities are sometimes mistakenly conceived to be inconsistent with the best interests of organized medicine. A careful examination of the facts with relation to existing instances will reveal that the highest type of state-supported preventive medicine may be conducted with full and complete regard for the prerogatives of private physicians, as well as for the rights of the general public. So conducted, these activities unquestionably tend to place patients in the hands of practitioners of medicine. When evidence of incompatibility arises, it can usually be traced either to a misunderstanding on the part of the physician or to misdirected zeal on the part of the health worker. In either case, a frank discussion of the matter can be depended on to clear up the misunderstanding or to correct the misdirected effort. As the teachings of health authorities with regard to disease prevention begin to seep into the mass mind, the field of medicine will be extended and its precision and scope will be vastly increased. Good medical practice will mean the unhampered pursuit of scientific medicine and its establishment as the basic essential of a sound program of public health. These two phases of modern medical achievement are rightfully corollaries, not competitors. Furthermore, it would be nothing less than pitiable ever to see these two mutually indispensable phases of modern medicine arrayed against one another. How can either overlook the fact that, without the other, it would be working with little thought and less vision in a blind alley?

Organized medicine and public health hold, within their united grasp, every essential for the successful readjustment of the services of healing and prevention to meet the needs of the world today. These essentials include devotion to scientific achievement, inextinguishable ardor for the public weal, sagacity in organization and administration of plans. When such plans have been jointly evolved, approved and accepted by a majority of the membership of both groups, then the profession shall be in position to dictate terms to every agency seeking to finance medical service. Until our house is set in order and unless it is done successfully, organized medicine will be subjected, more and more, to dictation from outside its own ranks, and public health administration will find itself repeatedly circling in its own tracks and in utter futility.

That the profession of medicine will suffer in consequence is of relatively minor importance. This lesser calamity will be swallowed up in the greater disaster of the human race which will not be raised to its highest practicable level intellectually, morally and physically, because scientific medicine will have failed to point the way by which this service might be had. This will prove to be, not merely the humiliation of medicine; it will be the tragedy of mankind.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. LEE, FISHBEIN AND BAKER

**Dr. Stewart R. Roberts**, Atlanta, Ga.: When one hears so timely a paper as that by Dr. Lee, one can hardly help thinking of a country physician and general practitioner, Edward Jenner, who discovered the first universal application of preventive medicine in his vaccination against smallpox. If Jenner could do that so long ago, how much can we clinicians do in preventive medicine? Emphasis on preventive medicine is a state of mind, of preventive intent and interest, always watching and looking for the personal contact and the personal teaching that would prevent illness. I am disposed to think that in our personal relations with our patients, so far as the preventive phase of it goes, we use the subjunctive too frequently. We need to use the indicative mode in our personal relations regarding preventive medicine with our patients. Sometimes we need to use the imperative. Health is much more than just feeling well. For thousands of years we have had the incubus that the physician is but a curative agent. Ask the little boy who the doctor is and he will tell you he is the man who goes around making sick people well. We now have the newer view. Many diseases will disappear, and more and more of us, as the younger graduates come on, will lay more sensible and more productive emphasis on balanced living.

**Dr. H. F. Vaughan**, Detroit: There is one aspect of the problem of medical cooperation with public health agencies which has not been emphasized and that is that at present there is an outstanding need for cooperation of this character. I know of no more opportune time than the present depression for efficient cooperation between the medical profession and the public health agencies. Health departments are suffering in their appropriations. They are being cut. There is greater need than ever before for the efficient expenditure of public funds and for the getting together of the most efficient type of machinery concerning public health. I think we can all agree that public health cannot be divorced from curative medicine; that the two go hand in hand. The Committee on the Costs of Medical Care has shown us that there are sick at a given time about 2 per cent of our population; 98 per cent are well or supposedly well. From my point of view, there is far more satisfaction to the medical profession and greater remuneration to the medical profession in taking care of the 98 per cent who are well than trying to collect bills from the 2 per cent who happen to be ill. It seems to me that the answer to the bugaboo of state medicine, so far as preventive medicine is concerned, lies entirely in a program of medical participation. The medical societies throughout the land should take the initiative in recapturing, as it were, for the medical profession the program of public health work. We come together occasionally and listen to discourses as to the difficulties inherent to a program of this sort, and I can't help becoming more or less agitated because we don't seem to get anywhere. Year after year we talk about the same thing. In one large city of a million and a half population such a program has actually been put in operation through the initiative of the county medical society. The health department and the medical society jointly have participated in a program of preventive medicine. We started in with a program of diphtheria protection. Three years ago we did away with all free clinics for the immunization of persons against diphtheria. We have not had a free clinic in three years, and this city has the highest percentage of protection between 1 year and 10 years of age when children have diphtheria, of any large community in the United States. Seventy-five per cent of the children of preschool age, 80 per cent of the school children, and 50 per cent of the youngsters under 1 year of age are protected against diphtheria. In the year 1931 this meant $200,000 in the pockets of the physicians who participated in this cooperative enterprise. All the service was rendered in the physician's office, with no free clinic by the health department. During the same period of time, without any special pressure or undue exertion, vaccinations against smallpox among the preschool group increased from 22 to 45 per cent, and the physicians were paid for this service. To my mind, the answer is the continued maintenance of public health machinery in our country of an adequate but limited character, and real participation on the part of organized medicine.

**Dr. E. Starr Judd**, Rochester, Minn.: The family physician is the most economical and the most satisfactory physician. I agree with Dr. Fishbein that rewards of the general practitioner must be made comparable to those of the specialist. The general practitioner can make thorough examination without elaborate equipment. He can keep abreast of the times by reading well recognized medical journals and by attending clinics and medical meetings. Preventive medicine is becoming a very definite part of the work of the general practitioner, and he should be paid for his services in this direction. He can carry out this work in a more satisfactory manner than any one else because he has intimate knowledge of his immediate district. This opens a new field of activity, income and real service. Some feel that group practice can be carried on without regard to the personal element. From experience of many years, I know that success in this form of practice is impossible without regard to this personal relationship. University clinics, industrial medicine, insurance practice and contract practice quite likely have a limited place in our work. It is difficult for me to see how the personal relationship between physician and patient can be maintained in these forms of practice, how the best results for the patient can be obtained, and, finally, how these forms of practice can help advancement of medical science. A recent survey shows the following: Men are entering the practice of medicine at a somewhat later age than previously. Although 47.7 per cent of the population of the United States is in communities of less than 5,000, only 19 per cent of the graduates of the year 1925 were practicing in communities of that size. Of the graduates of 1920 and 1925, 17.6 per cent were occupying full time salaried positions six years after graduation. Approximately 35 per cent of the graduates of 1920, and also of 1925, have limited their practice to a specialty within six years after graduation. More than 70 per cent look forward to limiting their practice ultimately to a specialty. A little more than half of those who limit their practice to a special field do so without having had any experience in general practice. The number of men specializing in eye, ear, nose and throat and pediatrics is decreasing. Specialization has been overdone a little, and many are setting themselves up as specialists who are not thoroughly qualified. The American Medical Association, cooperating with other associations interested in this problem, should endeavor to indicate who is entitled to designate himself as a specialist.

Dr. G. Henry Mundt, Chicago: The contacts which both men in government service and men in private practice must make are with the general public and with the profession. This contact with the general public has been carried out over the country, I think, much more satisfactorily by the men and women interested primarily in preventive medicine than those who are interested in the private practice of medicine. This, however, should not obtain, and with proper effort on the part of medical organizations they can make contacts which will be very satisfactory because in the final analysis the only way problems of medicine can be solved is by education of the general public. I think Dr. Fishbein is right. The average medical man is overtrained with mechanism but not overtrained with ability to think. One of the difficulties with this problem which is facing medicine is that the average man in medicine has a mechanistic view of medicine. He is entirely disposed to depend on roentgen or laboratory observations rather than on physical examination. We must get clearly in mind the extent to which universities and institutions of that kind practice medicine in competition with the private practitioner. I am convinced that the limit of material which should be used is that which is needed for teaching research. Anything beyond that is unfair to the public and to the medical profession. Unless we change our mental attitude and the mental attitude of the public concerning the practice of medicine by subsidized groups, we shall leave the 47 per cent of the general public who reside in communities of less than 5,000 very inadequately taken care of medically.

Dr. J. Cyril Eby, Plaquemine, La.: Organized medicine should cooperate with the public health workers. There is a definite field for both. When physicians as a whole concur in the fundamentals of public health principles, many of the alleged differences of opinion will automatically disappear, because it is frequently observed by health administrators that the bone of contention is not differences concerning the need for disease control measures but concerning the method of attacking the problems. I believe each community should meet its own needs as far as possible, and it is the duty of health officials, with the aid of the physicians, to educate people to the need of sanitation, hygiene and corrective procedures. Curative biologicals and medicines, if furnished the physicians, should be paid for by the individuals receiving the benefit. The health department and the physicians, working in cooperation, will eliminate useless friction and transform this wasted energy into beneficial service to the public. Every health officer here is striving to do the proper educational work so that the coming generation will look on the health department as a necessity. The older generation does not yet have this point of view, but coming generations will look on it as one of the essentials of the government and will demand adequate appropriations for the support of public health work.

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**Absence of the Stomach.**—Those who cling to the old theory of intestinal infection in pernicious anemia may think that the deciding factor is the intestinal flora, but when we consider the frequency of megalocytic anemia in fatty diarrhea and after intestinal resection, we shall probably conclude that it is a matter of the efficiency of digestion and assimilation in the intestine. While the results of gastrectomy show that a healthy intestine can compensate for the failure or absence of the stomach, there is evidence on the other hand that disorders of the intestine may nullify the effects of perfect digestion in the stomach. We seem driven to the view that in pernicious anemia either gastric or intestinal digestion, or both, may be at fault.—Witts, L. J.: *Lancet*, March 12, 1932, page 549.

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# COLLAPSE THERAPY OF PULMONARY TUBERCULOSIS IN THE NEW ENGLAND STATES

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The treatment of pulmonary tuberculosis by collapse of the affected lung as exemplified by pneumothorax, phrenicectomy and thoracoplasty represents one of the most effective means of treating this disease. A procedure by which the diseased lung is put at rest not only prolongs life, reduces the mortality from this disease and shortens what would otherwise be a long period of invalidism but, of still greater importance, hastens the patient's return to industry. Yet, certainly in New England and all over the eastern part of this country except in the great tuberculosis centers, such as Saranac Lake and Liberty, N. Y., and Asheville, N. C., the medical profession seems to hold aloof from these procedures and to look on them rather as measures of last resort. Compare pneumothorax in tuberculosis, for instance, as the most common and certainly the simplest means of putting the lung at rest, with insulin in diabetes and with liver and liver extracts in the primary anemias. Physicians are perfectly well aware of the great good that the latter two can accomplish. Yet, for the obvious reason that for every case of diabetes or primary anemia there are hundreds of cases of pulmonary tuberculosis, the total of good that can be done by the former fades into insignificance when compared with what can and should be done by collapse therapy in tuberculosis when in suitable hands and in properly selected cases. We do not mean to imply that the medical profession is ignorant of the various methods of putting the lung at rest. It is probably because the average physician has no experience in such procedures and is not equipped to carry out these methods of treatment that he is loath to recommend them to his patients. The reaction of many physicians, when the consultant suggests that pneumothorax is indicated, is too apt to be, "Oh, no, Doctor, she hasn't reached that stage yet." In our own practice this has been only too frequent an occurrence. Thus the patient and the family are persuaded against it and much precious time is lost while the disease attacks the other lung, after which all possibility of putting one lung at rest is gone forever.

The same point of view is apt to be found in many tuberculosis hospitals and sanatoriums. Often it is for reasons of economy, usually because there is no proper x-ray equipment, that pneumothorax is not done. Still more often it is because the medical personnel has had no experience along this line that many hospitals and sanatoriums for tuberculosis are not using this most effective means of helping their patients.

The public, wonderfully educated concerning tuberculosis and its treatment, in other ways, thanks to the educational campaign of the last twenty-five years, seems to be ignorant of "collapse therapy." Popular magazines are full of articles on the marvels accomplished by insulin and liver, but they contain little if anything about a far more important means of alleviating suffering and curing an infinitely more widespread and devastating disease than either diabetes or the anemias.

One of us (J. B. H.) recently asked three questions of fifty consecutive presumably intelligent lay men and women:

1. What does the word "insulin" mean to you?
2. What does "liver," not as a food but as a medicine, convey to your mind?
3. Do the words and phrases "pneumothorax," "collapse therapy," "compressing the lung," "gas treatment," "the rib operation" mean anything to you?

Each of the fifty gave satisfactory answers to the first two questions but admitted complete ignorance of the last.

We have simply selected the six New England states for this study because we live and carry on our work in one of them and are therefore much more familiar with the tuberculosis problem in New England than elsewhere. It was because we felt that this state of affairs in New England was a most unsatisfactory one, resulting in many unnecessary deaths and much equally needless invalidism and suffering, that we have undertaken this investigation. It is doubtless true that the same neglect of collapse and compression therapy in tuberculosis exists elsewhere in this country, but we felt that perhaps somewhat hyperconservative New England might be particularly derelict in this regard.

It is not easy to obtain accurate information concerning such a subject as this. The only figures at our disposal that can be said to be at all definite and certain are the yearly number of deaths from tuberculosis in each state. The remaining statistics on which such a study must be based are only approximate. Admitting this at the outset, we have therefore endeavored to obtain as accurate information as possible from every available source concerning:

Table 1.—*Deaths from Pulmonary Tuberculosis in the New England States in 1930*

| | |
|---|---|
| Connecticut | 825 |
| Maine | 371 |
| Massachusetts | 2,423 |
| New Hampshire | 206 |
| Rhode Island | 389 |
| Vermont | 208 |
| Total | 4,422 |

1. The total number of recorded deaths from pulmonary tuberculosis in each of the New England states for the year 1930.
2. The approximate number of active cases of this disease in each state for the same period.
3. The approximate number of patients with pulmonary tuberculous disease in whom some form of collapse therapy was used and, from this, the percentage of such cases with reference to the total number of patients with active tuberculosis in each state.
4. Finally, some idea, based on information from the most authoritative sources in this country, as to what might be considered a fair average percentage of the total number of active cases of tuberculosis in each community which are suitable for some form of collapse therapy and which should be given the opportunity of such treatment.

The accompanying tables show the results of our inquiry.

The figures in table 1, obtained from the respective health departments of each state, are presumably accurate although doubtless well inside the actual number of deaths from this disease. The respective mortality rates do not enter into this discussion.

In table 2 the figures as to the number of active cases of tuberculous disease were obtained by multiplying the number of deaths by 5. This factor, based on the results of the Framingham Demonstration and many other similar studies, has been approved and accepted by the National Tuberculosis Association and by the American Public Health Association as a fair means of estimating the number of active cases and is generally considered standard practice. It represents a figure probably far within the total number of cases of active tuberculous disease.

Table 2.—*Number of Active Cases of Pulmonary Tuberculosis in Each of the New England States in 1930*

| | |
|---|---|
| Connecticut | 4,125 |
| Maine | 1,855 |
| Massachusetts | 12,115 |
| New Hampshire | 1,030 |
| Rhode Island | 1,945 |
| Vermont | 1,040 |
| Total | 22,110 |

Accurate information concerning the use of pneumothorax, phrenicectomy and thoracoplasty is difficult to obtain. We have no doubt that we have missed some cases but in all probability not enough to affect the results materially. We have written personal letters to every hospital and sanatorium, public and private, in New England asking for the figures in each case. In this list we have included the larger general hospitals in which we felt that pneumothorax or some similar procedure might have been carried on. In addition, we have communicated with every specialist in diseases of the lung and in tuberculosis and with every thoracic surgeon in New England known to us. The result needs no comment. Of probably far more than 22,110 active cases of pulmonary tuberculosis in New England in the year 1930, only 928 were selected for some form of collapse treatment.

We were convinced that this proportion, 4.2 per cent, was pathetically low. Our next step, therefore, was to find out whether or not we were wrong in our belief that from 20 to 25 per cent rather than from 4 to 5 per cent was a far more proper proportion of those patients with active tuberculosis who needed and who should have been given the opportunity of receiving help by means of some operative procedure. Information on this subject is not found in textbooks but is to be obtained only by means of detailed personal investigation. We felt that if we could get the ideas of the various well known tuberculosis groups in this country, such as those at Saranac Lake and Liberty, N. Y., Asheville, N. C., Rutland, Mass., Colorado Springs, Colo., Portland, Ore., and Los Angeles, it would at least give us a fair idea on which to base our estimate. In

Table 3.—*Number and Percentage of Cases of Pneumothorax, Phrenicectomy or Thoracoplasty Performed During 1930 in Each of the New England States*

| | Number | Per Cent |
|---|---|---|
| Connecticut | 276 | 6.6 |
| Maine | 33 | 1.7 |
| Massachusetts | 556 | 4.5 |
| New Hampshire | 4 | 0.3 |
| Rhode Island | 40 | 2.0 |
| Vermont | 20 | 1.0 |
| Total | 928 | 4.2 |

addition to such sources of information, we communicated with other well known tuberculosis and lung specialists all over the country as well as with the superintendents and directors of many state, municipal and government tuberculosis hospitals and sanatoriums where we knew that this method of treatment was carried on. In each case we asked, first, what proportion of tuberculous patients received some form of compression treatment and, secondly, an opinion as to what this percentage in general should be regardless of the figures of their particular institution. Each one to whom we wrote seemed to feel that the subject was a most important one. With only one or two exceptions the majority were of the opinion that compression or collapse therapy in some form should be done far more frequently than is now the case.

Dr. Alexius Forster of the Cragmor Sanatorium of Colorado Springs stated: "In my judgment, approximately 30 per cent of the cases we have here are eligible for some form of surgical help." Dr. F. M. Pottenger of Monrovia, Calif., and Drs. Ralph and Ray Matson of Portland, Ore., are more conservative and, while not committing themselves definitely, gave us the impression that 15 per cent or thereabouts of all their cases were suitable for some form of compression therapy. Dr. Jamie Dickie of Southern Pines, N. C., makes the significant statement that "with few exceptions, every terminal case of tuberculosis was at one time a suitable case for one of these three operations." His own percentage during the past two years has not fallen below 20 nor above 30. The figures of Dr. Henry D. Chadwick, late of Massachusetts and now of Detroit, are most striking. In the hospitals and sanatoriums under his direct supervision with a total of 1,326 patients, 57 per cent received some form of compression or collapse therapy. This is certainly an amazing figure when compared with the 4.2 per cent of the New England states. Dr. Bayard Crane of Rutland, Mass., places his figure at 30 per cent of the total number of patients admitted, while Dr. David Lyman of Wallingford, Conn., states that 47 per cent of the 177 patients in 1930 were so treated. He adds that if he had more facilities for bed care his figure would be well over 50 per cent.

The Saranac Lake figures, as given by Dr. Fred Heise at the Trudeau Sanatorium and those in private practice under the care of such men as Dr. Lawrason Brown, J. Woods Price and Edward N. Packard, apparently run from 40 to 50 per cent of some form of operative collapse treatment. It hardly seems necessary to go further.

In addition to this, other authoritative opinions were obtained from the literature on the subject. Dr. E. J. O'Brien[1] of Detroit is of the opinion that practically every patient with unilateral tuberculosis should be given some form of compression therapy. In uncontrollable hemorrhage, even in bilateral lesions, if a pneumothorax is not possible, phrenicectomy should be done on the side on which the bleeding occurs.

Drs. Jerome R. Head and O. C. Schlack[2] speak in no uncertain terms on this subject:

> For the past eighteen months at the Oak Forest Tuberculosis Hospital [which is the Cook County Tuberculosis Hospital of Chicago] we have been proceeding upon the principle that every case of unilateral pulmonary tuberculosis should be treated surgically, i. e., by some form of compression treatment. Our reasons for adopting this program have been based partly upon logic and partly upon experience. Not the least consideration has been a recognition of the type of patient with which we have to deal. The patients are drawn principally from the laboring classes of a large metropolitan area. A great many of them leave the hospital against advice after too short a stay, and even those who remain until discharged as arrested are unable on account of economic necessity to continue their convalescence at home under proper conditions.

Out of a mass of figures and percentages, some of which we have given here, we have come to the conclusion that 30 per cent was the figure that nearest represented the consensus of all these authorities. It certainly agrees with our own opinions on this subject. This is in sharp contrast with the 4.2 per cent which apparently holds true in New England. Were this figure, 30 per cent, applied to the six New England states, over 6,500 patients instead of 928 would have been given the benefit of pneumothorax or some similar treatment. It is not difficult to figure how many lives would have been saved thereby and how much unhappiness and invalidism prevented.

Granted, then, that it is the consensus among authorities in tuberculosis work that 30 per cent of all active cases of tuberculosis should receive some form of surgical compression treatment, how can it best be brought about that such a low figure, 4.2 per cent, as is found in the New England states, can be changed for the better? It is certainly evident that an educational campaign along this line is urgently needed among both the medical profession and the public. It is undoubtedly true that one reason for the low figure in New England is the refusal of many patients to consider what they believe to be radical and even experimental treatment. But this does not explain the 30 or even 50 per cent of such cases elsewhere. In our own work we have little or no difficulty in persuading a patient that pneumothorax should be tried, although it often takes time, patience and tact. On the whole we believe that it is the medical profession that is at fault, chiefly because the vast majority of physicians are not aware of the almost miraculous results that can be accomplished by this means even under the most discouraging and hopeless conditions. The general practitioner is well able to handle his anemia patients with liver and liver extracts and his diabetic patients with insulin. But because few practitioners are equipped to handle pneumothorax cases, they rarely recommend it. Thus the opportunity is lost. Those patients are indeed fortunate who are at once sent to a sanatorium where this treatment is given. Back of all this is the fact that to most of the medical profession tuberculosis is a dull and uninteresting disease and its treatment equally so.

What is the answer? The figures presented are not complimentary to New England. However, we do not doubt that a similar state of affairs would be shown elsewhere, at least outside the well known resorts for the tuberculous.

### CONCLUSIONS

1. Tuberculosis and its diagnosis and treatment should be given distinctly more attention in medical schools than is now the case.

2. Every general hospital, large or small, should freely and willingly admit tuberculous patients for study, diagnosis and operative treatment, if necessary. This one of us (J. B. H.) has again and again emphasized. Further, each general hospital should have on

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[1] O'Brien, E. J.: Surgery of the Phrenic Nerves and Intrapleural Pneumolysis, J. A. M. A. 92:463 (Feb. 9) 1929.

[2] Head, J. R., and Schlack, O. C.: Am. Rev. Tuberc 24:42 (July) 1931.

its consulting staff at least, which in every case could easily be arranged, some one who could speak and act with authority in such matters.

3. Every tuberculosis hospital and sanatorium should have an x-ray plant or easy access to one and should be otherwise equipped to carry on compression treatment, while of course, most important of all, the members of its staff should be trained in the selection of cases and in the technic of pneumothorax. Phrenicectomy and thoracoplastic operations of course require the services of a surgeon trained in thoracic surgery.

4. The subject is of such real importance that it should form part of the yearly program of every county and local medical society. We have attended many meetings where such matters were discussed but either they were for a selected group of men engaged in this work or, if for the general medical public, of such a technical and detailed nature as to be practically devoid of interest and value.

5. We feel that the superintendents of tuberculosis hospitals and sanatoriums should not only write and publish articles on this subject but invite and urge the local medical profession to attend meetings where clinical demonstrations could be held and the whole subject of the modern treatment of tuberculosis presented in a simple and practical way.

11 Marlborough Street.

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# TRICHINIASIS

## REPORT OF AN OUTBREAK CAUSED BY EATING TRICHINOUS BEAR MEAT IN THE FORM OF "JERKY"

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Although lower animals are the normal hosts for Trichinella spiralis, man may be accidentally infected by eating insufficiently cooked or raw trichinous meat. By trichinous meat is meant meat in which the larvae of Trichinella spiralis have become encysted and require only liberation from their cystic cells, during the process of digestion, to resume their cycle of development and in turn infect their latest host. It has been said[1] that encysted larvae can remain alive in muscle tissue for as long as thirty years. When meat containing cysts is eaten, the wall is digested, the larvae are liberated, and the cycle once more is started. Briefly, this cycle consists in the liberation of the embryos from the cyst; their passage into the small intestine, where they grow to maturity in two or three days; the fertilization of the female by the male; the burrowing of the anterior end of the fertilized female about the sixth to the eighth day into the intestinal mucosa; the escape of the embryos from the vulva of the female into the intestinal mucosa over a period of about six weeks; the passage of the embryos into the lymph spaces of the mucosa and submucosa, and the passage of the embryos through the right side of the heart by way of the blood stream, through the lungs to the general circulation and thence to striated muscle, which they actively penetrate. Here the embryos rapidly develop to the adult stage in about fifteen days, at which time the first step in encystment takes place. When the worms implanted in the muscle tissue are seen early, they lie flat and in the plane of the muscle fibers, but after reaching maturity they begin to curl at both ends and encystment is under way about one month after infection. Encystment is probably complete by the end of the twelfth week for a given worm, the actual time of encystment after eating trichinous meat depending on the date of birth of the embryos after the burrowing of the female into the intestinal wall. From the foregoing, one can see that the eating or even the chewing and rejecting of trichinous meat starts the cycle of development which ends in the encystment of the organisms in the muscles of the host. Classically, pork is the offending meat, but other edible animals also act as host, possibly from eating trichinous rats and pigs. In the outbreak reported here the brown bear was the cause of infection.

### REPORT OF CIRCUMSTANCES SURROUNDING AN OUTBREAK IN VALLEJO, CALIF.

Case 1.—Lloyd K., aged 18 years, joined a party of hunters in Trinity County, Calif., and brought down a brown bear weighing about 400 pounds (180 Kg.), age not determined. The bear was skinned, and as there was a large amount of meat to be disposed of, it was decided to "jerk" it and keep it for later consumption. The process of "jerking" consists in cutting the meat in strips, then smoking and drying it in the sun for a few days. The end-result is a strip of black meat 18 inches long, 2 inches wide, and one-half inch thick, rather tough and leathery and not particularly palatable. The meat was divided among the members of the hunting party; Lloyd K. brought his home and proudly passed it around at school as well as at home and among the neighbors.

About seven days after eating his first jerky, he became ill with nausea, vomiting, diarrhea and generalized pain in the abdomen, which lasted two or three days and subsided. He continued to chew the jerky at odd times over a period of several days, and three or four days later he became ill with fever, malaise, anorexia, prostration and pain and stiffness in the muscles of the gastrocnemius groups. He continued to get worse; the muscular pains became quite severe; the temperature was high with large daily swings; he was unable to move his limbs, and he rapidly became delirious. On the evening of October 12, fourteen days after the onset of his illness and about twenty-one or twenty-two days after first eating the jerky, he was seen by me.

He was lying in bed, delirious, rambling in his talk, cyanotic, toxic and dehydrated. He responded meagerly to questions but did not give an intelligible reply. His temperature was 96 F. by mouth; pulse, 148, weak and thready. The pupils were dilated and did not react to light. The lips were parched and cyanotic; swallowing appeared difficult but there was no regurgitation of fluid through the nose when given a small amount of water with a drinking tube. There was some stiffness of the muscles of the neck, but I was unable to determine whether this was definite rigidity or merely resistance to my efforts to flex his head on his chest. His breathing was labored and of a peculiar character: it was not the labored breathing of embarrassed respiration due to fluid or cardiac insufficiency, but rather it gave the impression of being due to muscular insufficiency. The respiratory rate was 20. The abdomen was flat and flaccid; there was no tympanites, rigidity or guarding. He was unable to move his legs and could not cooperate in the examination. A superficial examination of the reflexes revealed: biceps, absent; patellar, absent; abdominal and cremasteric, absent. A leukocyte count made at this time showed 42,000 white cells with 97 per cent polymorphonuclears. The urine was dark, thick and acid, with a specific gravity of 1.030; albumin was 2 plus; it was negative for sugar. It was loaded with coarse and fine granular casts, from 250 to 300 per high power field. There were many leukocytes. Urine cultures on Endo's and litmus lactose plates showed no pathogenic bacteria. The boy died at 6 o'clock on

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Read at a staff conference, United States Naval Hospital, Mare Island, Calif.

From the outpatient service of the United States Naval Hospital, Dr. E. E. Curtis, chief of service.

[1] Whitmore, E. R.: Trichiniasis, in Tice: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc. 5:175.

the morning of October 13, a few hours after I had first seen him. A necropsy was requested and permission granted.

A series of cultures both aerobic and anaerobic were made at autopsy; the spinal fluid, mesenteric glands and the intestinal contents were negative for pathologic change in the viscera.

Sections of the bear meat were so tough that they had to be soaked for twelve hours before the microtome knife could make satisfactory sections. When stained and examined, they were found to be loaded with Trichinella spiralis in the encysted stage.

A necropsy was performed at 2 p. m., October 13, by Dr. H. E. Ragle, Lieutenant Commander, Medical Corps, U. S. Navy, who made the following observations:

The body was well developed and fairly well nourished. The skin was clear and somewhat brown. There were no signs of edema. The teeth were good. The pupils were equal in middilatation. A Y-shaped incision was made at necropsy. The muscles were well developed. There was very little subcutaneous fat. The lungs were partially collapsed and free from pleural adhesions. The cut sections showed no edema, congestion or consolidation. There was no excess of pleural fluid in the pleural cavities. The pericardial sac contained 100 cc. of clear straw-colored fluid. The heart was normal in size; the musculature was good and the valves were normal. The right side was somewhat dilated by blood. There was no free fluid in the peritoneal cavity. The lower edge of the greater curvature of the stomach adhered to the posterior parietal peritoneum. Some adhesions were found between the gallbladder and the loops of duodenum and jejunum. There was no gas in the intestinal tract. The mucosa of the intestinal tract showed a marked hyperemia throughout. The entire chain of mesenteric glands were enlarged and red. The spleen was normal in size and slightly congested. The liver was normal in size; a cut section showed a fat necrosis. The pancreas was normal. The gallbladder was normal. The kidneys were slightly swollen. The capsules stripped fairly easily. A cut section showed an acute congestion. The markings were good. The urinary bladder was distended by rather dark urine. The suprarenals were normal. The prostate was normal. The spinal fluid, obtained by cistern puncture, was clear; a stained smear showed it to be free of organisms and excess cells. The calvarium was removed; the brain was somewhat edematous and the capillaries were engorged. The meninges were normal. On histopathologic section, the unencysted form of Trichinella spiralis was found throughout the pectoral muscles and the diaphragm.

Sections of the bear meat showed encysted Trichinella spiralis.

The anatomic diagnosis was: edema of the brain; fat necrosis of the liver; acute nephritis; acute enteritis with enlargement of the mesenteric lymph nodes, and intestinal adhesions (old).

The microscopic diagnosis of the pectoral muscles and of the diaphragm was trichinosis.

The rest of the patient's family were lightly infected, except one sister, Lorraine K. Their histories were briefly as follows:

Case 2.—Mrs. K., aged 38, chewed only a small piece of the jerky, about September 23 or 24, and became ill, October 2, with headache, pain in the back and legs, and chills followed by fever, which rose quite high in the afternoon. She continued feeling bad, with fever in the afternoon and evenings and morning remissions, and severe pain in the gastrocnemii, but there was no nausea, vomiting, or diarrhea. When seen by me the evening of October 12, she had been sick ten days but was feeling much better, although quite weak, and was still having pain in her legs and back. The temperature was 99 F.; pulse, 80. Physical examination was negative except for sluggish biceps and patellar reflexes.

Case 3.—Mr. K., aged 42, ate only two or three small pieces of jerky, September 20, and became ill on October 3, thirteen days after eating the meat. His eyes became bloodshot and "looked as though they were going to pop out of his head." He also had chills and fever and a moderately severe headache. There was no nausea, vomiting or diarrhea, but the patient said that he had daily swings of fever, feeling fine in the mornings and hot and flushed in the afternoons and evenings. October 11, the day before I saw him, he began to improve and stated that he felt fine. At no time had he had any muscular pains. October 16, the urine showed a trace of albumin, from 20 to 30 coarse granular casts per high power field, and many leukocytes. The same day he had an eosinophilia of 31 per cent.

Case 4.—C. K., a girl, aged 15, developed a headache on October 8 and went to bed on the ninth. At first she stated that she had not eaten the bear meat but on close questioning admitted that on September 20 she had chewed a small piece, but after a few moments of chewing she did not swallow it. Since going to bed, October 9, she had had headaches, chills and a daily evening rise in temperature but at no time had there been any nausea and vomiting. When seen by me on the evening of October 12, three days after she went to bed, she was feeling tired and had pain in the thighs and the upper arms. The temperature was 101 F.; pulse, 92. Physical examination was negative except for sluggish biceps and patellar reflexes and tenderness to palpation over the muscles of her thighs and of the deltoid region. The urine showed no albumin or casts. October 15, she had an eosinophilia of 39 per cent.

Case 5.—Lorraine K., aged 18 years, ate several pieces of bear jerky, September 20, but did not notice any symptoms until fourteen days later, October 4, when she went to bed with a headache, chills and fever. There was no nausea, vomiting or diarrhea. After the onset of the initial symptoms she began to have muscle pains throughout her whole body but especially in her legs, shoulders and back. When first seen, she was lying in bed acutely ill with a temperature of 104.6 F., a pulse rate of 120, and respiration 20. She said that she was unable to move her legs without severe pain. She had some dysphagia and complained of burning in her throat on swallowing. Her eyelids were edematous; subconjunctival hemorrhages rimmed the iris of each eye; the pupils reacted to light sluggishly. Questions had to be repeated; there appeared to be some deafness. She complained of some stiffness of the neck—Kernig's sign was positive. Her breathing was labored and of the same character as was that of her brother's; the accessory muscles of respiration were apparently functioning by voluntary effort. The lung fields were clear. The abdomen was flat, with no tenderness; there was some tenderness and swelling of the muscles of the left flank and there was a local elevation of temperature as compared with the corresponding side. Her ankles were thick, but there was some pitting edema over the dorsum of the feet and of the ankles. A superficial neurologic examination showed sluggish and weak deep reflexes; superficial reflexes were present but weak. Examination of the blood, October 12, revealed: white blood cells, 21,000; polymorphonuclears, 97 per cent; eosinophils, 1 per cent. The specific gravity of the urine was 1.028. The urine was cloudy and amber colored; it was acid and contained a few leukocytes and epithelial cells. Throat cultures showed a long chain streptococcus; stools were negative for ova and parasites. Cultures of the feces showed no pathogenic organisms. Blood cultures were negative. Laboratory examination, October 15 revealed: a trace of albumin in the urine; from 250 to 300 granular casts per high power field; white blood cells, 18,000; polymorphonuclears, 92 per cent; eosinophils, 2 per cent; lymphocytes, 5 per cent. October 16: white blood cells, 20,400; polymorphonuclears, 80 per cent; eosinophils, 12 per cent. Daily urine examinations were made and on October 22 albumin was negative, and there were no casts and only a few leukocytes. A stained catheterized specimen showed numerous B. coli. Urine cultures, October 23, showed a heavy growth of B. coli.

### PROGRESS

Mr. K., Mrs. K. and C. K., in from seven to ten days, lost their fever and muscular pains and were allowed up and about the house. Lorraine K. had a rather stormy course; her temperature ranged from 96 F. to as high as 105.4 within four hours and her pulse from 110 to 140 and on one occasion to 150 per minute. On one occasion, her temperature rose to 104.8; her flanks became distended and were exquisitely tender to the lightest palpation; this was considered to be an acute local myositis due to showering of worms into these muscles. Throughout the course of the illness the kidney complication coupled with cardiac embarrassment and fatigue caused the greatest concern. These, however, responded to careful nursing and systematic treatment. Because of the severity of her infection and resultant toxic manifestations it was found necessary to keep her circulation well supported and elimination active.

### TREATMENT

There is no specific treatment for trichinous infection. These cases were all treated symptomatically. Lloyd K. was so toxic and dehydrated when I saw him that he died a few hours later. The other members of the family were given daily purges with magnesium sulphate; the urine was kept alkaline with sodium citrate in large doses, and after the severe symptoms incident to the stage of muscle invasion had passed, thymol in olive oil was given intramuscularly, from 0.13 to 0.3 Gm. a day for several days. During this period of treatment the urine was watched carefully, and, although occasionally granular casts were found, this was not considered a contraindication to treatment. In addition to this, thymol was given by mouth, 1 Gm. in a single dose repeated in twenty-four hours after a twenty-four hour fast and after a purge with saline solution. Although I have no accurate method of determining the rate or degree of improvement following the treatment, I use the eosinophilia in the differential blood count as an index of the degree of involvement and of the amount of improvement when compared with counts made before the treatment was instituted, but after the acute typhoid-like symptoms had subsided. When first seen, Lorraine K. was given 1,000 cc. of saline solution by hypodermoclysis to combat the evident dehydration, and then retention enemas of 500 cc. of warm tap water were given every four hours. When her temperature dropped to 96 and below, warm enemas of whisky and tincture of digitalis intramuscularly were given to combat collapse.

The toxic nephritis with from 200 to 300 granular casts per high power field was treated by alkalization with sodium citrate, intramuscular injections of calcium gluconate and tincture of digitalis intramuscularly for her failing circulation. Hot packs were used to relieve the acute pain of the myositis during the stage of dissemination and acetylsalicylic acid and codeine were given for pain, with occasionally 0.015 Gm. morphine sulphate when the acetylsalicylic acid and codeine failed to give relief.

### COMMENT

On the evening of October 12, the problem confronting me resolved itself about the fact that all five members of a family had been taken acutely ill over a period of a week. The various members had been ill for from four to fourteen days, with a diagnosis of probable typhoid. The only possible common source of infection was some "jerky" bear meat of which they had all partaken in large or small amount. So far as could be determined, they had not all partaken of any other food which could be held under suspicion. On the strength of this and the clinical manifestations of a typhoid-like fever, accompanied by a soreness of the muscles, edema of the eyes, and sluggish or absent reflexes, a tentative diagnosis of trichinosis was made. It was decided that the diagnosis could be finally made only in the laboratory, so complete laboratory studies were instituted at once. The following morning at 6 o'clock one member of the family (Lloyd K.) died, and a necropsy was held, but a definite diagnosis was not established. Sections of the suspected "jerky" bear meat were run through that day and Trichinella spiralis was found in large numbers. The striking features of the clinical picture in these cases was the great prostration noted even in those who had eaten small amounts of the infected meat. All but one of the patients complained of muscular pains, only one had the characteristic edema of the eyelids, and only one had subconjunctival hemorrhages. During the early stages of the disease, when the typhoid-like symptoms were so prominent, there was a decided polymorphonuclear reaction; but as dissemination neared completion and encystment commenced, the characteristic eosinophilia began to appear and reached 39 per cent in one of the patients. Lloyd K., even a few hours before death, with a white count of 42,000, showed no eosinophilia.

This outbreak presented some unusual aspects from a public health standpoint. A bear is a large animal and "jerky" goes a long way. On close inquiry it was found that not less than twenty-five people in this immediate vicinity had eaten the jerky, and a large portion of it had been left at the scene of the hunt with residents of that district. In addition, one member of the party took his share home to a nearby large city and treated his friends, so that in all probably fifty or more people ate "jerky" from this trichinous bear before they could be notified through the state board of health that the meat was dangerously unfit for consumption.

### SUMMARY

An outbreak of human trichiniasis with one death occurred following the ingestion of trichinous bear meat in the form of "jerky." The encysted trichinellae were found in sections made from the bear meat and also were recovered from muscular tissue of the diaphragm and pectorals at the necropsy of the patient who died of the effects of the disease. The outstanding clinical features of the case were the typhoid-like symptoms, chills and fever, a high leukocyte count with marked polymorphonuclear reaction during the height of the disease, the absence of muscular pain in one of the five patients, edema of the eyes in only two of the five, and the occurrence of the characteristic eosinophilia only during the period of convalescence.

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**The Scope of Clinical Medicine.**—Pope has said that the "proper study of mankind is man," and even though the clinician has science, art and craftsmanship, unless he is intensely interested in human beings he is not likely to be a good doctor. At bottom, we all have many qualities in common, and these fundamental properties can be observed with somewhat less effort on our part in the clientele of a hospital, than in those members of society who are more deeply imbued with the "herd instinct," as Trotter calls it, or are protected by inherited conventionalities of thought and conduct. If we turn our attention for an instant from the study of the abnormal organ or pathology to the study of the morbid patient as a whole, the scope of clinical medicine widens and takes on a character that differentiates it from all other arts and sciences.—Longcope, W. T.: Methods and Medicine, *Bull. Johns Hopkins Hosp.* **50**:4 (Jan.) 1932.

# Clinical Notes, Suggestions and New Instruments

## EPISCLERITIS DUE TO ALLERGY

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and
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After a careful search for the etiology of episcleritis by the most thorough investigators,[1] we have concluded that many cases must be reported as "cause unknown." The fact that a specific hypersensitiveness might often be the etiologic factor in patients suffering from episcleritis of the so-called idiopathic type was suggested by the following case.

### REPORT OF CASE

F. S., a physician, aged 37, said that for ten or twelve years he had suffered every five or six months from eye symptoms characterized by a fairly sudden onset of photophobia, lacrimation and painful eyeballs. The duration of the attacks was from seven to fourteen days. We have never seen him with symptoms. However, he reports that while in school in the East he was studied by a number of ophthalmologists, all of whom made the same diagnosis; namely, episcleritis of unknown origin. His practice of medicine has been seriously interfered with during the last five years, as for at least thirty days out of the year the severity of symptoms would necessitate his discontinuance of work. Between the attacks he has never had eye symptoms except during the early fall of the year, at which time he has suffered from seasonal hay fever.

He was first seen by us in 1927, at which time he gave a history of seasonal hay fever of twelve years' duration and an occasional attack of urticaria. At this time we were not testing seasonal hay fever patients in a routine manner with food allergens. He was found sensitive to the following pollens:

| | | | |
|---|---|---|---|
| Giant ragweed | +++ | Spiny amaranth | ++ |
| Short ragweed | ++++ | Western water hemp | +++ |
| Western ragweed | ++ | | |

Preseason pollen therapy was instituted, both the ragweed and the pigweed group being employed, with only fair results. He was again desensitized in 1928, the same pollen antigens being used, with fair results. The following year he came in for general rechecking, at which time he was tested with pollens, animal epithelia, dusts of all kinds, and foods. He was found sensitive to the following:

| | | | |
|---|---|---|---|
| Giant ragweed | ++++ | Lima bean | +++ |
| Short ragweed | +++ | Buckwheat | ++ |
| Western ragweed | +++ | Pecan | ++ |
| Spiny amaranth | +++ | Strawberry | ++ |
| Western water hemp | +++ | Lettuce | +++ |
| Pyrethrum | ++ | Celery | +++ |
| Duck feathers | ++ | Watermelon | +++ |
| Goose feathers | ++++ | Navy bean | +++ |
| Chicken feathers | ++ | Cucumber | ++ |
| | | Sweet potato | ++ |

Hay fever treatment was again instituted, the same pollen groups that were previously used being employed. He was also carefully advised concerning the possibility of feathers as a secondary factor in seasonal hay fever. Foods to which he was specifically sensitive were removed from the diet. The result of pollen therapy this season was nearly 100 per cent.

The part of the history in which we are chiefly interested just now is the fact that during the past year he has not suffered recurrent attacks of episcleritis except on one occasion, about two weeks following the time he was advised concerning his diet, when he deliberately ate some of the foods to which he is specifically sensitive.

We have insisted that he again eat the foods which we advised to be removed from his diet, to see whether symptoms of episcleritis would recur, but he reported: "There has been no return of the episcleritis which has dealt me so much misery during the last ten years. I am convinced it was due to food allergy and do not want to run the risk of having another attack."

### COMMENT

The case we have just reported is typical of the type that May[1] describes as periodic transient episcleritis. The patient had been studied by a number of competent ophthalmologists and internists, and there was no disagreement about the diagnosis of the chain of symptoms with which he suffered. The internists were unable to find any possible foci of infection that might produce his trouble. In a survey of the literature, allergy is not mentioned as one of the possible causes of episcleritis. In our patient no change was made in his routine life except that his feather pillows were covered with rubberized sheeting, and the foods to which he was specifically sensitive were removed from his diet, with the result that he has been free from symptoms for over a year, except on one occasion when he deliberately partook of foods to which he is specifically sensitive.

The fact that a patient with episcleritis has not suffered or does not suffer from some well recognized allergic syndrome, such as hay fever or hives, as our patient did, by no means rules out the possibility of allergy as an etiologic factor. It is a well recognized fact that one may become specifically sensitive to foods or other substances and the manifestation of sensitivity occur in only one tissue of the body; for example, the brain, the skin or the nasal, bronchial, intestinal or bladder mucosa. In discussing this case and the subject of episcleritis in general, Dr. Edward Jackson[2] of Denver said that his study of episcleritis during the last decade has impressed him with the possibility of allergy as an etiologic factor, but that he had never had an opportunity to study any case from an allergic standpoint.

On the basis of the data given, it seemed justifiable to suspect an allergic factor in the etiology of the symptoms of episcleritis with which our patient suffered.

1200 North Walker.

# Special Articles

## CLINICAL FEATURES OF VITAMIN A DEFICIENCY

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and
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ROCHESTER, MINN.

[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

The peculiar curative virtues of certain foods have been recorded at isolated periods since ancient times. Some of these observations are strikingly accurate and prophetic. Today, from the standpoint both of human experience and of laboratory research, it has been definitely proved that a natural food supply furnishes, and normal nutrition requires, other substances in addition to proteins, fats, carbohydrates, water and salts. Present knowledge concerning these accessory food factors, or vitamins, is rather the product of development than of any isolated discovery, and much of this development antedates the introduction of the word "vitamin." It is almost exclusively within the last quarter of a century that experimental investigation, to which American scientists have made numerous and valuable contributions, has, in addition to making fundamental discoveries, explained the rationale of such historic dietotherapeutic procedures, as, for example, the use of fresh vegetables and citrus fruits in the treatment of scurvy and of cod liver oil in rickets, the feeding of liver in night blindness, and the substitution of barley for polished rice in beriberi.

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[2] Jackson, Edward: Personal communication to the author.

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The conception of the fat-soluble vitamin A arose from the failure of McCollum and Davis[1] and of Osborne and Mendel[2] to secure normal growth of experimental animals for a long period of time on purified foods furnishing adequate proteins, fats, carbohydrates and salts, whereas the conception of the presence in certain foods of the water-soluble vitamins B and C developed primarily from observations on disease.

Until recently the versatility of vitamin A has apparently not been appreciated. A remarkably increasing literature in the last year or two attests its growing importance in the chemistry of food and nutrition, not only in the prevention and cure of certain ailments of man but, when supplied in liberal proportion, in the maintenance of a satisfactory state of nutrition and a high degree of health and vigor, both in the growing child and in the adult.

### HISTORICAL SUMMARY

The most readily appreciated clinical symptoms of vitamin A deficiency have to do with changes occurring in the eyes. It has been known for centuries that some relationship between ocular conditions and states of malnutrition existed. Hippocrates is quoted as advocating an abundance of liver, or liver and honey, in cases of night blindness, and such treatment is recognized as scientifically correct today in cases of hemeralopia (night blindness) on a nutritive basis.

McCollum and Simmonds[3] stated that Livingstone, in 1857, describing the hardships endured in his explorations in Africa, related that his party while suffering from exposure to the weather lived for a time on sugarless coffee, manioc roots and meal, and reported that "the eyes became affected (as in the case of animals fed, on experiment, on pure gluten or starch)." Unfortunately, the experiments referred to have not been found described. On the continent of South America, Gama Lobo,[4] in 1865, described a disease of the eyes among the poorly nourished slaves on the coffee plantations of Brazil. This was the so-called ophthalmia Brasiliana, and seventeen years later his fellow countryman de Gouvêa[5] gave a description of the real picture in xerosis of the conjunctiva, hemeralopia, and destruction of the cornea in nutritional disease. Bitôt,[6] in 1863, had recognized the clinical relationship between xerosis of the conjunctiva and certain kinds of night blindness of human beings, and first described the former condition. Endemic night blindness among orthodox Russians during lenten fasts was described (1887). During such periods, starvation among adults was common, and it was observed that nurslings whose mothers practiced long religious fasts not uncommonly had spontaneous sloughing of the cornea.

Among the first descriptions of nutritional keratomalacia in the United States were those of Little,[7] Weeks[8] and Kollock.[9] The most extensive early report of a large series of such cases came from still another continent, Asia, with the description by Mori[10] of 1,400 cases of xerophthalmia among children in Japan, a syndrome known as "hikan."

It is rather interesting that there were few accurate early descriptions of such diseases in Europe, but the unique experiences which have occurred in Denmark within the last two decades, chiefly those of Bloch[11] and Blegvad,[12] have been outstanding in producing clinical data to correlate with the extremely numerous and accurate experimental data which have been collected during this same period. It was shortly after the beginning of their studies that Osborne and Mendel, and McCollum and Davis, showed experimentally that young animals fed on food mixtures alike in all other respects would continue to grow and thrive or would soon cease growing and shortly thereafter sicken and die, according as the fat in these mixtures was butter fat, cod liver oil, egg yolk or lard.

In 1919, Bloch unwittingly performed a human experiment corresponding exactly to feeding experiments on animals, by dividing into two groups thirty-two healthy children, from 1 to 4 years of age, in an institution in Copenhagen, one group receiving whole milk and the other fat or vegetable fat in margarine. In eight cases among those on the vegetable-fat diets, xerosis developed and was subsequently relieved by cod liver oil, whereas in the group given whole milk no disturbance developed. This close correlation was further demonstrated in Denmark during and after the war, for, as Widmark[13] has shown, the number of cases of xerophthalmia in that country (from 1914 to 1920) was inversely proportional to the amount of butter fat consumed by the people.

### THE NATURE, PHYSIOLOGY AND SOURCES OF VITAMIN A

Investigations based on Steenbock's[14] discovery in 1919 that among the vegetable foods the distribution of vitamin A is associated in a remarkable way with yellow pigmentation have borne much fruit. The yellow pigment carotene is apparently the plant source of the vitamin A of animal tissue. In fact, biologic tests alone, according to the work of Capper, McKibbin and Prentice,[15] cannot distinguish between carotene and vitamin A, and it would seem probable that this vitamin is a product of conversion by animals and ultimately owes its origin entirely to carotene. The physiologic potency of pure carotene has been shown by various investigators to be as striking as that of other known vitamins. The latest evidence[16] indicates that carotene is apparently unchanged in the bowel and is converted by hepatic enzymatic activity into vitamin A; the latter, a colorless product, is stored chiefly in the liver. This organ also undoubtedly plays an important part in the regulation of the concentration of the vitamin throughout the remainder of the body. Because of the very small amounts of carotene which will overcome vitamin A deficiency in the rat, it has been assumed that the vitamin may act chemically as a catalyst, but nothing is known of the mechanism of the physiologic action of the substance. The functions of vitamin A have been variously stated as growth promoting, infection resisting and antixerophthalmic, although it has been denied by some that this vitamin has any of these functions. The high vitamin A content of mother's breast milk has been determined by Macy, Outhouse, Graham and Long,[17] and is of tremendous importance to the nursling. It has been shown by Jennie Rowntree[18] that there is no alimentary vitaminuria in infants and young children following generous allowances of vitamin A in the diet. Establishment of this fact seems to signify that the limit of the capacity to store vitamin A is not easily reached. Loss of vitamin A in the feces is variable and occurs independent of the intake, according to Rowntree's investigations.

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[3] McCollum, E. V., and Simmonds, Nina: The Newer Knowledge of Nutrition, ed. 4, New York, Macmillan Company, 1929.

[4] Lobo, Gama, quoted by Pillat (footnote 25, second reference).

[5] de Gouvêa, H.: Beiträge zur Kenntniss der Hemeralopie und Xerophthalmie aus Ernährungsstörungen, Arch. f. Ophth. **29:** 167-200, 1883.

[6] Bitôt, quoted by Blegvad (footnote 58).

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[10] Mori, M.: Ueber den sogenannten Hikan (Xerosis conjunctiva infantum ev. Keratomalacie), Jahrb. f. Kinderh. **59:** 175-195, 1904.

[11] Bloch, C. E.: Effects of Deficiency in Vitamins in Infancy, Am. J. Dis. Child. **42:** 263-278 (Aug.) 1931.

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[16] Moore, Thomas: Vitamin A and Carotene: Distribution of Vitamin A and Carotene in the Body of the Rat, Biochem. J. **25:** 274, 1931. Olcott, H. S., and McCann, D. C.: Transformation of Carotene to Vitamin A in Vitro, Science, new series, **74:** 414 (Oct. 23) 1931.

The usual food sources of vitamin A are milk, butter, eggs and green vegetables. As these are representative of the more expensive foods, their consumption is frequently inadequate among the poor, especially during periods of economic depression, war, famine or drought. Lard, vegetable fats and oils, as a general rule, do not contain vitamin A. On the other hand, certain animal oils, for example, cod liver oil, and probably halibut liver oil, are very rich in it. The vitamin A content of these products is dependent on the diet of the animal and is influenced by the reserve store in the body. Carrots, the yellow tissue of pumpkin, tomatoes, sweet potatoes and green dried peas also contain appreciable amounts of carotene. Cereals and muscle tissue are poor in it. Sherman and Smith[19] have tabulated the results of various investigators as regards the vitamin A content of typical foods from a wide biologic range of sources.

## DISEASE AND PATHOLOGIC CHANGES AS A RESULT OF VITAMIN A DEFICIENCY

It may be said at the outset that the most familiar form of vitamin A deficiency, xerophthalmia, both of infants and of adults, especially the latter, is extremely rare in the United States. There is good reason to believe that the ordinary food supplies of the major portion of the population of this country furnish enough of this accessory food factor so that there is no tangible evidence of a lack of it. States of vitamin A deficiency are less frequently observed in adults than in infants and young children because the storage of vitamin is greater in adults and there is no demand on storage depots for purposes of growth. Moreover, the adult instinctively looks for nourishment containing this vitamin. It is likely, however, that certain individuals, the poor in particular, do not consume enough foods that contain vitamin A and vitamin G to insure a state of nutrition essential to the greatest physical stamina, efficiency and ability to resist infectious diseases. As a result of the rarity of vitamin A deficiency disease in man, few clinical and pathologic observations have been made. This is in contrast to the numerous and exhaustive studies on experimental animals. The incidence of rachitic, pellagrous and scorbutic forms of avitaminosis is undoubtedly much greater than of those frank forms of avitaminosis due to vitamin A deficiency. The inadequate dietary of a nation like China or India, and the vicissitudes of war, famine, flood, drought and poverty in any country have, from time to time, made possible valuable clinical observations relative to states of vitamin A deficiency in man, which have, in the main, been corroborative of the results of experimentation on animals.

Previous to the differentiation of vitamins A and D from each other by McCollum and his co-workers[20] in 1922, many of the abnormalities reported following clinical observations and experimental studies, thought to be solely due to vitamin A deficiency, were really due to a deficiency either of vitamin A or D, or of both. Fortunately the factor of vitamin D deficiency was eventually shown to play only a secondary part in the diseases we are to consider.

Vitamin A deficiency disease may result from reduction of adequate intake of this vitamin, as the available food supply may be poor in it; from deficient absorption and storage as the result of intestinal or hepatic derangement or disease, or from an increased demand for, and consumption of, the vitamin; for example, during periods of rapid growth or of disease, especially severe infectious diseases, when the basal metabolic function may be greatly enhanced. These features may explain the development of avitaminosis in the presence of an apparently adequate supply of the vitamin.

In the light of present knowledge concerning the diseases and pathologic processes engendered through deficiency of vitamin A, it is essential that a broad view of the subject be taken and not, as in the past, that attention be concentrated chiefly on changes in the ocular organs. It is appropriate at this time to emphasize the fact that it is doubtful whether deficiency disease in man, with the possible exception of scurvy, ever occurs uncomplicated, for symptoms of uncomplicated deficiency disease in the animal occur only following a regimen of carefully planned experimental diets. This aspect of the subject is a plausible explanation for the controversy that still exists over certain clinical and pathologic phenomena in states of vitamin A deficiency.

The physician may gain a fairly clear conception of how vitamin A deficiency manifests itself clinically and pathologically in man by realizing that such deficiency affects epithelial tissues in a specific manner. The pathologic investigations of Wolbach and Howe,[21] subsequently confirmed by various other investigators, show that there is a substitution of stratified keratinizing epithelium for normal epithelium in various parts of the respiratory, alimentary and genito-urinary tracts, in the eyes and in the para-ocular glands; or, in brief, metaplasia of the greater part of the ectodermal leaf of the body. Such changes may be followed by infection in the various organs or tissues. Thus, the maintenance of intact, healthy epithelial membranes, which constitutes the first line of defense against bacterial invasion, is a prophylactic function of this vitamin of the first importance.

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### EYES

It has been widely considered until recently that the eye was the only organ affected in vitamin A deficiency. The effects on the eye result in two types of changes: (1) hemeralopia, or night blindness, and (2) xerophthalmia, xerosis or keratomalacia, all of which have to do with changes in the epithelium of the eyeball and para-ocular glands.

*Night Blindness.*—Night blindness may be defined as difficulty or inability to adapt the faculty of vision to very faint illumination, and it may result from intra-ocular as well as from deficiency diseases. In the latter type, it is generally presumed that the hemeralopia is of the so-called essential type and that it depends on disturbance in the visual purple metabolism of the retinal rod cells, and changes in the ocular fundi are absent. Under ordinary circumstances of bright light, visual purple is bleached, but it is also being constantly regenerated. Experimental evidence indicates that there is a close relationship between vitamin A and the visual purple, since, as Fridericia and Holm[22] have shown, there is delay or failure in regeneration of visual purple in animals deprived of vitamin A. In addition, the high vitamin A content of the hog's retina has been demonstrated by Yudkin, Kriss and Smith,[23] so that it is possible that in the retina there may occur a reversible reaction, vitamin A being required for the production of visual purple and the latter, under suitable conditions, producing vitamin A. It is obvious that the manifestation of night blindness will occur chiefly after exposure of the patient to bright light, and it is in this way that the supply of visual purple is depleted in amount, and ample regeneration cannot occur. This was convincingly demonstrated by Aykroyd,[24] who found that after prolonged exposure to brilliant sunlight, with apparent rapid exhaustion of the visual purple, several cases of night blindness were first manifested. Night blindness may occur in association with other ocular lesions accompanying vitamin A deficiency.

*Xerophthalmic Changes.*—Pillat,[25] whose extensive observations in China on the ocular changes in vitamin A deficiency of adults have given him an unparalleled experience, divides the symptoms of these changes into the following groups: (1) night blindness, (2) xerosis epithelialis conjunctivae, (3) xerosis epithelialis corneae, (4) keratomalacia, (5) pigmentation of the cornea, (6) meibomitis, (7) blepharitis and hordeolum, (8) decrease of tear fluid, (9) edema and puffiness of the lids, and (10) comedones. Xerosis, or dryness of the conjunctiva, Pillat considers to be the usual second stage of vitamin A deficiency. It manifests itself in four forms: Bitôt's spots, irregular xerosis, loss of luster, and wrinkling of the bulbar conjunctiva. Of these, Bitôt's spots, consisting or triangular white spots appearing like dense foam of soap in the palpebral fissure, with the base at the limbus, are perhaps best known and are produced by hyalinization and degeneration of the upper conjunctival layers, with exfoliation. Xerosis of the cornea is the next stage, and almost always coexists with conjunctival xerosis. Associated inactivity of the para-ocular glands, with lessened secretion of tears, frequently accompanies these changes.

Pillat considered keratomalacia the last stage of vitamin A deficiency in the eyes of adults. When corneal softening occurs, infection begins, distorting the primary picture and resulting in severe complications which frequently lead to complete or partial blindness.

Conjunctival pigmentation is one of the most characteristic changes, as described by Pillat, Wright[26] and Mori. The pigment is light brown and probably melanotic, and may have the appearance of intensive argyrosis. John[27] has demonstrated that the sensibility of the cornea, in advanced stages of the condition, is reduced to a high degree, for instance up to 100 times, whereas the conjunctival sensibility is much less reduced, and such insensibility may remain months after disappearance of the local ocular condition. He believes that there is evidence of a lesion of the central nervous system in these deficiency diseases.

The ultimate result of vitamin A deficiency has not been settled, but Bloch[28] presented material which he studied over a considerable number of years, and he considered that "The death rate among children is considerable after their recovery from xerophthalmia; hardly two thirds of these children reach the age of 8 years. After this their development goes on normally." The deficiency leaves no characteristic defects unless impairment of vision, or blindness, persists.

### THE RESPIRATORY TRACT

The high susceptibility to infection of the respiratory organs of the rat and other experimental animals when deprived of an adequate amount of vitamin A seems to be borne out in man. Of eighty-six children with xerophthalmia, Bloch noted the presence of pneumonia in fifteen and bronchitis in twelve. Nasal and tracheobronchial catarrh was prevalent also. All the pulmonary complications were severe, and there was no improvement or cure until a sufficient intake of vitamin A was provided. In two of the four cases of nutritional keratomalacia in infants, reported by Ross,[29] bronchopneumonia was the immediate cause of death. Pillat observed that children usually succumb to the general disease on account of diarrhea and bronchopneumonia before the ocular symptoms become as distinct as in adults. To an inadequacy of vitamin A in the human dietary, McCarrison[30] has attributed the high incidence of infection of the nose and accessory sinuses, including otitis media, and of the upper respiratory passages and lung, because of the prevalence of these diseases in albino rats when their diet is also inadequate in this vitamin. Wilson and DuBois'[31] pathologic studies of a fatal case of nutritional keratomalacia in an infant 5 months of age revealed extensive keratinization of the bronchial epithelium in many places, bronchiectatic cavities and abscesses. There was also extensive peribronchitis and interstitial emphysema. In both the trachea and the larynx was some stratified squamous epithelium, in which there was a slight degree of cornification. Hume and Smith[32] and others feel that partial deficiency of vitamin A is not uncommon and that a condition of latent deficiency results, in which the individual is liable to infectious invasion of the mucous membranes, more particularly those of the respiratory passages. Herbert,[33] in India, mentioned changes in the mucous membrane of the mouth and larynx, causing hoarseness, nasal catarrh and bronchitis. The familiar chronic diarrhea and a characteristic rise in temperature, features which Pillat stressed, are also noted.

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### THE ALIMENTARY TRACT

The extent to which the alimentary tract may be involved in vitamin A deficiency is at present conjectural, owing to the dearth of trustworthy clinical observations and material for histopathologic study. In Wilson and DuBois' case, no noteworthy abnormality was found in the stomach, pylorus, duodenum, ileum or colon. In the pancreas, however, there were marked changes. There were numerous epithelial-lined cystlike cavities, which apparently were dilated acini. There were also marked inflammatory and fibrotic processes throughout the gland. Various writers have recorded the frequency of diarrhea in both children and adults who were suffering from this form of avitaminosis. Pillat expressed the belief that such diarrhea has its origin in a simultaneous degenerative disease of the intestinal mucous membrane similar to the diarrhea accompanying severe mehlnährschäden, as noted in Germany and Austria. The high incidence of intestinal disease in monkeys subjected to a shortage of vitamin A, according to Tilden and Miller[34] and McCarrison, the atony, changes in haustral marking and increase in the length of the colon of man during periods of malnutrition, as reported by Graham and Fletcher,[35] and the frequent striking therapeutic effect of a high vitamin diet in the latter instance and in ulcerative colitis would argue for a causative relationship between intestinal dysfunction and disease and avitaminosis. To what extent a deficiency of vitamin A in man plays a primary or exclusive part remains to be determined, for lack of other vitamins, especially C and G, is known to cause pathologic changes in the gastro-intestinal mucous membrane. Fehr[36] has observed that keratomalacia develops with essential atrophy of the intestinal tract. McCarrison noted that gastric and duodenal ulcers were very common in southern India. He was able to reproduce very small gastric ulcers in two groups of albino rats on diets resembling in deficiency in vitamins A, B and C and in other respects that of two of the poorer classes of the population. In one group he also noted changes characteristic of duodenitis. To what extent vitamin A played a part, if any, again remains to be determined. The inability to produce actual duodenal ulcers in any of the experimental animals seems disconcerting, for 90 per cent of all peptic ulcers in man are duodenal. These results argue for conservatism in drawing conclusions, at least so far as the causal relationship between any particular phase of avitaminosis and duodenal ulcer is concerned.

On the other hand, disease of the liver or pancreas, when associated with impaired digestion and assimilation of fat, may provoke nutritional keratomalacia. Bloch has noted reports of such cases in the older literature. Blegvad recently has observed xerophthalmia in a case in which carcinoma of the liver occluded the common bile duct. Wright has noted a similar case. Pillat believes that severe infectious intestinal disease, such as typhoid and dysentery, may act as an exhaustive factor, and may lead, indirectly, to the outbreak of keratomalacia in adults, as it does in children.

### THE GENITO-URINARY TRACT

The strikingly high incidence of urinary calculi and deposits of calcium in the experimental animal deprived of an adequate supply of vitamin A may have its counterpart in man, but observations on the latter are conspicuous by their absence. Research bearing on the changes in the epithelial tissues of the reproductive organs of experimental animals of both sexes and on their deleterious influence on the function of reproduction, likewise, has not as yet been substantiated in man. Therefore no conclusions can be drawn at present concerning the formation of urinary calculi and the influence on reproduction in the human being. In Wilson and DuBois' case, keratinization of the epithelium of the renal pelvis was found. The uterine epithelium of the fundus was nearly replaced by stratified squamous epithelium, and where so replaced the uterine glands were absent. Bloch noted complicating pyelitis in eighty-six cases of keratomalacia in children. Herbert reported an increase of epithelial cells in the urine, and Spence[37] made similar observations in seventeen cases of nutritional xerophthalmia and night blindness. The possible part played by vitamin deficiency in its relation to puerperal sepsis will be considered presently.

### CUTANEOUS SYSTEM

Pigmentation of the conjunctiva in xerophthalmia and xerosis conjunctivae, apparently confined to the dark-skinned races, has been reported by Herbert, by Wright, and by Pillat and King.[38] Chou[39] stated that it is the earliest sign of xerophthalmia. As the condition of the conjunctiva improves, much of the pigment disappears, but some of it remains permanently. This pigmentation is the result of an increased amount of melanin normally present in the basal epithelium, and, according to Collins,[40] is also present in the more superficial, even in the keratinized, layers.

Bloch and others have called attention to the dry, scaly, shriveled condition of the skin among infants affected with this disease. Pillat maintained that, apart from the eye, the skin undergoes the most marked and extensive change of all. In this, the sebaceous and sweat glands, hair and nails participate. He, and Frazier and his associates,[41] detailed these various changes. The latter investigators characterized them as xerosis and hyperpigmentation, and in some, ulcerative lesions and pustulation developed. In the group reported by Frazier and his associates, mostly observed in adult Chinese soldiers, the cutaneous changes developed even before xerophthalmia was apparent, and there was no clinical evidence of beriberi, scurvy or pellagra. Curiously enough, the cutaneous lesions were essentially identical to those of the series of cases of scurvy described by Nocolaŭ,[42] Wilshire[43] and others. Frazier, however, attributed the cutaneous changes to vitamin A deficiency. Furunculosis, coming in the category of pustulation or pyodermia, one of the common sequelae of cutaneous changes in xerophthalmia, was noted by Bloch, Ross, Spence and others.

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### HEMATOPOIETIC SYSTEM

Berglund, Keefer and Yang[44] described a form of secondary anemia which they considered to be associated with deficiency in the fat-soluble food factor. They made the reservation, however, that other factors seem to be necessary to bring the anemia into existence. In their series of cases, administration of cod liver oil caused a rise in the reticulocyte count of from 1 to 30 per cent. Other observations have been made by Keefer and Yang,[45] Pillat, and Pillat and Yang,[46] who have also stressed factors other than actual vitamin deficiency itself as the cause of the anemia so frequently observed. John[46a] did not find any change in the velocity of sedimentation of erythrocytes in this deficiency disease that was not due to other associated conditions. Sure, Kik and Walker[47] were unable to substantiate the observations of Koessler and his co-workers[48] that there is a relation between vitamin A deficiency and pernicious anemia.

### CENTRAL NERVOUS SYSTEM

Until recently, vitamin B and possibly G were the only vitamins held to play any important part in maintaining a healthy condition of the nerves. Nothing has been known clinically, up to the present time, of the involvement of the nerves in vitamin A deficiency.

The experimental researches of Mellanby[49] have shown that diets containing a large amount of cereals, and deficient in vitamin A or carotene, when fed to young puppies caused degeneration of the spinal cord in the form of demyelination of the nerve fibers. Moreover, it was definitely established experimentally that the effect of the neurotoxin of ergot and cereals is neutralized by this vitamin. These results have a possible bearing on convulsive ergotism, lathyrism, pellagra and the subacute, combined degeneration of pernicious anemia, tabes dorsalis and disseminated sclerosis. In a communication on pellagra, Eusterman and O'Leary[50] have shown that this disease, for various reasons, may be constantly in our presence and that it has a universal distribution. Therefore the part that vitamin A deficiency plays, as regards lesions of nerves, and the causative relationship of the toxic element in maize and cereal to pellagra might be determined by clinical investigation. John has noted that in vitamin A deficiency the patients are mentally numb and apathetic. Bloch has commented on the fact that children are indolent in the first stages and later extremely irritable. John's observations on the changes in corneal sensibility and the possible relationship of xerophthalmia to lesions of the central nervous system have already been considered.

### RELATION OF VITAMIN A DEFICIENCY TO INFECTIONS IN GENERAL

Many observers are agreed that vitamin A is a physiologic prophylactic against infection, by virtue of the fact that it maintains the integrity of the epithelial linings of the mucous tracts and the skin, but its "antiinfective" function, that is, its ability to cure infections when the barrier of the mucous membrane has been passed, or to prevent or cure infections of the blood stream, is still not established. The marked susceptibility to, and the high incidence of, infections in the experimental animal, as a rule rather extremely deprived of vitamin A, is the usual and early observation of all research workers. Accumulating experimental evidence, however, tends to support the hypothesis that vitamin A plays a part as an antiinfective agent. It seems logical that these observations can be translated into terms of human experience, the differences being mostly those of degree. It will be recalled that Bloch noted many severe infections in his eighty-six xerophthalmic patients. In addition to pneumonia and bronchitis in twenty-seven, there was otitis media in thirteen, pyelitis in twenty-seven and pyodermia in fourteen cases. He maintained that vitamin A is of especial importance to the organism for resisting and overcoming infections, and that this applies to vitamin A only. Spence's experience in seventeen cases of nutritional xerophthalmia and night blindness, chiefly in older children and young adolescents, stands in contrast to that of Bloch. There was a high incidence of cutaneous infection, impetigo and boils in the families (ninety-nine members) of the eleven youngest patients. In seven of the latter there was a history of indolent infection of the skin. This was promptly cured by antixerophthalmic treatment. But over a period of two years the only serious, febrile illnesses in these families, living on a xerophthalmia-producing diet, were a fatal case of pneumonia in a girl 14 years old, and two cases of mumps and three of measles, with complete recovery. A clinical study of the relationship of vitamin A to the "common cold" by Wright and his associates[51] failed to disclose any appreciable difference in the incidence of this infection in groups of children supplied with normal amounts of vitamin A and those supplied with large amounts of this vitamin. In the treatment of patients with pneumonia at the Crown Gold Mines in Johannesburg, Donaldson[52] found that in 200 cases in which large doses of vitamin A were given the mortality rate was 8 per cent, whereas in a control group of 100 cases the mortality rate was 13 per cent. To determine the particular part that vitamin A plays in the favorable therapeutic effect of high vitamin diets in such chronic infectious conditions as rheumatoid arthritis and pulmonary tuberculosis requires further investigation.

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[42] Nicolaŭ, W., quoted by Frazier and Hu (footnote 41).

[43] Wilshire, H., quoted by Frazier and Hu (footnote 41).

[44] Berglund, Hilding; Keefer, C. S., and Yang, C. S.: Deficiency Anemia in Chinese, Responding to Cod Liver Oil, Proc. Soc. Exper. Biol. & Med. **26**: 418-421 (March) 1929.

[45] Keefer, C. S., and Yang, C. S.: The Rôle of the Various Vitamins in the Production of Anemia, Nat. M. J. China **15**: 419-429 (Aug.) 1929.

[46] Pillat, Arnold; and Yang, C. S.: The Blood Picture in Keratomalacia of Adults, Arch. Ophth. **4**: 309-314 (Sept.) 1930.

[46a] John, I.: The Sedimentation Velocity of Blood Cells in Eye Diseases Caused by Vitamin A Deficiency, Am. Jour. Ophth. **14**: 590-594 (July) 1931.

[47] Sure, Barnett; Kik, M. C., and Walker, Dorothy J.: Hematopoietic Function in Avitaminosis: IV. Further Studies of Vitamin A Deficiency, Proc. Soc. Exper. Biol. & Med. **28**: 495-496, 1931.

[48] Koessler, K. K.; Maurer, Sigfried; and Loughlin, Rosemary: The Relation of Anemia, Primary and Secondary, to Vitamin A Deficiency, J. A. M. A. **87**: 476-482 (Aug. 14) 1926.

[49] Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, Brain **54**: 247-290 (Sept.) 1931.

[50] Eusterman, G. B., and O'Leary, P. A.: Pellagra Secondary to Benign and Carcinomatous Lesions and Dysfunction of the Gastro-Intestinal Tract: Report of Thirteen Cases, Arch. Int. Med. **47**: 633-649 (April) 1931.

[51] Wright, H. P.; Frosst, J. B.; Puchel, F., and Lawrence, Margaret R.: Vitamin "A" and the Common Cold, Canad. M. A. J. **25**: 412-416 (Oct.) 1931.

[52] Donaldson, quoted by Wright, Frosst, Puchel and Lawrence (footnote 51).

Mellanby and Green [53] reported success in the treatment of puerperal sepsis with vitamin A concentrates. These cases were not of the fulminating type and constituted too small a number from which to draw definite conclusions as to the antiinfective potency of this vitamin. The investigations of Burton and Balmain [54] and of Cramer [55] tended to discredit the hypothesis that vitamin A has an antiinfective effect, but the results of recent studies by Green, Pindar, Davis and Mellanby [56] are more convincing as to the part diet plays as a prophylactic agent against puerperal sepsis, and vitamin A as an antiinfective agent. Of 275 pregnant women who were given vitamin A concentrates and vitamin D during the later weeks of pregnancy, in only 1.1 per cent did morbidity according to the British Medical Association standard develop; among a similar number of pregnant women acting contemporaneously as controls there was a morbidity of 4.7 per cent. Further clinical investigations along these lines, particularly as they concern pyogenic infection of various organs and tissues, are desirable.

### TREATMENT OF VITAMIN A DEFICIENCY

The treatment of vitamin A deficiency states in the absence of intestinal and hepatic diseases, which prevent adequate absorption and metabolism of vitamin A, is as simple as the prevention of such a deficiency. Prevention should be the keynote in a consideration of the treatment of such conditions. Prevention or cure of the deficiency state itself is very readily accomplished by means of a diet containing adequate vitamin A. The foods rich in this vitamin, as previously mentioned, are butter, milk, cod liver oil, and vegetables containing green and yellow pigment. That the ordinary American dietary contains foods adequately supplied with this vitamin is attested by the rarity of such diseases in the United States. There is no evidence that the normal person fails to absorb vitamin A or its precursor, carotene.

Spence noted that from 10 to 15 cc. of cod liver oil daily was sufficient to cure xerosis in man almost as rapidly as in cases treated with large amounts of cod liver oil and butter. He noted improvement in night blindness in from three to five days after the onset of the treatment, and in from seven to fourteen days vision was apparently normal. Bitôt's spots became somewhat fragmented and decreased in size, and in the severest cases had completely cleared in five or six weeks. Two months was adequate time in which to clear up all signs of the disease. Liver extract, exposure to irradiation by the mercury vapor lamp daily for four weeks, and administration of irradiated ergosterol were without therapeutic effect on xerosis.

If disturbances of gastro-intestinal or hepatic function, or of absorption, are of such degree as to prevent oral administration of foods rich in vitamin A, the substance may be administered parenterally, with equal effectiveness. Bloch [57] noted the efficacy of subcutaneous injections of cod liver oil (sterilized by boiling) in vitamin A deficiency states; doses were of 0.5 cc., raised to 1 cc. daily, for from four to eight days. Blegvad [58] cited a method of producing a preparation with a potency 100 times that of cod liver oil, which may be used subcutaneously. He used this successfully in treatment of night blindness and xerosis due to faulty assimilation, in a case in which there was carcinoma of the liver and jaundice, after a diet high in vitamin A had been ineffective during a trial of six weeks. This patient was given 1 cc. subcutaneously every other day, with apparent rapid absorption and without local inflammation; after two injections the xerosis disappeared, and after six injections the patient could read in dim light. These observations are borne out experimentally by the work of Koehne and Mendel,[59] who showed that rats deficient in vitamin A unquestionably were able to utilize the vitamin A content of cod liver oil administered subcutaneously. There was little evidence, however, that the oil itself was utilized.

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[53] Mellanby, Edward; and Greene, H. N.: Vitamin A as an Anti-Infective Agent: Its Use in the Treatment of Puerperal Septicemia, Brit. M. J. **1:** 984-986 (June 1) 1929.

[54] Burton, A. H. G., and Balmain, A. R.: Vitamin A and Streptococcal Antitoxic Immunity, Lancet **1:** 1063-1068 (May 17) 1930.

[55] Cramer, W.: Vitamin A and Infections, Lancet **1:** 1153-1154 (May 24) 1930.

[56] Green, H. N.; Pindar, D.; Davis, G., and Mellanby, Edward: Diet as a Prophylactic Agent Against Puerperal Sepsis, with Special Reference to Vitamin A as an Anti-Infective Agent, Brit. M. J. **2:** 595-598 (Oct. 3) 1931.

[57] Bloch, C. E.: Further Clinical Investigations into the Diseases Arising in Consequence of a Deficiency in the Fat-Soluble A Factor, Am. J. Dis. Child. **28:** 659-667 (Dec.) 1924.

[58] Blegvad, Olaf: Quoted in editorial, Subcutaneous Injection of Vitamin A, Brit. M. J. **1:** 122-123 (Jan. 19) 1924.

[59] Koehne, Martha; and Mendel, L. B.: The Utilization of Fatty Oils Given Parenterally, J. Nutrition **1:** 399-443 (May) 1929.

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# THE PERCENTAGE OF OCCUPANCY IN AMERICAN HOSPITALS

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The greatest economic problem before the hospitals of the United States today is the adequate utilization of the hospital facilities and personnel. To study this problem a special committee of the American Hospital Association was appointed by its president, Mr. Paul H. Fesler. The following facts, among others, were gathered for the purposes of the committee. These data are based solely on material accumulated by the Council on Medical Education and Hospitals of the American Medical Association.

### THE TRENDS IN HOSPITAL OCCUPANCY

In table 1 there are compared the total beds and the percentage of occupancy in hospitals registered by the American Medical Association, according to type of control, for five successive years, from 1927 to 1931. This table shows that the percentage of occupancy has remained almost constant for this entire period for both government and nongovernment hospitals, nearly 90 per cent for the former and something more than 60 per cent for the latter. There has been a consistent growth in the bed capacity of the government hospitals with an average increase of approximately 20,000 beds

Table 1.—*Bed Capacity and Percentage of Occupancy in Hospitals Registered by the American Medical Association, According to Type of Control, for Five Successive Years*

| | Control | | | |
|---|---|---|---|---|
| | Government | | Nongovernment | |
| Year | Bed Capacity | Percentage of Occupancy | Bed Capacity | Percentage of Occupancy |
| 1927 | 545,169 | 84 | 308,149 | 65 |
| 1928 | 567,434 | .... | 325,500 | .... |
| 1929 | 582,537 | 88 | 324,596 | 64 |
| 1930 | 619,726 | 89 | 336,143 | 63 |
| 1931 | 641,524 | 89 | 332,591 | 62 |

a year. In contrast, the years 1929 and 1931 show slight decreases in the total bed capacity in nongovernment institutions. The number of occupied beds in nongovernment institutions increased very slowly except in 1931, when the total was actually less than for the year 1930.

TABLE 2.—*Bed Capacity and Percentage of Occupancy in General and Nervous and Mental Hospitals Registered by the American Medical Association, for Five Successive Years*

| | Type of Service | | | |
|---|---|---|---|---|
| | General | | Nervous and Mental | |
| Year | Bed Capacity | Percentage of Occupancy | Bed Capacity | Percentage of Occupancy |
| 1927 | 345,364 | 66 | 373,364 | 93 |
| 1928 | 363,337 | .... | 394,364 | .... |
| 1929 | 357,034 | 65 | 414,386 | 95 |
| 1930 | 371,609 | 65 | 437,919 | 95 |
| 1931 | 384,333 | 65 | 451,245 | 95 |

In table 2 there is set forth a comparison of the total and occupied beds in general and in nervous and mental hospitals registered by the American Medical Association for the five-year period 1927-1931. There has been a steady increase in the bed capacity of the nervous and mental hospitals during this entire period, with a much slower and a much less regular increase in the bed capacity of the general hospitals.

The nervous and mental hospitals have been occupied to approximately 95 per cent capacity during this five-year interval, whereas the occupancy of general hospitals has been approximately 65 per cent. The reduction in reported bed capacity for general hospitals in 1929 was in part the result of a reclassification of hospitals on the part of the American Medical Association. The facilities of some hospitals were removed from the register or classified as "institutional" rather than as "general" hospital beds.

### THE VARIATIONS AMONG "GENERAL" HOSPITALS

Table 3 represents the proportions of occupied beds in 3,952 general hospitals registered by the American Medical Association in 1930 according to the bed capacity of the hospitals. The percentage of occupancy increases with the average size of the institution. For the small hospitals (fifty beds or less) the average occupancy is approximately 50 per cent. This proportion increases to 59 per cent for hospitals with from 51 to 100 beds each and reaches an average of about 65 per cent for the hospitals ranging from 101 to 300 beds per institution. The proportion of occupancy for the two larger groups are 72 per cent and 80 per cent, respectively.

TABLE 3.—*Number, Total Capacity and Percentage of Occupancy of Registered General Hospitals in the United States, 1930, Classified According to Size of Hospital (Excluding Hospitals Registered as "Related Institutions")*

| Size of Hospital | No. of Hospitals | No. of Beds | Percentage of Occupancy |
|---|---|---|---|
| 10- 50 | 2,141 | 58,559 | 49 |
| 51-100 | 844 | 63,069 | 59 |
| 101-300 | 790 | 136,577 | 65 |
| 301-500 | 105 | 39,989 | 72 |
| Over 500 | 72 | 71,721 | 80 |
| Total | 3,952 | 369,915 | 65 |

A partial explanation of the higher percentage of occupancy in the large institutions is the fact that most of them are under government auspices. The lower percentage of occupancy in small hospitals is not as serious a condition as would at first appear. Many of these small hospitals are primarily adjuncts to the private practice of independent physicians, containing apparatus and equipment to round out the physician's office practice. Some of these small institutions are the only hospitals in the town or community and as such must be regarded as emergency stations whose primary function is readiness to serve a community when a severe illness or accident occurs. The burden to maintain these hospitals ready to serve the community, therefore, is primarily one for the community as a whole to bear, and the low degree of utilization of bed capacity is not as serious as if there were several institutions standing side by side each with low percentages of occupancy.

An analysis was also made of occupied and unoccupied beds in these 3,952 general hospitals in 1930 classified according to type of control, as shown in table 3. The average occupancy of these government hospitals for acute diseases and conditions in 1930 was 75 per cent, whereas only 62 per cent of the beds in nongovernmental general hospitals were occupied daily.

TABLE 4.—*Number, Total Capacity and Percentage of Occupancy of Registered General Hospitals in the United States, 1930, Classified According to Type of Control (Excluding Hospitals Registered as "Related Institutions")*

| Type of Control | No. of Hospitals | No. of Beds | Percentage of Occupancy |
|---|---|---|---|
| Governmental: | | | |
| City and county | 441 | 68,753 | 75 |
| State | 46 | 14,039 | 83 |
| Federal | 201 | 32,368 | 70 |
| Total governmental | 688 | 115,160 | 75 |
| Nongovernmental: | | | |
| Church and fraternal | 851 | 105,371 | 63 |
| Industrial, individual and partnership | 964 | 24,745 | 49 |
| Independent | 1,449 | 124,639 | 62 |
| Total nongovernmental | 3,264 | 254,755 | 62 |
| Total | 3,952 | 369,915 | 66 |

The city and county hospitals represent the largest number of beds for acute diseases and conditions under governmental auspices. These institutions maintained during 1930 a 75 per cent capacity. A higher percentage prevailed for the state institutions, although they contain a smaller number of beds for acute diseases and conditions.

The church and fraternal hospitals show approximately 63 per cent occupancy; the industrial and independent and partnership hospitals, 49 per cent, and the independent institutions, 62 per cent. Many of the "independent" hospitals are organized as private corporations for profit. It is this group of institutions which has particularly suffered through reduction in occupancy during recent years.

### CONCLUSION AND SUMMARY

Are the American hospitals actually serving the public to the greatest advantage? The answer to the question lies in part in the extent to which the facilities are utilized at any given time or during a period of time. The degree of utilization may be expressed in terms of the amount of service rendered and may apply not only to "beds" but also to the professional personnel and scientific apparatus and equipment. The foregoing paragraphs have dealt solely with the facilities of the hospital so far as they can be expressed in terms of numbers of beds. It is recognized, of course, that the bed capacity of a hospital is merely one expression of its available scientific facilities. In addition, there are important capital investments in other scientific apparatus, such as laboratories, the x-ray department, the outpatient service, and physical therapy. It is quite possible that in a particular institution these scientific items of equipment would be used to a high degree of capacity, even though the beds of the institution were not filled with patients. This will be particularly true in a hospital that maintains a large outpatient service or in a private hospital owned and conducted by a clinic that utilizes the scientific apparatus and equipment for the office practice of the physician members of the group.

The data set forth in these tables indicate clearly that at the present time the beds in the general hospitals of the United States are able to take care of an increased number of persons during any particular year and at any particular time. Whether or not these proportions are too large or too small cannot be answered for the country as a whole, for in some communities there is still need of additional institutions, while other communities admittedly have more facilities than can be properly used.

Julius Rosenwald Fund.

# *Council on Pharmacy and Chemistry*

## NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

SUPRARENIN (See New and Nonofficial Remedies, 1932, p. 187).

The following dosage forms have been accepted:

*Suprarenin Solution, 1:1,000:* Each 1 cc. contains suprarenin bitartrate equivalent to suprarenin 0.001 Gm. (1/65 grain).

*Ampules Suprarenin Solution:* Each 1 cc. contains suprarenin bitartrate equivalent to suprarenin 0.001 Gm. (1/65 grain).

## REPORTS OF THE COUNCIL

The Council has authorized publication of the following report.

W. A. Puckner, Secretary.

### ANTIOPIN NOT ACCEPTABLE FOR N. N. R.

Antiopin, marketed in the form of tablets, is claimed to be "an efficacious remedy for morphine and cocaine poisoning," it being stated that after administration to an addict for ten to fourteen days morphine can be totally dispensed with; also that the preparation is efficacious in cases of cocaine poisoning, and that alcoholism and nicotine poisoning can be cured with it. The Council took up the consideration of this preparation at the request of Walter Grautoff, New York, who transmitted information concerning the product which was supplied by the manufacturer, Dr. K. Yamada's Chemical Laboratory, Kobe, Japan.

Antiopin is claimed to be a mixture of "Euphrasin" 5 per cent, quinine hydrochloride 10 per cent, caffeine 15 per cent, lactose 40 per cent, sucrose 20 per cent, acacia 10 per cent. The "Euphrasin" component is stated to consist of "extract from 'Kofuku' Sea-ear" 10 Gm., quinine hydrochloride 9.5 Gm., urea 1 Gm. "to which hydrochloric acid and alcohol are added, and the mixture is heated and condensed. It is then allowed to absorb in 20 grammes of lactose, left to dry and then made into powder." While the statement in regard to the preparation of the mixture designated "Euphrasin" is not clear and while the weight of the tablets is not declared, it is evident that Antiopin is claimed to contain small quantities of an extract prepared from the entrails of a certain kind of "ear shell," in admixture with quinine hydrochloride, caffeine and urea. The details of the method of preparation of the extract from the entrails of "'Kofuku' ear shell" are not furnished nor is any information made available in regard to the chemical composition of this extract or its pharmacologic properties.

The name Antiopin is not descriptive of the composition but, instead, is evidently intended to indicate its use in the treatment of opium poisoning.

In the circular that accompanies the trade package, Antiopin is "recommended to those, who desire to radically get rid of the habitual use of morphine or opium . . ." and also "to those who do not wish to discontinue the habit but are afraid of the poisonous effects." It is further claimed that Antiopin "is efficacious for strengthening the digestive organs, building up the strength and mitigating or stopping pain" and that it is "especially recommended in the case of stomachache, gripe or diarrhoea."

No evidence is offered for the effectiveness of Antiopin in the treatment of alcoholism, nicotine poisoning, "stomachache, gripe or diarrhoea." As evidence for the efficacy of the product in the treatment of drug addiction, the Council was supplied with translations of reports of trials carried out in Japan. The reports lack all control and do not constitute acceptable evidence. Seldom has a preparation been presented for consideration with such extraordinary claims, with so little evidence concerning the nature of the substance used, without the least pharmacologic study of its actions, and with so little evidence of its therapeutic value. Naturally, it is impossible for one to say what an extract of the intestine of the Japanese fish the "kofuku," or earshell, contains, and there is no excuse for offering the physician a preparation with such extraordinary claims without the slightest information concerning the pretended active constituent of the preparation.

There are few more tragic chapters in medicine than that relating to morphine addiction and its treatment. Without referring further to the innumerable fraudulent "cures," which usually consist of mixtures of morphine, many methods have been put forward in good faith and employed following enthusiastic reports of their successful use, only to fall into oblivion because they were incapable of modifying the course of withdrawal appreciably. The following quotations from two papers illustrate the difficulty of evaluating substances used in the treatment of morphine addiction, even by recognized specialists: "Some 219 men and 147 women have been given this treatment. It has shown itself to be of unquestioned value, producing a successful withdrawal of the drug in a few days, in some instances with but little discomfort, and *in all instances with less suffering than the ordinary withdrawal method.* [Italicized by the editor.] The patients sleep without hypnotics of any kind during and after their treatment, and at the end of a few days are hungry, and digest easily all that their renewed and voracious appetites cause them to take" Lambert, Alexander, and Tilney, Frederick: The Treatment of Narcotic Addiction by Narcosan, *M. J. & Rec.* **124**:764 [Dec. 15] 1926). "The Narcosan treatment was given to sixty-eight patients.— The results were clear cut. In the Narcosan-treated group there were noted a greater occurrence and intensity of all the symptoms mentioned. Taking an average of the sixty-eight Narcosan-treated cases, there was found in the former a more marked restlessness and muscular twitching, and particularly a greater intensity in the gastro-intestinal symptoms, vomiting, diarrhea and cramps, and in general prostration. In short, the symptoms occurring in patients receiving Narcosan were more severe than in those not receiving Narcosan. Further, in regard to recuperation after the withdrawal period, the Narcosan-treated patients did not show any advantage over the controls" (Lambert, Alexander, and others: Narcosan for Drug Addiction, Report of the Mayor's Committee of New York on Drug Addiction, J. A. M. A. **92**:147 [Jan. 12] 1929).

The Council declared Antiopin unacceptable for New and Nonofficial Remedies because the preparation is a mixture of indefinite composition, offered under a nondescriptive, therapeutically suggestive name and marketed in a way that may foster the drug habit.

# HOSPITAL SERVICE IN THE UNITED STATES

## ELEVENTH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Fourteen to a minute is the rate at which the hospitals of the United States are admitting patients. For twenty-two years, hospitals have been built and equipped at the rate of one sixty-nine bed hospital each day, including Sundays and holidays. This means that hospitals have increased about 25,000 beds annually during that time. The number of physicians connected with hospitals is 116,363. The number of patients admitted in 1931 was 7,155,976. Hospitals were the birthplaces of 708,889 babies during the last fiscal year, and the number of hospital births is increasing at a rate of around 50,000 a year.

One or more hospitals are located in each of 1,875 counties, or 70 per cent of the total 3,074 counties in the United States. In 1920 only 1,332, or 44 per cent of the 3,027 counties then laid out, had any kind of hospital. In the past twelve years, therefore, one or more hospitals have been built in 543 counties which previously did not have a hospital within their borders.

The total patients admitted during any year has just been ascertained for the first time since 1872, through the Annual Census of Hospitals for 1931 by the Council on Medical Education and Hospitals, a report of which is herewith presented.

The care of the sick and injured in the United States requires 6,613 hospitals with a total capacity of 974,115 hospital beds. Twenty-two years ago, fewer than half that number of hospital beds were in existence. Hospital service as it existed in the United States sixty years ago is described in a twenty-five page report printed in the Transactions of the American Medical Association for 1873, volume 24. That report contains the names of 178 hospitals having a total capacity of 35,604 beds, to which were admitted 146,472 patients during the year 1872. There were 309 resident medical officers in addition to 580 members of attending medical and surgical staffs. Forty medical students were employed. The greatest number of hospitals in any one state was 53 in New York, followed by 22 in Pennsylvania, 17 in Illinois and 13 in Massachusetts. According to that early report, 18 of the 178 hospitals had a capacity of 400 beds, 38 hospitals between 200 and 400, 46 between 100 and 200, and 14 between 40 and 100; 22 had a capacity of 50 beds or less. The sum total of patients admitted was only 146,472. Only 9 hospitals reported that they were connected with medical colleges. However, an additional 36 stated that clinical instruction was given in their institutions. Thirty hospitals were supported by states, 15 by cities, 4 by counties, 7 by religious denominations and 67 by "patients and other sources." That early report was compiled from a survey conducted by the United States Bureau of Education and its publication in the Transactions was arranged by J. M. Toner, M.D. Just why no authentic figures on hospital service were available between 1873 and 1909 is not easily explained. The next actual census of hospitals worthy of recognition for completeness, after the one of 1873, was that contained in the second edition of the American Medical Directory in 1909. Each succeeding edition has given a list of hospitals existing at the time. In recent years, more accurate and more complete data have been obtained through the annual census of hospitals.

### AMERICAN SYSTEM OF HOSPITALS

The American people have developed a system of hospital service in their own way. Realizing that the care of the sick is always the duty of the well, they have performed that duty in every community, using whatever agency or organization seemed best adapted or most available for the operation of hospitals. Hospitals are maintained by a number of agencies both governmental, such as federal, state, county and city governments, and nongovernmental, such as churches, fraternities, industries, individuals and incorporated associations.

The government owned hospitals now number 1,816, with a total capacity of 641,524 beds and an average daily census of 569,301 patients. All hospitals other than the government owned had an average daily census of 206,095. On the other hand, the total patients admitted by all government owned institutions was only 1,833,078, as compared with 5,322,898 patients admitted to all nongovernment institutions during the last fiscal year. These figures, of course, reflect the preponderance of custodial care in the government supported institutions. It would be a mistake, however, to conclude that governmental agencies are not interesting themselves in the care of other than custodial cases, because acute medical and surgical care is maintained for the patients and inmates of some federal and state institutions that are primarily designed for custodial care. Reference to accompanying compilations will support these deductions, and the columns of figures arranged by states are bristling with interesting facts. There is a tendency for the federal government to extend constantly hospital care to veterans for nonservice connected disabilities. The report of the Veterans' Administration for 1931 (p. 62), shows that of 102,226 admissions of World War veterans in that year, 75,427, or 73.8 per cent, were for non-service connected disabilities.

### FEDERAL HOSPITALS

Reports were received from 291 hospitals and related institutions owned and operated by the federal government. Those institutions have a total capacity of 69,170 beds and 391 bassinets. The total number of patients admitted was 301,149. The total average daily census of patients in federal hospitals was 52,881. The hospital work now being carried on by the various branches of the federal government is as follows:

| | Hospitals | Beds | Bassinets |
|---|---|---|---|
| Veterans' Administration Hospitals | 55 | 28,454 | ... |
| Veterans' Administration Homes | 10 | 6,537 | ... |
| Army | 95 | 10,789 | 155 |
| Navy | 16 | 8,735 | ... |
| U. S. Public Health Service | 26 | 4,763 | ... |
| Indian Service | 80 | 3,833 | 210 |
| All other federal hospitals | 9 | 6,059 | 26 |
| Totals | 291 | 69,170 | 391 |

Taken in order of bed capacity, the Veterans' institutions come first, followed in order by the Army, Navy, United States Public Health Service and United States Indian Service.

The data received from the Veterans' Administration as well as that received from individual institutions indicate two types of service: the Veterans' Administration Hospitals and the Veterans' Administration Homes, formerly called National Homes for Disabled Volunteer Soldiers. The veterans' hospitals number 55, with a total capacity of 28,454. In the ten Veterans' Administration Homes there were 6,537 beds. The annual report of the Administrator of Veterans' Affairs for the year 1931 (p. 15) says:

> Of the total of 109,649 admissions of veterans during this year 58,894, or 54 per cent, were made to hospital facilities under the control of the Veterans' Administration; 25,490, or 23 per cent, to naval hospitals; 12,093, or 11 per cent, to Army hospitals; 7,966, or 7 per cent, to Marine hospitals, and 5,206, or 5 per cent, to state and civil institutions and to hospitals in Washington, D. C., operated by the Interior Department. It is significant to mention that during this fiscal year only 4.7 per cent of the total admissions were made to civil and state institutions, while in 1920 and 1924 these figures were approximately 45 per cent and 19 per cent, respectively.

In contrast with the comparatively even distribution of all types of civilian hospitals, the fifty-five Veterans' Administration hospitals are located in New York, four; California, Illinois, Massachusetts, Missouri and Pennsylvania, three each; Arizona, Georgia, Indiana, Kentucky, Minnesota and Washington, two each. The remaining states have one hospital each except Delaware, Kansas, Maine, Nevada, New Hampshire, Rhode Island, South Carolina, South Dakota, Utah, Vermont, Virginia, West Virginia and Wisconsin, in which no veterans' hospitals are reported. The ten Veterans' Administration homes are located one each in California, Illinois, Kansas, Maine, New York, Ohio, South Dakota, Tennessee, Virginia and Wisconsin.

It would seem, therefore that the distribution of veterans' hospitals is not adapted to the care of veterans in the case of acute illnesses and accidents.

The Army exceeds all other branches of the federal hospital system as to the number of hospitals, there being ninety-five Army hospitals with a bed capacity of 10,789.

The sixteen hospitals under the Navy Department have a capacity of 8,735 beds.

The United States Public Health Service, conducting the Marine Hospitals and others, accounts for twenty-six hospitals, with a capacity of 4,763 beds. The United States Indian Service maintains eighty hospitals. The total bed capacity of the Indian hospitals, however, is only 3,833.

Table 1.—*Number and Capacity of Hospitals According*

| Marginal No. | State | Federal | | | | | | State | | | | | | County | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births |
| 1 | Alabama | 4 | 2,392 | 900 | .. | 674 | .. | 9 | 3,063 | 4,582 | .. | 4,595 | .... | 6 | 7,863 | 514 | 44 | 409 | 1,150 |
| 2 | Arizona | 19 | 14,550 | 1,669 | 52 | 1,177 | 212 | 3 | 219 | 650 | .. | 796 | .... | 9 | 1,800 | 400 | 19 | 296 | 145 |
| 3 | Arkansas | 2 | 1,674 | 1,050 | .. | 976 | .. | 7 | 3,659 | 3,549 | .. | 3,754 | .... | 3 | 986 | 335 | 2 | 257 | 32 |
| 4 | California | 18 | 29,548 | 6,427 | 23 | 4,652 | 139 | 17 | 12,319 | 19,501 | 32 | 18,520 | 527 | 61 | 105,856 | 10,880 | 368 | 9,240 | 6,654 |
| 5 | Colorado | 4 | 6,440 | 2,471 | 10 | 1,586 | 49 | 8 | 9,743 | 3,466 | 18 | 3,276 | 758 | 4 | 2,095 | 172 | 18 | 116 | 239 |
| 6 | Connecticut | 1 | ..... | 249 | .. | 161 | ... | 14 | 3,062 | 7,705 | 12 | 7,413 | 35 | .. | ..... | ..... | ... | ..... | ..... |
| 7 | Delaware | 1 | 207 | 28 | .. | 5 | .. | 4 | 353 | 1,069 | .. | 978 | .... | .. | ..... | ..... | ... | ..... | ..... |
| 8 | District of Columbia | 8 | 20,731 | 7,592 | 46 | 6,553 | 675 | 2 | 433 | 262 | .. | 218 | .... | .. | ..... | ..... | .. | ..... | ..... |
| 9 | Florida | 4 | 3,972 | 597 | .. | 513 | . | 6 | 4,015 | 4,258 | 1 | 4,061 | 4 | 5 | 4,327 | 302 | 25 | 302 | 397 |
| 10 | Georgia | 8 | 10,559 | 1,590 | 12 | 1,291 | 115 | 7 | 1,342 | 6,015 | .. | 5,861 | .... | 2 | 10,856 | 77 | 10 | 49 | ..... |
| 11 | Idaho | 4 | 1,617 | 397 | 6 | 325 | 21 | 6 | 687 | 1,262 | .. | 1,109 | .... | 3 | 2,043 | 84 | 32 | 54 | 250 |
| 12 | Illinois | 10 | 18,753 | 4,972 | 3 | 3,591 | 39 | 24 | 20,208 | 31,125 | 25 | 29,446 | 405 | 27 | 69,415 | 6,374 | 158 | 4,925 | 3,895 |
| 13 | Indiana | 4 | 1,442 | 1,656 | .. | 1,269 | ... | 22 | 12,789 | 11,252 | 43 | 10,698 | 1,193 | 36 | 22,072 | 2,408 | 176 | 1,653 | 1,397 |
| 14 | Iowa | 3 | 976 | 853 | .. | 802 | .. | 18 | 18,082 | 9,832 | 54 | 9,456 | 436 | 13 | 6,071 | 895 | 45 | 683 | 747 |
| 15 | Kansas | 5 | 6,168 | 988 | 10 | 623 | 133 | 17 | 6,909 | 6,568 | 15 | 6,119 | 250 | 5 | 2,367 | 219 | 30 | 121 | 386 |
| 16 | Kentucky | 5 | 1,416 | 828 | .. | 574 | ... | 10 | 5,627 | 6,564 | .. | 6,305 | .... | 7 | 1,619 | 333 | 29 | 229 | 221 |
| 17 | Louisiana | 3 | 6,984 | 1,316 | .. | 1,081 | ... | 8 | 52,377 | 7,371 | 69 | 7,143 | 2,662 | .. | ..... | ..... | ... | ..... | ..... |
| 18 | Maine | 3 | 1,798 | 426 | .. | 294 | ... | 6 | 786 | 3,364 | .. | 3,236 | .... | .. | ..... | ..... | .. | ..... | ..... |
| 19 | Maryland | 8 | 7,906 | 1,695 | .. | 1,318 | .. | 17 | 11,836 | 6,464 | 50 | 5,717 | 390 | 4 | 2,831 | 273 | 27 | 199 | 210 |
| 20 | Massachusetts | 8 | 9,016 | 2,827 | 8 | 2,157 | 56 | 31 | 7,040 | 29,414 | 40 | 27,297 | 142 | 7 | 869 | 1,057 | .. | 698 | ..... |
| 21 | Michigan | 5 | 2,408 | 844 | .. | 767 | . | 21 | 30,967 | 16,922 | 45 | 14,278 | 343 | 26 | 10,400 | 9,474 | 37 | 6,791 | 413 |
| 22 | Minnesota | 8 | 5,012 | 1,317 | 16 | 1,255 | 194 | 17 | 11,476 | 12,096 | 30 | 11,308 | 244 | 17 | 2,254 | 1,691 | 14 | 1,594 | 56 |
| 23 | Mississippi | 2 | 586 | 456 | 6 | 449 | 21 | 12 | 16,149 | 5,066 | 40 | 4,675 | 818 | 1 | 259 | 22 | 5 | 5 | ..... |
| 24 | Missouri | 6 | 7,103 | 1,124 | 3 | 988 | 24 | 11 | 6,124 | 8,372 | 8 | 8,227 | 50 | 6 | 2,302 | 678 | 74 | 539 | 163 |
| 25 | Montana | 7 | 4,055 | 487 | 24 | 299 | 174 | 4 | 195 | 1,741 | 3 | 1,730 | .. | 5 | 451 | 217 | 14 | 173 | 56 |
| 26 | Nebraska | 6 | 2,118 | 356 | 2 | 167 | 5 | 12 | 4,045 | 5,427 | 30 | 4,965 | 466 | 2 | 1,615 | 228 | 3 | 163 | 13 |
| 27 | Nevada | 3 | 780 | 126 | .. | 69 | 7 | 1 | 70 | 325 | .. | 286 | .... | 11 | 1,543 | 236 | 17 | 221 | 208 |
| 28 | New Hampshire | 1 | 1,095 | 200 | .. | 111 | ... | 5 | 515 | 2,490 | .. | 2,338 | .... | 3 | 1,092 | 205 | 8 | 171 | 74 |
| 29 | New Jersey | 3 | 1,817 | 985 | .. | 354 | .. | 15 | 5,079 | 12,860 | 3 | 11,316 | 19 | 23 | 9,279 | 8,195 | 314 | 7,065 | 264 |
| 30 | New Mexico | 11 | 4,395 | 1,239 | 24 | 924 | 88 | 4 | 712 | 928 | 5 | 684 | 59 | 1 | ..... | 17 | .. | 8 | ..... |
| 31 | New York | 22 | 30,725 | 6,279 | 8 | 4,969 | 61 | 41 | 8,963 | 68,065 | 36 | 62,584 | 28 | 48 | 12,458 | 5,246 | 54 | 4,192 | 413 |
| 32 | North Carolina | 3 | 2,698 | 784 | 12 | 662 | .. | 7 | 1,308 | 7,206 | .. | 6,632 | .... | 12 | 2,566 | 706 | 23 | 601 | 113 |
| 33 | North Dakota | 5 | 2,186 | 202 | 12 | 98 | 82 | 4 | 835 | 2,588 | .. | 2,381 | .... | 2 | 162 | 85 | 3 | 60 | 14 |
| 34 | Ohio | 6 | 8,076 | 2,065 | 4 | 1,725 | 10 | 24 | 18,130 | 23,421 | 35 | 23,203 | 385 | 23 | 7,334 | 2,641 | 58 | 2,079 | 670 |
| 35 | Oklahoma | 12 | 10,310 | 1,026 | 36 | 767 | 248 | 13 | 12,673 | 6,770 | 22 | 6,689 | 306 | 1 | 1,121 | 50 | 10 | 25 | 168 |
| 36 | Oregon | 4 | 4,348 | 658 | 2 | 565 | .. | 11 | 3,927 | 4,401 | .. | 4,347 | .... | 3 | 4,073 | 368 | 26 | 829 | 610 |
| 37 | Pennsylvania | 6 | 7,380 | 1,956 | 1 | 1,237 | 16 | 32 | 43,604 | 21,973 | 123 | 20,348 | 1,680 | 19 | 1,973 | 6,358 | 14 | 5,857 | 79 |
| 38 | Rhode Island | 2 | 2,058 | 328 | .. | 226 | .. | 7 | 1,984 | 3,469 | 12 | 3,822 | 49 | .. | ..... | ..... | .. | ..... | ..... |
| 39 | South Carolina | 2 | 1,845 | 246 | 5 | 101 | 26 | 5 | 1,457 | 3,274 | .. | 3,472 | .... | 8 | 7,106 | 622 | 46 | 347 | 507 |
| 40 | South Dakota | 10 | 4,477 | 921 | 22 | 774 | 175 | 4 | 664 | 2,200 | .. | 2,164 | .... | 1 | 400 | 17 | 4 | 13 | 68 |
| 41 | Tennessee | 3 | 6,814 | 1,091 | .. | 952 | .. | 9 | 2,168 | 4,628 | .. | 4,348 | .... | 7 | 1,819 | 1,719 | 3 | 1,391 | 8 |
| 42 | Texas | 12 | 14,852 | 2,094 | 27 | 1,374 | 261 | 16 | 5,913 | 13,241 | 6 | 12,112 | 23 | 13 | 5,730 | 520 | 50 | 321 | 622 |
| 43 | Utah | 2 | 419 | 46 | .. | 20 | 22 | 3 | 426 | 895 | .. | 883 | .... | 3 | 3,302 | 214 | 24 | 177 | 455 |
| 44 | Vermont | 1 | 887 | 62 | 1 | 19 | 2 | 6 | 450 | 1,352 | .. | 1,224 | .... | 1 | 79 | 47 | .. | 42 | ..... |
| 45 | Virginia | 8 | 12,119 | 2,107 | 6 | 1,549 | 54 | 16 | 14,045 | 8,639 | 30 | 8,819 | 461 | 1 | 801 | 50 | 5 | 22 | 40 |
| 46 | Washington | 13 | 9,091 | 2,111 | 4 | 1,517 | 43 | 10 | 2,444 | 6,224 | .. | 5,988 | .... | 9 | 2,970 | 1,143 | 20 | 897 | 177 |
| 47 | West Virginia | . | ..... | ..... | .. | ..... | ... | 12 | 7,921 | 4,517 | 19 | 4,442 | 64 | 6 | 4,591 | 226 | 13 | 160 | 108 |
| 48 | Wisconsin | 3 | 5,251 | 906 | .. | 718 | ... | 14 | 10,068 | 5,173 | 32 | 4,971 | 190 | 60 | 13,355 | 11,529 | 71 | 10,059 | 309 |
| 49 | Wyoming | 3 | 2,035 | 623 | 6 | 503 | 44 | 4 | 1,933 | 743 | 8 | 704 | 143 | 4 | 5,131 | 286 | 39 | 138 | 670 |
| 50 | Totals (1931) | 291 | 301,149 | 69,170 | 391 | 52,881 | 2,996 | 576 | 388,984 | 419,282 | 846 | 394,938 | 12,130 | 508 | 345,236 | 77,373 | 1,932 | 62,862 | 22,001 |
| 51 | (1930) | 288 | ....... | 63,581 | 274 | 50,409 | ..... | 581 | ....... | 405,309 | 788 | 380,279 | ..... | 505 | ....... | 73,615 | 1,498 | 60,529 | ...... |
| 52 | (1929) | 292 | ....... | 59,101 | 229 | 46,033 | 2,296 | 578 | ....... | 385,706 | 785 | 364,042 | 9,125 | 487 | ....... | 65,619 | 1,385 | 52,994 | 17,527 |
| 53 | (1928) | 294 | ....... | 67,165 | 117 | ..... | ..... | 595 | ....... | 369,759 | 813 | ...... | ..... | 489 | ....... | 63,231 | 1,297 | ...... | ...... |
| 54 | (1927) | 301 | ....... | 60,444 | ... | 42,137 | ..... | 592 | ....... | 354,786 | ... | 328,737 | ..... | 480 | ....... | 58,907 | ..... | 47,704 | ...... |

All other federal hospitals not accounted for in the foregoing consist of the St. Elizabeths Hospital (two units), the Freedmen's and the Hospital of the National Training School for Boys, at Washington, D. C.; three United States Penitentiary Hospitals; the Morningside Hospital at Portland, Ore., and the W. B. Lewis Hospital in the Yosemite National Park.

The Army hospitals have 155 bassinets and reported 1,387 births for the year. In the Indian Service there were 210 bassinets, and 1,188 births were reported. In other federal hospitals there were 421 births, making a total of 2,996 babies born in the federal institutions.

The decrease in the number of federal hospitals in the past five years, shown by table 1, is due to the dropping of a number of small institutions, mainly army post hospitals, from the register of hospitals. In the same five years the capacity of federal hospitals has increased from 60,444 beds to 69,170 beds, and the average number of patients has increased from 42,137 to 52,881.

*to Agencies Owning or in Control*

| City | | | | | | City and County | | | | | | Total Government Owned | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Marginal No. |
| 5 | 8,676 | 421 | 43 | 253 | 481 | 1 | 552 | 75 | 5 | 9 | 23 | 25 | 22,546 | 6,492 | 92 | 5,940 | 1,654 | 1 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 31 | 16,569 | 2,719 | 71 | 2,269 | 357 | 2 |
| 3 | 4,106 | 193 | 20 | 102 | 247 | .. | ..... | ..... | .. | ..... | ..... | 15 | 10,425 | 5,127 | 22 | 5,089 | 279 | 3 |
| 6 | 2,012 | 243 | 25 | 57 | 149 | 5 | 12,864 | 1,994 | 32 | 1,639 | 422 | 107 | 162,599 | 39,045 | 480 | 34,108 | 7,891 | 4 |
| 2 | 368 | 94 | ... | 24 | ..... | 1 | 9,924 | 469 | 46 | 381 | 630 | 19 | 28,570 | 6,672 | 92 | 5,383 | 1,286 | 5 |
| 6 | 3,711 | 845 | 12 | 504 | 145 | .. | ..... | ..... | .. | ..... | ..... | 21 | 6,773 | 8,799 | 24 | 8,078 | 180 | 6 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 5 | 560 | 1,097 | .. | 983 | ..... | 7 |
| 2 | 8,934 | 641 | 50 | 429 | 948 | .. | ..... | ..... | .. | ..... | ..... | 12 | 30,098 | 8,495 | 96 | 7,200 | 1,623 | 8 |
| 9 | 12,556 | 744 | 105 | 394 | 1,211 | 1 | 838 | 75 | 10 | 35 | 69 | 25 | 25,708 | 6,066 | 141 | 5,305 | 1,681 | 9 |
| 8 | 22,051 | 1,005 | 103 | 684 | 3,171 | 5 | 3,323 | 615 | 39 | 428 | 196 | 30 | 48,131 | 9,302 | 164 | 8,313 | 3,482 | 10 |
| 2 | 4 | 32 | 2 | 5 | ..... | 2 | 1,606 | 74 | 19 | 33 | 222 | 17 | 5,957 | 1,849 | 59 | 1,526 | 453 | 11 |
| 23 | 21,472 | 2,623 | 158 | 1,990 | 2,374 | 1 | 2,674 | 141 | 24 | 72 | 423 | 85 | 132,712 | 45,235 | 368 | 40,024 | 7,136 | 12 |
| 6 | 11,583 | 677 | 63 | 467 | 1,046 | 3 | . ... | 26 | .. | ..... | ..... | 71 | 47,886 | 16,019 | 282 | 14,187 | 3,636 | 13 |
| 7 | 3,755 | 154 | 32 | 78 | 480 | 2 | 81 | 31 | .. | ..... | ..... | 43 | 28,965 | 11,765 | 131 | 11,019 | 1,663 | 14 |
| 7 | 3,606 | 182 | 42 | 79 | 374 | 1 | 81 | 50 | .. | 35 | ..... | 35 | 19,131 | 8,007 | 97 | 6,977 | 1,143 | 15 |
| 6 | 16,536 | 741 | 98 | 507 | 1,413 | 5 | 2,714 | 582 | 26 | 526 | 102 | 33 | 27,912 | 9,048 | 153 | 8,141 | 1,736 | 16 |
| 2 | 560 | 118 | 3 | 52 | ..... | 1 | 383 | 125 | .. | 15 | ..... | 14 | 60,304 | 8,930 | 72 | 8,291 | 2,662 | 17 |
| 3 | 1,258 | 151 | 18 | 99 | 153 | .. | ..... | ..... | .. | ..... | ..... | 12 | 3,842 | 3,941 | 18 | 3,629 | 153 | 18 |
| 6 | 5,944 | 1,309 | 16 | 1,058 | 118 | 1 | 2,918 | 128 | 20 | 89 | 288 | 36 | 31,435 | 9,869 | 113 | 8,372 | 1,266 | 19 |
| 37 | 62,739 | 5,450 | 422 | 4,039 | 5,851 | 2 | 362 | 43 | 5 | 29 | 62 | 85 | 80,026 | 38,791 | 475 | 34,220 | 6,111 | 20 |
| 37 | 63,467 | 4,506 | 353 | 3,442 | 6,123 | 4 | 1,593 | 97 | 14 | 38 | 256 | 93 | 108,844 | 31,843 | 449 | 25,316 | 7,135 | 21 |
| 12 | 11,680 | 823 | 89 | 627 | 1,369 | 4 | 12,628 | 1,157 | 70 | 730 | 1,598 | 58 | 43,050 | 17,084 | 219 | 15,514 | 3,561 | 22 |
| .. | ..... | ..... | ... | ..... | ..... | 1 | 416 | 35 | 8 | 13 | 58 | 16 | 17,410 | 5,579 | 59 | 5,142 | 897 | 23 |
| 15 | 38,213 | 7,190 | 174 | 6,137 | 4,115 | .. | ..... | ..... | .. | ..... | ..... | 38 | 53,742 | 17,373 | 259 | 16,191 | 4,352 | 24 |
| .. | ..... | ..... | ... | ..... | ..... | 1 | ..... | 35 | .. | 5 | ..... | 17 | 4,701 | 2,480 | 41 | 2,207 | 230 | 25 |
| 4 | 278 | 92 | 18 | 18 | 34 | .. | ..... | ..... | .. | ..... | ..... | 24 | 8,056 | 6,113 | 53 | 5,313 | 518 | 26 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 15 | 2,393 | 787 | 17 | 576 | 215 | 27 |
| 4 | 1,405 | 175 | 20 | 71 | 155 | .. | ..... | ..... | .. | ..... | ..... | 13 | 4,107 | 3,070 | 28 | 2,691 | 229 | 28 |
| 11 | 33,017 | 2,235 | 114 | 1,707 | 3,748 | .. | ..... | ..... | .. | ..... | ..... | 52 | 49,183 | 24,275 | 431 | 20,442 | 4,031 | 29 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 16 | 5,107 | 2,184 | 29 | 1,616 | 147 | 30 |
| 50 | 213,659 | 17,017 | 823 | 14,354 | 15,048 | 5 | 10,311 | 460 | 42 | 413 | 1,493 | 166 | 276,116 | 97,067 | 963 | 86,512 | 17,043 | 31 |
| 3 | 3,652 | 278 | 29 | 100 | 313 | 4 | 3,169 | 174 | 24 | 90 | 277 | 29 | 13,393 | 9,208 | 88 | 8,085 | 703 | 32 |
| 2 | 94 | 63 | ... | 3 | ..... | .. | ..... | ..... | .. | ..... | ..... | 13 | 3,277 | 2,938 | 15 | 2,542 | 96 | 33 |
| 23 | 38,487 | 3,605 | 268 | 2,741 | 3,667 | .. | ..... | ..... | .. | ..... | ..... | 76 | 72,027 | 31,735 | 365 | 29,748 | 4,732 | 34 |
| 8 | 4,044 | 269 | 31 | 70 | 346 | .. | ..... | ..... | .. | ..... | ..... | 34 | 28,148 | 8,115 | 99 | 7,551 | 1,188 | 35 |
| 2 | 919 | 87 | 9 | 21 | ..... | .. | ..... | ..... | .. | ..... | ..... | 20 | 13,267 | 5,514 | 37 | 5,262 | 610 | 36 |
| 12 | 30,214 | 5,562 | 68 | 4,078 | 990 | 5 | 2,838 | 5,149 | 15 | 4,920 | 126 | 74 | 86,009 | 41,008 | 221 | 36,440 | 2,891 | 37 |
| 1 | 2,100 | 250 | ... | 154 | ..... | .. | ..... | ..... | .. | ..... | ..... | 10 | 6,142 | 4,047 | 12 | 4,202 | 49 | 38 |
| 2 | 2,710 | 124 | 8 | 96 | 276 | 1 | 61 | 26 | .. | 22 | ..... | 18 | 13,179 | 4,292 | 59 | 4.038 | 809 | 39 |
| 1 | 198 | 15 | 5 | 4 | 21 | .. | ..... | ..... | .. | ..... | ..... | 16 | 5,739 | 3,153 | 31 | 2,955 | 264 | 40 |
| 4 | 18,012 | 786 | 85 | 624 | 1,819 | 5 | 6,519 | 625 | 42 | 517 | 789 | 28 | 35,332 | 8,849 | 130 | 8,032 | 2,616 | 41 |
| 8 | 8,809 | 664 | 70 | 263 | 874 | 13 | 24,978 | 1,621 | 123 | 1,250 | 3,100 | 62 | 60,282 | 18,140 | 276 | 15,420 | 4,880 | 42 |
| 1 | 768 | 25 | ... | 16 | ..... | .. | ..... | ..... | .. | ..... | ..... | 9 | 4,915 | 1,180 | 24 | 1,096 | 477 | 43 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 8 | 1,416 | 1,461 | 1 | 1,285 | 2 | 44 |
| 4 | 3,600 | 750 | 25 | 528 | 179 | 1 | 2,715 | 90 | 10 | 61 | 122 | 30 | 33,280 | 11,636 | 76 | 10,979 | 856 | 45 |
| 4 | 2,438 | 455 | ... | 281 | ..... | 1 | 4,902 | 420 | 33 | 416 | 404 | 37 | 21,845 | 10,353 | 57 | 9,099 | 624 | 46 |
| 3 | 7,067 | 116 | 22 | 59 | 197 | .. | ..... | ..... | .. | ..... | ..... | 21 | 19,579 | 4,859 | 54 | 4,661 | 369 | 47 |
| 13 | 14,557 | 632 | 55 | 239 | 876 | 1 | ..... | 31 | 8 | ..... | ..... | 91 | 43,231 | 18,261 | 166 | 15,987 | 1,905 | 48 |
| .. | ..... | ..... | ... | ..... | ..... | .. | ..... | ..... | .. | ..... | ..... | 11 | 9,159 | 1,652 | 53 | 1,345 | 837 | 49 |
| 364 | 689,259 | 61,351 | 3,478 | 46,854 | 58,311 | 77 | 108,450 | 14,348 | 615 | 11,766 | 10,660 | 1,816 | 1,833,078 | 641,524 | 7,262 | 569,301 | 106,698 | 50 |
| 364 | ....... | 63,064 | 3,246 | 47,880 | ....... | 74 | ....... | 14,157 | 497 | 11,550 | ...... | 1,812 | ........ | 619,726 | 6,303 | 550,737 | ....... | 51 |
| 357 | ....... | 57,128 | 3,093 | 42,440 | 45,787 | 81 | ....... | 14,183 | 570 | 11,376 | 8,806 | 1,795 | ........ | 582,537 | 6,062 | 516,885 | 83,541 | 52 |
| 372 | ....... | 65,126 | 3,161 | ...... | ...... | 63 | ....... | 7,553 | 284 | ...... | ..... | 1,813 | ........ | 567,434 | 5,672 | ....... | ....... | 53 |
| 366 | ....... | 63,327 | ..... | 46,389 | ...... | 70 | ....... | 7,705 | ... | 5,190 | ..... | 1,809 | ........ | 545,169 | ..... | 470,157 | ....... | 54 |

### STATE HOSPITALS

State hospitals likewise have decreased in number, but their capacity has grown in the last five years from 354,786 beds to 419,282 beds. The average number of patients in state hospitals has mounted from 328,737 to 394,938 in five years. State hospitals reported that they admitted 388,984 patients during the last fiscal year.

For a proper understanding of the facts brought out in table 1, it is necessary to bear in mind that the nongovernmental agencies mainly, though not entirely, run hospitals for the care of acutely sick and injured, while the governmental institutions were designed mainly, but not entirely, for the chronic cases. The care of persons who are disabled for a great length of time, frequently for a lifetime, is a distinct burden which the family and friends of the individual may be unable to assume. This is the fundamental reason why the custodial patients must be placed in tax supported institutions, while those who are only temporarily ill and those who are able to pay their own expenses can be cared for in hospitals maintained by agencies not dependent on taxation.

### COUNTY HOSPITALS

County hospitals have grown in number during the half decade from 480 to 508. This is a considerable net increase when it is considered that during the same time a great many small county institutions have been discontinued and their sick and injured transferred to larger county hospitals. The average daily census of patients in county hospitals has increased in the five year period from 47,704 to 62,862. The increase should be noted in the patronage of county hospitals since 1929, when they had an average daily census of 52,994 patients.

### CITY HOSPITALS

That city hospitals, as a group, are used more than other governmental hospitals for the care of the acutely sick and injured is evidenced by the fact that they admitted 689,259 patients during the last fiscal year, although their bed capacity was 61,351, which is considerably less than that of the county hospitals. The patronage of city hospitals, as indicated by the average daily census of patients, has dropped slightly in the past year; but they are still caring for considerably more patients than in 1929. The total births in city hospitals during the past two years increased from 45,787 to 58,311.

### CITY-COUNTY HOSPITALS

The operation of hospitals by the cooperation of city and county governments is of course purely a matter of local convenience. City-county institutions in the past five years have increased from 70 to 77. They admitted 108,450 patients last year and had an average of 11,766 patients. Births in the past two years increased from 8,806 to 10,660.

### CHURCH HOSPITALS

The 1931 census of hospitals gives churches the credit for 1,011 hospitals with a total bed capacity of 116,935, and with an average daily census of 73,911 patients. This average is a little lower than in 1929, when it reached a peak of 75,770, but the total number of patients admitted by this group of hospitals, 2,013,352, is greater than for any other nongovernmental group except independent hospital associations, which admitted 2,714,406 patients. The church hospitals have credit for 235,229 births, showing a healthy increase over 209,726 births in the same institutions two years ago. Church hospitals, being supported in a rather large part by donations, and the rest of their support coming mainly from patients, are among the hospitals that are most keenly feeling the effects of the depression. This is probably due to their inability to make collections from their pay patients rather than to any actual drop in patronage, for the average number of patients, 73,911, is only slightly below their peak of 75,770 for 1929. The average length of stay in church hospitals is thirteen days, one day shorter than in any other group.

### FRATERNAL HOSPITALS

Fraternal orders maintain 76 hospitals. The relatively small share of this group in hospital work is

TABLE 1.—*Number and Capacity of Hospitals According*

| Marginal No. | State | Church | | | | | | Fraternal | | | | | | Industrial | | | | | | Individual | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds |
| 1 | Alabama | 9 | 12,256 | 755 | 98 | 313 | 989 | .. | ..... | ... | .. | ... | ... | 3 | 6,496 | 352 | 38 | 230 | 518 | 32 | 17,590 | 1,122 |
| 2 | Arizona | 10 | 11,691 | 812 | 80 | 448 | 1,051 | .. | ..... | ... | .. | ... | ... | 11 | 4,029 | 359 | 35 | 164 | 457 | 20 | 1,257 | 494 |
| 3 | Arkansas | 9 | 14,402 | 971 | 103 | 413 | 951 | 5 | 4,140 | 245 | 13 | 148 | 85 | 4 | 4,068 | 325 | 7 | 107 | 47 | 26 | 9,596 | 525 |
| 4 | California | 41 | 90,899 | 4,842 | 758 | 2,961 | 10,897 | 6 | 8,671 | 646 | 34 | 492 | 505 | 15 | 10,308 | 842 | 40 | 504 | 244 | 136 | 48,289 | 3,212 |
| 5 | Colorado | 30 | 35,672 | 2,592 | 283 | 1,608 | 3,557 | 1 | 300 | 250 | .. | 165 | ... | 4 | 4,231 | 356 | 20 | 168 | 368 | 31 | 7,804 | 758 |
| 6 | Connecticut | 6 | 27,653 | 1,166 | 217 | 897 | 3,924 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 14 | 1,709 | 447 |
| 7 | Delaware | 1 | 1,623 | 70 | 10 | 48 | ..... | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 1 | ..... | 22 |
| 8 | District of Columbia | 4 | 15,708 | 598 | 105 | 372 | 2,046 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 7 | 627 | 109 |
| 9 | Florida | 6 | 6,952 | 610 | 96 | 220 | 768 | 3 | 1,385 | 164 | 6 | 92 | 88 | 1 | 1,033 | 70 | 6 | 46 | 34 | 26 | 6,586 | 533 |
| 10 | Georgia | 7 | 14,579 | 638 | 77 | 383 | 1,363 | 1 | 375 | 64 | .. | 59 | ... | 2 | 2,556 | 137 | .. | 77 | ... | 42 | 10,400 | 1,104 |
| 11 | Idaho | 11 | 12,569 | 623 | 99 | 355 | 1,239 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 22 | 3,403 | 414 |
| 12 | Illinois | 90 | 221,819 | 11,769 | 1,978 | 6,969 | 29,067 | 6 | 6,553 | 431 | 25 | 250 | 400 | 6 | 5,366 | 409 | 25 | 199 | 357 | 52 | 15,221 | 1,198 |
| 13 | Indiana | 30 | 78,878 | 3,979 | 603 | 2,140 | 7,970 | 2 | 148 | 174 | .. | 110 | ... | 3 | 1,156 | 177 | .. | 56 | ... | 19 | 3,867 | 287 |
| 14 | Iowa | 44 | 74,315 | 4,058 | 585 | 2,529 | 8,169 | 2 | 22 | 66 | .. | 53 | ... | 1 | 377 | 60 | .. | 19 | ... | 55 | 13,530 | 874 |
| 15 | Kansas | 39 | 46,880 | 2,907 | 427 | 1,679 | 5,139 | 1 | 2,112 | 250 | .. | 80 | ... | 3 | 2,719 | 253 | .. | 142 | ... | 30 | 4,826 | 453 |
| 16 | | 21 | 28,440 | 2,115 | 231 | 1,171 | 3,226 | 1 | ..... | 16 | .. | 4 | ... | 6 | 2,508 | 240 | 18 | 88 | 79 | 28 | 5,822 | 772 |
| 17 | | 11 | 27,001 | 1,395 | 123 | 877 | 1,985 | 2 | 1,192 | 122 | 13 | 96 | 220 | 8 | 3,066 | 164 | 12 | 89 | 240 | 16 | 7,341 | 413 |
| 18 | [illegible] | 5 | 5,810 | 338 | 39 | 217 | 369 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 25 | 8,495 | 514 |
| 19 | Maryland | 11 | 27,745 | 1,989 | 144 | 1,720 | 1,998 | .. | ..... | ... | .. | ... | ... | 1 | ..... | 16 | .. | ... | ... | 12 | 1,129 | 339 |
| 20 | Massachusetts | 17 | 44,296 | 2,294 | 362 | 1,676 | 6,058 | 1 | 280 | 60 | .. | 63 | ... | 2 | 806 | 30 | 14 | 16 | 160 | 44 | 6,405 | 890 |
| 21 | Michigan | 31 | 71,696 | 4,053 | 597 | 2,736 | 10,364 | 1 | 93 | 50 | .. | 16 | ... | 14 | 6,660 | 324 | 51 | 184 | 625 | 47 | 13,725 | 947 |
| 22 | Minnesota | 41 | 85,358 | 4,018 | 630 | 2,628 | 9,365 | 1 | 238 | 60 | .. | 61 | ... | 1 | 126 | 15 | 4 | 10 | 24 | 75 | 20,698 | 1,170 |
| 23 | Mississippi | 7 | 8,963 | 370 | 39 | 166 | 519 | 1 | ..... | 15 | .. | 6 | 10 | 1 | 533 | 50 | 10 | 10 | 38 | 32 | 15,425 | 1,121 |
| 24 | Missouri | 39 | 87,938 | 5,383 | 588 | 3,686 | 8,766 | 4 | 2,078 | 350 | .. | 293 | ... | 3 | 5,805 | 443 | .. | 179 | ... | 41 | 11,745 | 932 |
| 25 | Montana | 23 | 26,985 | 1,754 | 261 | 832 | 2,999 | .. | ..... | ... | .. | ... | ... | 3 | 6,229 | 156 | 12 | 99 | 60 | 16 | 3,180 | 278 |
| 26 | Nebraska | 20 | 41,564 | 2,136 | 274 | 1,244 | 3,514 | 1 | 16 | 45 | .. | 45 | ... | .. | ..... | ... | .. | ... | ... | 53 | 13,669 | 955 |
| 27 | Nevada | 1 | 1,448 | 52 | 12 | 37 | 93 | .. | ..... | ... | .. | ... | ... | 3 | 723 | 78 | 12 | 39 | 113 | 2 | 818 | 48 |
| 28 | New Hampshire | 5 | 6,261 | 360 | 66 | 228 | 748 | .. | ..... | ... | .. | ... | ... | 1 | 50 | 10 | .. | 6 | 4 | 2 | 152 | 110 |
| 29 | New Jersey | 19 | 58,813 | 3,531 | 445 | 2,365 | 6,924 | 2 | 107 | 160 | .. | 81 | ... | 1 | 646 | 30 | 7 | 21 | 68 | 23 | 4,207 | 577 |
| 30 | New Mexico | 14 | 8,627 | 1,089 | 79 | 564 | 689 | .. | ..... | ... | .. | ... | ... | 5 | 1,316 | 217 | 10 | 55 | 83 | 5 | 350 | 126 |
| 31 | New York | 84 | 161,799 | 12,321 | 1,430 | 8,879 | 23,317 | 6 | 4,810 | 593 | 6 | 394 | 25 | 2 | 321 | 28 | .. | 16 | ... | 77 | 25,617 | 2,603 |
| 32 | North Carolina | 16 | 15,323 | 918 | 106 | 555 | 1,469 | 2 | 18 | 97 | 6 | 25 | ... | 3 | 1,188 | 109 | 11 | 47 | 30 | 43 | 20,625 | 1,498 |
| 33 | North Dakota | 19 | 26,766 | 1,595 | 216 | 931 | 3,026 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 10 | 2,349 | 126 |
| 34 | Ohio | 48 | 122,697 | 6,805 | 970 | 4,557 | 16,036 | 5 | 2,328 | 438 | .. | 324 | ... | 2 | 210 | 31 | 2 | 8 | 12 | 40 | 9,129 | 860 |
| 35 | Oklahoma | 9 | 15,858 | 835 | 161 | 490 | 2,116 | 3 | 1,775 | 113 | 16 | 44 | 120 | 1 | 10 | 10 | 1 | 1 | 2 | 62 | 25,519 | 1,794 |
| 36 | Oregon | 16 | 33,113 | 1,627 | 271 | 1,131 | 3,694 | 1 | 193 | 60 | .. | 59 | ... | 1 | 220 | 15 | .. | 4 | ... | 21 | 6,491 | 514 |
| 37 | Pennsylvania | 45 | 96,849 | 7,169 | 779 | 4,995 | 11,401 | 5 | 1,166 | 358 | .. | 324 | ... | 2 | 691 | 85 | 4 | 34 | 46 | 48 | 10,490 | 1,283 |
| 38 | Rhode Island | 3 | 3,103 | 392 | 40 | 238 | 421 | .. | ..... | ... | .. | ... | ... | .. | ..... | ... | .. | ... | ... | 4 | 248 | 64 |
| 39 | South Carolina | 4 | 3,820 | 210 | 20 | 127 | 230 | 3 | 1,212 | 140 | 5 | 101 | 40 | .. | ..... | ... | .. | ... | ... | 15 | 6,756 | 446 |
| 40 | South Dakota | 15 | 22,539 | 1,090 | 158 | 597 | 1,910 | .. | ..... | ... | .. | ... | ... | 1 | 417 | 25 | 5 | 11 | 29 | 20 | 4,563 | 300 |
| 41 | Tennessee | 7 | 29,421 | 1,123 | 136 | 716 | 2,651 | .. | ..... | ... | .. | ... | ... | 1 | 24 | 10 | .. | 1 | 1 | 38 | 10,845 | 812 |
| 42 | Texas | 37 | 75,794 | 3,694 | 444 | 2,077 | 8,288 | 7 | 3,313 | 396 | 23 | 322 | 382 | 9 | 7,964 | 485 | 12 | 205 | 126 | 120 | 33,831 | 2,831 |
| 43 | Utah | 6 | 16,287 | 983 | 134 | 561 | 3,234 | .. | ..... | ... | .. | ... | ... | 2 | 800 | 56 | 11 | 17 | 110 | 13 | 2,110 | 150 |
| 44 | Vermont | 3 | 3,982 | 217 | 19 | 120 | 317 | .. | ..... | ... | .. | ... | ... | 1 | 407 | 33 | 7 | 10 | 67 | 3 | 404 | 36 |
| 45 | Virginia | 4 | 10,109 | 573 | 75 | 313 | 1,037 | 2 | 2,256 | 147 | 14 | 61 | 170 | 5 | 2,822 | 180 | 7 | 91 | 82 | 19 | 7,389 | 721 |
| 46 | Washington | 23 | 52,481 | 2,900 | 459 | 1,762 | 5,686 | .. | ..... | ... | .. | ... | ... | 2 | 1,280 | 54 | 6 | 32 | 71 | 36 | 8,465 | 723 |
| 47 | West Virginia | 10 | 14,118 | 877 | 103 | 418 | 1,084 | .. | ..... | ... | .. | ... | ... | 1 | 2,179 | 114 | 20 | 76 | 35 | 15 | 17,713 | 595 |
| 48 | Wisconsin | 58 | 111,760 | 6,289 | 921 | 3,918 | 14,504 | 1 | ..... | 18 | .. | 12 | ... | 3 | 494 | 44 | 8 | 24 | 123 | 33 | 7,468 | 530 |
| 49 | Wyoming | 2 | 692 | 50 | 10 | 24 | 61 | .. | ..... | ... | .. | ... | ... | 2 | 432 | 45 | 6 | 17 | 136 | 9 | 1,306 | 124 |
| 50 | Totals (1931) | 1,011 | 2,013,352 | 116,935 | 15,861 | 73,911 | 235,229 | 76 | 44,790 | 5,528 | 161 | 3,820 | 2,054 | 135 | 91,166 | 6,437 | 421 | 3,102 | 4,389 | 1,560 | 459,184 | 36,764 |
| 51 | (1930) | 1,017 | ........ | 116,846 | 15,615 | 75,162 | ....... | 77 | ...... | 5,606 | 149 | 3,779 | ..... | 146 | ...... | 6,703 | 461 | 3,538 | ..... | 1,620 | ....... | 38,557 |
| 52 | (1929) | 1,024 | ........ | 113,555 | 15,037 | 75,770 | 209,726 | 70 | ...... | 5,283 | 158 | 3,627 | 1,730 | 145 | ...... | 6,810 | 467 | 3,703 | 4,327 | 1,611 | ....... | 37,977 |
| 53 | (1928) | 1,036 | ........ | 114,613 | 13,190 | ...... | ....... | 87 | ...... | 5,298 | 196 | ..... | ..... | 157 | ...... | 7,047 | 437 | ..... | ..... | 1,699 | ....... | 39,710 |
| 54 | (1927) | 1,060 | ........ | 108,582 | ...... | 72,813 | ....... | 85 | ...... | 4,935 | ... | 3,193 | ..... | 161 | ...... | 7,032 | ... | 3,694 | ..... | 1,682 | ....... | 39,118 |

reflected in the number of patients admitted, 44,790, the smallest number admitted by any of the groups contained in the report. The number of fraternal hospitals has declined from 85 five years ago. The capacity, at the same time, has increased from 4,935 to 5,528, and the average daily census of patients has increased from 3,193 to 3,820. The average length of stay per patient is thirty-one days; the births for 1931 numbered 2,054.

### INDUSTRIAL OR EMPLOYERS' HOSPITALS

Industrial hospitals have made a sharp decline in number from 161 to 135 during the past five years. Rather less is the decline in the number of beds, from 6,703 to 6,437 during the last year. The number of patients, at the same time, dwindled from 3,558 to 3,102. The comparatively large number of patients admitted, 91,166, of course reflects the short average stay of patients in industrial hospitals.

### INDIVIDUAL AND PARTNERSHIP HOSPITALS

The classification of individual and partnership hospitals shows evidence of a more rapid decline than any other group. There is, to be sure, still a comparatively large number, 1,560, of hospitals operated by individuals either singly or in partnership, the capacity of which has shrunk from 39,118 five years ago to 36,764 at the present time. In the same half decade the average number of patients dropped from 21,779 to 17,912. Only in the number of births have these proprietary institutions shown any considerable increase. They reported 39,436 births in 1929 and 42,268 in 1931.

### INDEPENDENT HOSPITAL ASSOCIATIONS

This group of hospitals represent a large and increasing number of associations usually formed for the express purpose of operating a single hospital in a given community. Some of these 2,015 organizations are incorporated for profit. The entire group admitted 2,714,406 patients in 1931, whose average length of stay in the hospital was fourteen days. They have a capacity of 166,927 beds, and their average daily census of patients is 107,350, only slightly below the corresponding figure for 1930. The number of births increased during the past two years from 283,136 to 318,251. This increase is explained, at least in part, by the general increased use of hospitals for maternity cases; also it is further explained by the fact that most of the hospitals maintained by independent hospital associations are general hospitals, nearly all of which have maternity services.

*to Agencies Owning or in Control—Continued*

| or Partnership | | | Independent | | | | | | Total Nongovernment Owned | | | | | | Grand Total—All Hospitals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Marginal No. |
| 133 | 486 | 1,346 | 26 | 16,562 | 1,186 | 98 | 536 | 777 | 70 | 52,904 | 3,415 | 367 | 1,565 | 3,630 | 95 | 75,450 | 9,907 | 459 | 7,505 | 5,284 | 1 |
| 13 | 288 | 76 | 4 | 1,532 | 180 | 7 | 96 | 99 | 45 | 18,509 | 1,845 | 135 | 993 | 1,683 | 76 | 35,078 | 4,564 | 206 | 3,265 | 2,040 | 2 |
| 50 | 173 | 528 | 15 | 6,522 | 615 | 66 | 216 | 367 | 59 | 38,728 | 2,681 | 239 | 1,057 | 1,978 | 74 | 49,153 | 7,808 | 261 | 6,146 | 2,257 | 3 |
| 521 | 1,688 | 4,301 | 102 | 141,711 | 7,394 | 1,076 | 4,707 | 16,024 | 300 | 299,878 | 16,936 | 2,429 | 10,352 | 31,971 | 407 | 462,477 | 55,981 | 2,909 | 44,460 | 39,862 | 4 |
| 113 | 396 | 714 | 25 | 8,700 | 2,035 | 85 | 1,390 | 531 | 91 | 56,716 | 5,991 | 501 | 3,727 | 5,170 | 110 | 85,286 | 12,663 | 593 | 9,110 | 6,456 | 5 |
| 28 | 327 | 175 | 46 | 79,403 | 5,445 | 688 | 3,639 | 11,741 | 66 | 108,765 | 7,058 | 933 | 4,863 | 15,840 | 87 | 115,538 | 15,857 | 957 | 12,941 | 16,020 | 6 |
| 8 | 12 | ... | 7 | 11,064 | 625 | 88 | 373 | 1,259 | 9 | 12,687 | 717 | 106 | 433 | 1,259 | 14 | 13,247 | 1,814 | 106 | 1,416 | 1,259 | 7 |
| 8 | 70 | 54 | 13 | 32,876 | 1,659 | 268 | 1,141 | 3,657 | 24 | 49,211 | 2,366 | 381 | 1,583 | 5,757 | 36 | 79,309 | 10,861 | 477 | 8,783 | 7,380 | 8 |
| 94 | 203 | 697 | 27 | 14,840 | 1,159 | 169 | 467 | 1,233 | 63 | 30,796 | 2,536 | 371 | 1,028 | 2,820 | 88 | 56,504 | 8,602 | 512 | 6,333 | 4,501 | 9 |
| 117 | 526 | 538 | 32 | 22,607 | 1,548 | 181 | 716 | 1,783 | 84 | 50,517 | 3,491 | 375 | 1,761 | 3,684 | 114 | 98,648 | 12,793 | 539 | 10,074 | 7,166 | 10 |
| 65 | 144 | 324 | 6 | 2,283 | 139 | 23 | 73 | 223 | 39 | 18,255 | 1,176 | 187 | 572 | 1,786 | 56 | 24,212 | 3,025 | 246 | 2,098 | 2,279 | 11 |
| 174 | 636 | 894 | 105 | 177,496 | 10,588 | 1,715 | 6,300 | 27,076 | 259 | 426,455 | 24,395 | 3,917 | 14,394 | 67,794 | 344 | 559,167 | 69,630 | 4,285 | 54,418 | 64,930 | 12 |
| 51 | 115 | 313 | 21 | 19,675 | 1,363 | 190 | 745 | 2,121 | 75 | 103,724 | 5,980 | 844 | 3,166 | 10,404 | 146 | 151,610 | 21,999 | 1,126 | 17,353 | 14,040 | 13 |
| 162 | 392 | 1,237 | 26 | 20,134 | 1,192 | 192 | 666 | 1,951 | 128 | 108,378 | 6,250 | 939 | 3,659 | 11,357 | 171 | 137,343 | 18,015 | 1,070 | 14,678 | 13,020 | 14 |
| 80 | 213 | 561 | 24 | 13,723 | 825 | 123 | 404 | 1,333 | 97 | 70,260 | 4,688 | 630 | 2,518 | 7,033 | 132 | 89,391 | 12,695 | 727 | 9,495 | 8,176 | 15 |
| 74 | 345 | 249 | 25 | 15,265 | 975 | 98 | 491 | 376 | 81 | 52,035 | 4,118 | 421 | 2,099 | 8,930 | 114 | 79,947 | 13,166 | 574 | 10,240 | 5,666 | 16 |
| 35 | 163 | 456 | 21 | 26,238 | 1,373 | 103 | 771 | 2,117 | 53 | 65,738 | 3,467 | 286 | 1,996 | 5,027 | 67 | 126,042 | 12,397 | 358 | 10,287 | 7,689 | 17 |
| 128 | 295 | 869 | 31 | 25,653 | 1,607 | 246 | 1,032 | 2,199 | 61 | 39,958 | 2,459 | 413 | 1,344 | 3,437 | 73 | 43,800 | 6,400 | 431 | 5,773 | 3,590 | 18 |
| 12 | 255 | 101 | 27 | 43,154 | 3,492 | 297 | 2,578 | 4,231 | 51 | 72,028 | 5,836 | 453 | 4,553 | 6,330 | 87 | 103,463 | 15,705 | 566 | 12,925 | 7,596 | 19 |
| 203 | 479 | 1,456 | 146 | 200,723 | 12,239 | 2,149 | 8,163 | 28,377 | 210 | 252,510 | 15,513 | 2,728 | 10,397 | 36,051 | 295 | 332,536 | 54,304 | 3,203 | 44,617 | 42,162 | 20 |
| 154 | 480 | 1,377 | 52 | 103,069 | 5,719 | 761 | 3,610 | 13,172 | 145 | 195,243 | 11,093 | 1,563 | 7,026 | 25,538 | 238 | 304,087 | 42,936 | 2,012 | 32,342 | 32,673 | 21 |
| 265 | 573 | 2,404 | 48 | 70,763 | 3,321 | 389 | 2,040 | 5,602 | 166 | 177,183 | 8,584 | 1,288 | 5,312 | 17,395 | 224 | 220,233 | 25,668 | 1,507 | 20,826 | 20,956 | 22 |
| 135 | 392 | 737 | 20 | 11,700 | 872 | 82 | 281 | 621 | 61 | 36,621 | 2,428 | 266 | 855 | 1,925 | 77 | 54,031 | 8,007 | 325 | 5,997 | 2,822 | 23 |
| 233 | 446 | 1,031 | 28 | 34,473 | 2,097 | 291 | 1,295 | 3,276 | 115 | 142,039 | 9,205 | 1,112 | 5,899 | 13,073 | 153 | 195,781 | 26,378 | 1,371 | 22,090 | 17,425 | 24 |
| 59 | 106 | 439 | 5 | 3,237 | 205 | 35 | 101 | 224 | 47 | 39,631 | 2,393 | 367 | 1,158 | 3,722 | 64 | 44,332 | 4,873 | 408 | 3,365 | 3,952 | 25 |
| 188 | 408 | 1,277 | 9 | 6,369 | 521 | 58 | 401 | 744 | 83 | 61,618 | 3,667 | 520 | 2,098 | 5,535 | 107 | 69,674 | 9,780 | 573 | 7,411 | 6,053 | 26 |
| 8 | 33 | 55 | .. | ..... | ..... | ... | ..... | ..... | 6 | 2,989 | 178 | 32 | 109 | 261 | 21 | 5,382 | 965 | 49 | 685 | 476 | 27 |
| 2 | 68 | .. | 26 | 20,747 | 1,220 | 221 | 716 | 2,629 | 34 | 27,210 | 1,700 | 289 | 1,018 | 3,381 | 47 | 31,317 | 4,770 | 317 | 3,709 | 3,610 | 28 |
| 60 | 320 | 418 | 72 | 137,587 | 8,617 | 1,200 | 5,984 | 19,147 | 117 | 201,360 | 12,915 | 1,712 | 8,771 | 26,557 | 169 | 250,543 | 37,190 | 2,143 | 29,213 | 30,588 | 29 |
| 5 | 97 | 30 | 8 | 1,645 | 254 | 27 | 160 | 138 | 32 | 11,938 | 1,686 | 121 | 876 | 940 | 48 | 17,045 | 3,870 | 150 | 2,492 | 1,087 | 30 |
| 520 | 1,562 | 6,922 | 264 | 540,841 | 30,413 | 4,174 | 21,458 | 70,423 | 433 | 733,388 | 45,958 | 6,130 | 32,309 | 100,687 | 599 | 1,009,504 | 143,025 | 7,093 | 118,821 | 117,730 | 31 |
| 95 | 817 | 824 | 65 | 44,088 | 3,586 | 399 | 1,748 | 3,188 | 129 | 81,242 | 6,208 | 617 | 3,192 | 5,511 | 158 | 94,635 | 15,416 | 705 | 11,277 | 6,214 | 32 |
| 42 | 60 | 352 | 11 | 6,328 | 259 | 95 | 119 | 761 | 40 | 35,443 | 1,980 | 353 | 1,110 | 4,139 | 53 | 38,720 | 4,918 | 368 | 3,652 | 4,235 | 33 |
| 85 | 451 | 411 | 98 | 136,363 | 7,427 | 1,104 | 4,733 | 15,964 | 193 | 270,727 | 15,561 | 2,161 | 10,073 | 32,423 | 269 | 342,754 | 47,296 | 2,526 | 39,821 | 37,155 | 34 |
| 228 | 768 | 2,295 | 17 | 13,411 | 706 | 61 | 350 | 950 | 92 | 56,573 | 3,458 | 467 | 1,653 | 5,483 | 126 | 84,721 | 11,573 | 566 | 9,204 | 6,671 | 35 |
| 82 | 240 | 560 | 25 | 14,481 | 993 | 153 | 505 | 1,598 | 64 | 54,498 | 3,209 | 506 | 1,939 | 5,852 | 84 | 67,765 | 8,723 | 543 | 7,201 | 6,462 | 36 |
| 195 | 702 | 1,565 | 202 | 377,594 | 24,541 | 3,132 | 17,269 | 45,259 | 302 | 486,790 | 33,436 | 4,110 | 23,324 | 58,271 | 376 | 572,799 | 74,444 | 4,331 | 59,764 | 61,162 | 37 |
| 6 | 41 | 2 | 16 | 24,838 | 2,032 | 301 | 1,249 | 3,998 | 23 | 28,189 | 2,488 | 347 | 1,528 | 4,421 | 33 | 34,331 | 6,535 | 359 | 5,730 | 4,470 | 38 |
| 39 | 213 | 242 | 24 | 19,564 | 1,250 | 113 | 707 | 1,395 | 46 | 31,352 | 2,046 | 177 | 1,148 | 1,907 | 64 | 44,531 | 6,338 | 236 | 5,186 | 2,716 | 39 |
| 61 | 141 | 568 | 13 | 8,400 | 515 | 91 | 219 | 947 | 49 | 35,919 | 1,930 | 315 | 968 | 3,454 | 65 | 41,658 | 5,093 | 346 | 3,923 | 3,718 | 40 |
| 59 | 329 | 275 | 35 | 26,261 | 2,143 | 179 | 1,268 | 1,738 | 81 | 66,551 | 4,088 | 374 | 2,314 | 4,665 | 109 | 101,883 | 12,937 | 504 | 10,346 | 7,281 | 41 |
| 309 | 1,128 | 2,242 | 70 | 47,913 | 3,055 | 331 | 1,463 | 2,898 | 243 | 168,815 | 10,461 | 1,119 | 5,195 | 13,936 | 305 | 229,097 | 28,601 | 1,395 | 20,615 | 18,816 | 42 |
| 23 | 40 | 216 | 4 | 2,962 | 138 | 19 | 74 | 275 | 25 | 22,159 | 1,327 | 187 | 692 | 3,835 | 34 | 27,074 | 2,507 | 211 | 1,788 | 4,312 | 43 |
| 7 | 15 | 80 | 18 | 16,394 | 1,370 | 138 | 1,165 | 1,591 | 25 | 21,187 | 1,656 | 171 | 1,310 | 2,055 | 33 | 22,603 | 3,117 | 172 | 2,595 | 2,057 | 44 |
| 53 | 415 | 377 | 54 | 54,639 | 3,203 | 355 | 1,891 | 4,086 | 84 | 77,215 | 4,824 | 504 | 2,771 | 5,752 | 114 | 110,495 | 16,460 | 580 | 13,750 | 6,608 | 45 |
| 161 | 316 | 1,198 | 23 | 27,416 | 1,742 | 290 | 982 | 3,267 | 84 | 89,642 | 5,419 | 916 | 3,092 | 10,222 | 121 | 111,487 | 15,772 | 973 | 12,191 | 10,846 | 46 |
| 76 | 272 | 477 | 31 | 38,616 | 2,242 | 200 | 1,334 | 1,556 | 57 | 72,626 | 3,828 | 399 | 2,100 | 3,152 | 78 | 92,205 | 8,687 | 453 | 6,761 | 3,521 | 47 |
| 103 | 232 | 775 | 43 | 42,644 | 2,665 | 349 | 1,644 | 5,192 | 138 | 162,366 | 9,546 | 1,387 | 5,830 | 20,594 | 229 | 205,597 | 27,807 | 1,553 | 21,817 | 22,499 | 48 |
| 24 | 41 | 230 | 5 | 1,902 | 182 | 27 | 80 | 137 | 18 | 4,332 | 401 | 67 | 162 | 564 | 29 | 13,491 | 2,053 | 120 | 1,507 | 1,401 | 49 |
| 5,332 | 17,912 | 42,268 | 2,015 | 2,714,406 | 166,927 | 22,437 | 107,350 | 318,251 | 4,797 | 5,322,898 | 332,591 | 44,232 | 206,095 | 602,191 | 6,613 | 7,155,976 | 974,115 | 51,494 | 775,396 | 708,889 | 50 |
| 5,233 | 19,948 | ..... | 2,047 | ........ | 168,431 | 21,823 | 110,198 | ...... | 4,907 | ........ | 336,143 | 43,281 | 212,645 | ...... | 6,719 | ........ | 955,869 | 49,584 | 763,382 | ...... | 51 |
| 5,212 | 20,604 | 39,436 | 2,011 | ........ | 160,971 | 21,003 | 106,177 | 283,136 | 4,870 | ........ | 324,596 | 41,877 | 209,881 | 538,355 | 6,665 | ........ | 907,133 | 47,939 | 726,766 | 621,896 | 52 |
| 4,813 | ..... | ..... | 2,040 | ........ | 158,832 | 18,975 | ...... | ...... | 5,039 | ........ | 325,500 | 37,641 | ...... | ...... | 6,852 | ........ | 892,934 | 43,313 | ...... | ...... | 53 |
| ..... | 21,779 | ..... | 2,010 | ........ | 148,482 | ..... | 100,196 | ...... | 4,998 | ........ | 308,149 | ...... | 201,675 | ...... | 6,807 | ........ | 853,318 | ...... | 671,832 | ...... | 54 |

(CONTINUED ON PAGE 2070)

## Table 2.—*Number and Capacity of Hospitals According to Type of Service, Together with Number of Patients Admitted*

| Marginal No. | State | General | | | | | | Nervous and Mental | | | | Tuberculosis | | | | | Maternity | | | | | | Industrial | | | | | | Convalescent and Rest | | | | | Marginal No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Average Patients | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | |
| 1 | Alabama | 71 | 62,941 | 4,500 | 387 | 2,385 | 4,677 | 4 | 549 | 4,385 | 4,462 | 4 | 325 | 244 | .. | 170 | 1 | 117 | 50 | 30 | 43 | 84 | 2 | 6,496 | 337 | 38 | 225 | 518 | 1 | ... | 10 | .. | 8 | 1 |
| 2 | Arizona | 37 | 29,485 | 2,455 | 171 | 1,461 | 1,583 | 1 | 219 | 600 | 778 | 25 | 1,345 | 1,180 | .. | 889 | .. | ... | .. | .. | .. | ... | 10 | 4,029 | 259 | 35 | 109 | 457 | .. | ... | .. | .. | .. | 2 |
| 3 | Arkansas | 57 | 40,576 | 2,878 | 248 | 1,407 | 2,163 | 2 | 1,773 | 3,650 | 3,901 | 2 | 1,179 | 526 | .. | 520 | 1 | 40 | 48 | 4 | 2 | 32 | 4 | 4,068 | 325 | 7 | 107 | 47 | .. | ... | .. | .. | .. | 3 |
| 4 | California | 256 | 420,035 | 26,844 | 2,614 | 18,325 | 37,893 | 27 | 4,112 | 20,128 | 19,217 | 46 | 5,441 | 4,475 | .. | 3,859 | 14 | 2,051 | 366 | 245 | 192 | 1,725 | 16 | 10,367 | 847 | 40 | 506 | 244 | 13 | 864 | 520 | .. | 296 | 4 |
| 5 | Colorado | 69 | 66,806 | 6,208 | 521 | 3,897 | 5,815 | 8 | 1,709 | 3,562 | 3,315 | 16 | 1,859 | 2,040 | .. | 1,480 | 1 | 497 | 25 | 15 | 12 | 273 | 4 | 4,231 | 356 | 20 | 168 | 368 | 2 | 360 | 40 | 9 | 44 | 5 |
| 6 | Connecticut | 40 | 106,862 | 5,848 | 943 | 3,893 | 15,921 | 14 | 2,268 | 7,321 | 7,006 | 8 | 1,092 | 1,234 | .. | 1,118 | 1 | 141 | 10 | 2 | 3 | 64 | .. | ..... | ... | .. | ... | ... | 6 | 209 | 99 | .. | 83 | 6 |
| 7 | Delaware | 9 | 12,828 | 721 | 106 | 415 | 1,259 | 2 | 203 | 945 | 887 | 2 | 150 | 124 | .. | 91 | .. | ... | .. | .. | .. | ... | .. | ..... | ... | .. | ... | ... | 1 | 66 | 24 | .. | 23 | 7 |
| 8 | District of Columbia | 19 | 65,738 | 5,159 | 376 | 3,712 | 5,876 | 2 | 851 | 4,744 | 4,401 | 2 | 308 | 250 | .. | 209 | 2 | 2,819 | 129 | 90 | 86 | 1,504 | .. | ..... | ... | .. | ... | ... | 2 | 151 | 33 | .. | 21 | 8 |
| 9 | Florida | 70 | 50,614 | 3,948 | 499 | 2,048 | 4,463 | 6 | 1,627 | 4,201 | 4,028 | 1 | 78 | 60 | .. | 50 | 1 | ... | 8 | 6 | 5 | ... | 1 | 1,033 | 70 | 6 | 46 | 34 | 1 | ... | 50 | .. | 35 | 9 |
| 10 | Georgia | 85 | 86,728 | 4,918 | 500 | 2,766 | 7,110 | 7 | 1,058 | 6,364 | 6,298 | 5 | 782 | 621 | .. | 503 | 2 | 90 | 42 | 34 | 28 | 56 | 2 | 2,556 | 137 | .. | 77 | ... | .. | ... | .. | .. | .. | 10 |
| 11 | Idaho | 46 | 23,260 | 1,603 | 234 | 853 | 2,208 | 3 | 274 | 1,201 | 1,090 | 1 | 190 | 132 | .. | 132 | 1 | 71 | 8 | 12 | 2 | 71 | .. | ..... | ... | .. | ... | ... | .. | ... | .. | .. | .. | 11 |
| 12 | Illinois | 231 | 496,432 | 29,768 | 3,653 | 18,566 | 59,670 | 30 | 14,397 | 32,214 | 30,376 | 27 | 5,142 | 3,663 | .. | 3,189 | 9 | 7,070 | 668 | 569 | 216 | 4,903 | 6 | 5,366 | 409 | 25 | 199 | 357 | 5 | 1,783 | 233 | .. | 171 | 12 |
| 13 | Indiana | 93 | 137,096 | 7,433 | 1,083 | 3,951 | 12,847 | 16 | 1,681 | 12,014 | 11,588 | 8 | 1,373 | 1,208 | .. | 1,101 | 1 | 1,895 | 68 | 35 | 67 | 1,193 | 3 | 1,156 | 177 | .. | 56 | ... | 3 | 63 | 61 | .. | 13 | 13 |
| 14 | Iowa | 128 | 129,050 | 6,856 | 974 | 3,972 | 12,344 | 15 | 2,324 | 9,577 | 9,661 | 6 | 734 | 776 | .. | 668 | 4 | 740 | 131 | 93 | 46 | 676 | 1 | 377 | 60 | .. | 19 | ... | 1 | 22 | 70 | .. | 42 | 14 |
| 15 | Kansas | 100 | 82,095 | 5,400 | 718 | 2,938 | 8,050 | 11 | 1,324 | 6,045 | 5,734 | 3 | 367 | 338 | .. | 283 | 1 | 175 | 40 | 9 | 35 | 126 | 3 | 2,719 | 253 | . | 112 | ... | .. | ... | .. | .. | .. | 15 |
| 16 | Kentucky | 81 | 70,045 | 4,917 | 537 | 2,600 | 5,519 | 9 | 1,860 | 6,428 | 6,308 | 5 | 843 | 1,034 | 10 | 966 | 1 | 91 | 53 | 9 | 30 | 68 | 7 | 2,808 | 255 | 18 | 93 | 79 | 1 | 120 | 10 | .. | 2 | 16 |
| 17 | Louisiana | 46 | 113,860 | 5,606 | 346 | 4,168 | 7,449 | 6 | 2,102 | 5,439 | 5,252 | 3 | 124 | 270 | .. | 187 | .. | ... | .. | .. | .. | ... | 3 | 3,966 | 164 | 12 | 89 | 240 | 1 | 251 | 30 | .. | 20 | 17 |
| 18 | Maine | 58 | 41,935 | 2,749 | 394 | 1,764 | 3,373 | 5 | 454 | 2,954 | 2,856 | 5 | 444 | 534 | .. | 458 | 3 | 450 | 38 | 38 | 19 | 217 | .. | ..... | ... | .. | ... | ... | .. | ... | .. | .. | .. | 18 |
| 19 | Maryland | 40 | 89,962 | 5,710 | 564 | 4,050 | 7,596 | 18 | 2,230 | 7,825 | 7,140 | 9 | 1,937 | 1,262 | 2 | 1,169 | . | ... | .. | .. | .. | ... | 1 | ..... | 16 | .. | ... | ... | 4 | 103 | 113 | .. | 105 | 19 |
| 20 | Massachusetts | 161 | 285,435 | 19,000 | 2,066 | 13,729 | 36,709 | 34 | 1,040 | 26,429 | 24,500 | 30 | 4,452 | 4,512 | .. | 3,446 | 12 | 6,616 | 435 | 408 | 268 | 5,293 | 2 | 806 | 30 | 14 | 16 | 160 | 6 | 805 | 201 | .. | 155 | 20 |
| 21 | Michigan | 149 | 257,585 | 16,825 | 1,736 | 10,703 | 27,294 | 18 | 3,526 | 18,982 | 16,486 | 21 | 3,263 | 3,287 | .. | 2,596 | 6 | 11,706 | 1,523 | 210 | 1,157 | 4,593 | 17 | 6,876 | 366 | 54 | 205 | 625 | 2 | 590 | 274 | .. | 262 | 21 |
| 22 | Minnesota | 158 | 194,502 | 10,362 | 1,402 | 6,870 | 19,970 | 15 | 2,143 | 11,450 | 10,933 | 16 | 1,610 | 1,933 | .. | 1,765 | 3 | 1,369 | 155 | 85 | 104 | 808 | 3 | 1,300 | 65 | 18 | 37 | 178 | 9 | 2,607 | 398 | .. | 186 | 22 |
| 23 | Mississippi | 65 | 49,749 | 2,976 | 309 | 1,283 | 2,751 | 4 | 1,813 | 4,275 | 4,222 | 2 | 365 | 524 | .. | 303 | 1 | 267 | 25 | 6 | 5 | 33 | 1 | 533 | 50 | 10 | 10 | 38 | .. | ... | ... | .. | ... | 23 |
| 24 | Missouri | 101 | 161,550 | 10,247 | 1,066 | 6,834 | 13,633 | 17 | 3,906 | 12,450 | 12,245 | 6 | 1,636 | 1,377 | .. | 1,276 | 6 | 3,155 | 339 | 293 | 217 | 3,792 | 3 | 5,805 | 443 | .. | 179 | ... | 2 | 376 | 57 | .. | 31 | 24 |
| 25 | Montana | 55 | 37,908 | 2,933 | 385 | 1,525 | 3,892 | 1 | ..... | 1,550 | 1,582 | 1 | ..... | 156 | .. | 142 | 1 | ... | 8 | 8 | 6 | ... | 3 | 6,229 | 156 | 12 | 99 | 60 | .. | ... | ... | .. | ... | 25 |
| 26 | Nebraska | 87 | 67,672 | 4,262 | 535 | 2,388 | 5,900 | 5 | 593 | 4,868 | 4,565 | 1 | 163 | 156 | .. | 140 | 1 | 97 | 8 | 15 | 2 | 97 | .. | ..... | ... | .. | ... | ... | .. | ... | ... | .. | ... | 26 |
| 27 | Nevada | 14 | 4,012 | 456 | 37 | 311 | 363 | 1 | 70 | 325 | 286 | 1 | 72 | 58 | .. | 30 | .. | ... | .. | .. | .. | ... | 4 | 741 | 86 | 12 | 42 | 113 | .. | ... | ... | .. | ... | 27 |
| 28 | New Hampshire | 33 | 29,990 | 1,879 | 297 | 1,206 | 3,408 | 2 | 403 | 2,370 | 2,236 | 2 | 210 | 210 | .. | 160 | 1 | 198 | 22 | 18 | 8 | 198 | 1 | 50 | 10 | .. | 6 | 4 | 1 | ... | 10 | 2 | 3 | 28 |
| 29 | New Jersey | 86 | 221,377 | 11,829 | 1,832 | 8,353 | 30,501 | 23 | 3,901 | 18,824 | 16,501 | 16 | 3,778 | 3,038 | .. | 2,493 | 2 | 46 | 284 | 284 | 1 | ... | 1 | 646 | 30 | 7 | 21 | 68 | 7 | 875 | 558 | .. | 390 | 29 |
| 30 | New Mexico | 28 | 14,189 | 1,227 | 132 | 603 | 1,004 | 2 | 257 | 798 | 660 | 11 | 1,283 | 1,498 | .. | 1,150 | .. | ... | .. | .. | .. | ... | 5 | 1,316 | 217 | 10 | 55 | 83 | .. | ... | ... | .. | ... | 30 |
| 31 | New York | 320 | 849,039 | 46,143 | 5,800 | 33,998 | 95,117 | 64 | 7,361 | 73,434 | 66,578 | 61 | 14,008 | 9,528 | 29 | 8,483 | 21 | 29,233 | 1,725 | 1,185 | 1,117 | 21,115 | 3 | 632 | 56 | .. | 33 | ... | 34 | 14,926 | 2,097 | .. | 1,739 | 31 |
| 32 | North Carolina | 100 | 85,724 | 6,052 | 669 | 3,430 | 6,003 | 9 | 883 | 6,953 | 6,223 | 25 | 1,241 | 1,600 | .. | 1,263 | 1 | 80 | 6 | 6 | 1 | 31 | 3 | 1,188 | 109 | 11 | 17 | 30 | 2 | 104 | 41 | .. | 17 | 32 |
| 33 | North Dakota | 43 | 36,808 | 2,121 | 319 | 1,153 | 4,009 | 3 | 585 | 2,403 | 2,241 | 1 | 250 | 210 | .. | 208 | 2 | 218 | 26 | 48 | 9 | 226 | .. | ..... | ... | .. | ... | ... | .. | ... | ... | .. | ... | 33 |
| 34 | Ohio | 152 | 302,561 | 16,870 | 2,170 | 11,351 | 32,394 | 30 | 6,013 | 23,517 | 23,571 | 17 | 3,399 | 2,697 | .. | 2,226 | 12 | 5,777 | 396 | 331 | 214 | 4,747 | 2 | 210 | 31 | 2 | 8 | 12 | 6 | 799 | 453 | .. | 213 | 34 |
| 35 | Oklahoma | 104 | 76,410 | 4,826 | 535 | 2,640 | 6,481 | 6 | 1,685 | 5,685 | 5,762 | 6 | 1,043 | 742 | .. | 687 | 1 | 232 | 25 | 30 | 12 | 188 | 1 | 10 | 10 | 1 | 1 | 2 | .. | ... | ... | .. | ... | 35 |
| 36 | Oregon | 56 | 58,803 | 3,478 | 478 | 2,261 | 6,210 | 6 | 930 | 4,197 | 4,234 | 4 | 573 | 415 | .. | 396 | 4 | 394 | 117 | 59 | 51 | 232 | 1 | 220 | 15 | .. | 4 | ... | 2 | 222 | 42 | .. | 21 | 36 |
| 37 | Pennsylvania | 225 | 519,658 | 30,829 | 3,748 | 20,937 | 55,362 | 45 | 6,265 | 33,335 | 31,227 | 21 | 6,168 | 1,293 | .. | 3,795 | 15 | 9,204 | 868 | 538 | 542 | 5,748 | 2 | 691 | 85 | 4 | 34 | 46 | 11 | 2,510 | 476 | 32 | 390 | 37 |
| 38 | Rhode Island | 17 | 27,736 | 3,051 | 201 | 2,236 | 2,105 | 4 | 615 | 2,366 | 2,661 | 3 | 795 | 530 | .. | 458 | 2 | 2,676 | 169 | 155 | 108 | 2,365 | .. | ..... | ... | .. | ... | ... | 1 | 25 | 20 | .. | 15 | 38 |
| 39 | South Carolina | 41 | 41,515 | 2,552 | 236 | 1,365 | 2,716 | 2 | 1,013 | 2,953 | 3,236 | 8 | 648 | 553 | .. | 466 | .. | ... | .. | .. | .. | ... | .. | ..... | ... | .. | ... | ... | .. | ... | ... | .. | ... | 39 |
| 40 | South Dakota | 58 | 40,567 | 2,742 | 341 | 1,646 | 3,689 | 3 | 395 | 2,022 | 2,088 | 1 | 135 | 240 | .. | 150 | .. | ... | .. | .. | .. | ... | 1 | 417 | 25 | 5 | 11 | 29 | .. | ... | ... | .. | ... | 40 |
| 41 | Tennessee | 67 | 90,707 | 5,808 | 481 | 4,010 | 7,110 | 10 | 1,867 | 5,179 | 5,005 | 9 | 1,246 | 1,071 | .. | 955 | 1 | 68 | 36 | 12 | 16 | 42 | 1 | 24 | 10 | .. | 1 | 1 | 1 | 125 | 25 | .. | 10 | 41 |
| 42 | Texas | 231 | 206,343 | 12,101 | 1,350 | 6,443 | 18,558 | 15 | 3,161 | 12,370 | 11,351 | 19 | 3,811 | 2,378 | .. | 1,968 | 3 | 175 | 40 | 28 | 12 | 131 | 10 | 8,231 | 507 | 12 | 211 | 126 | 2 | 50 | 38 | .. | 26 | 42 |
| 43 | Utah | 26 | 25,588 | 1,482 | 186 | 851 | 3,966 | 3 | 426 | 883 | 880 | .. | ..... | ..... | .. | ..... | 1 | 260 | 28 | 14 | 7 | 236 | 2 | 800 | 56 | 11 | 17 | 110 | ... | ... | ... | .. | ... | 43 |
| 44 | Vermont | 21 | 21,376 | 1,109 | 165 | 639 | 1,990 | 4 | 453 | 1,725 | 1,791 | 3 | 267 | 166 | .. | 135 | .. | ... | .. | .. | .. | ... | 1 | 407 | 33 | 7 | 10 | 67 | .. | ... | ... | .. | ... | 44 |
| 45 | Virginia | 78 | 97,409 | 6,617 | 537 | 4,164 | 6,438 | 8 | 2,169 | 7,579 | 7,937 | 6 | 1,330 | 1,007 | .. | 938 | 1 | 35 | 6 | 22 | 2 | 20 | 5 | 2,822 | 180 | 7 | 91 | 82 | 1 | 100 | 50 | .. | 40 | 45 |
| 46 | Washington | 82 | 102,758 | 7,111 | 916 | 4,332 | 10,433 | 9 | 1,210 | 6,550 | 6,371 | 10 | 1,921 | 1,010 | .. | 845 | 1 | 113 | 103 | 51 | 65 | 342 | 2 | 1,280 | 54 | 6 | 32 | 71 | 3 | 271 | 38 | .. | 20 | 46 |
| 47 | West Virginia | 60 | 87,665 | 4,071 | 433 | 2,123 | 3,186 | 4 | 631 | 3,478 | 3,655 | 7 | 1,002 | 807 | .. | 719 | .. | ... | .. | .. | .. | ... | 1 | 2,170 | 114 | 20 | 76 | 35 | .. | ... | ... | .. | ... | 47 |
| 48 | Wisconsin | 130 | 181,965 | 10,931 | 1,488 | 6,614 | 22,252 | 51 | 3,319 | 13,602 | 12,724 | 22 | 2,158 | 1,893 | .. | 1,738 | 1 | ... | 50 | 35 | 21 | 108 | 2 | 398 | 28 | 8 | 19 | 123 | 2 | 212 | 66 | .. | 45 | 48 |
| 49 | Wyoming | 22 | 12,792 | 913 | 111 | 388 | 1,265 | 3 | 235 | 1,056 | 1,080 | 1 | 22 | 33 | .. | 22 | .. | ... | .. | .. | .. | ... | 2 | 432 | 45 | 6 | 17 | 130 | .. | ... | ... | .. | ... | 49 |
| 50 | Totals (1931) | 4,309 | 6,321,861 | 384,333 | 45,434 | 247,560 | 641,823 | 587 | 97,889 | 451,245 | 427,135 | 509 | 80,562 | 65,923 | 41 | 56,088 | 145 | 91,196 | 8,078 | 5,032 | 4,737 | 61,363 | 142 | 93,415 | 6,176 | 438 | 3,118 | 4,543 | 133 | 28,628 | 6,123 | 43 | 4,429 | 50 |
| 51 | (1930) | 4,302 | ........ | 371,609 | 43,941 | 240,384 | ....... | 561 | ...... | 437,919 | 415,042 | 515 | ...... | 65,910 | 18 | 56,372 | 151 | ...... | 6,527 | 4,480 | 4,126 | ...... | 155 | ...... | 6,875 | 471 | 3,616 | ..... | 162 | ...... | 7,374 | 77 | 5,034 | 51 |
| 52 | (1929) | 4,268 | ........ | 357,031 | 42,715 | 234,009 | 501,751 | 572 | ...... | 411,386 | 395,407 | 502 | ...... | 61,310 | 53 | 50,707 | 146 | ...... | 5,134 | 4,023 | 3,412 | 53,019 | 152 | ...... | 7,001 | 479 | 3,824 | 4,123 | 119 | ...... | 6,474 | 75 | 4,588 | 52 |
| 53 | (1928) | 4,361 | ........ | 363,337 | 38,339 | ....... | ....... | 553 | ...... | 391,268 | ....... | 508 | ...... | 62,113 | 23 | ...... | 164 | ...... | 5,912 | 3,621 | ..... | ...... | 169 | ...... | 7,290 | 419 | ..... | ..... | 171 | ...... | 7,317 | 60 | ..... | 53 |
| 54 | (1927) | 4,322 | ........ | 345,364 | ...... | 228,081 | ....... | 563 | ...... | 373,361 | 349,667 | 508 | ...... | 63,170 | .. | 50,781 | 178 | ...... | 5,747 | ..... | 3,695 | ...... | 168 | ...... | 7,039 | ... | 3,712 | ..... | 159 | ...... | 8,143 | .. | 5,589 | 54 |

TABLE 2.—*Number and Capacity of Hospitals According to Type of Service, Together with Number of Patients Admitted—Continued*

| Marginal No. | State | Isolation | | | | | Children's | | | | | | Eye, Ear, Nose and Throat | | | | | Orthopedic | | | | Hospital Departments of Institutions | | | | | | All Other Hospitals | | | | | | Totals | | | | | | Marginal No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Hospitals | Patients Admitted | Beds | Average Patients | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births | |
| 1 | Alabama | .. | ..... | ... | .. | ... | 1 | 491 | 20 | 3 | 7 | 5 | .. | ..... | ... | .. | ... | 1 | 937 | 50 | 34 | 9 | 3,591 | 296 | 1 | 166 | .. | 1 | ..... | 15 | .. | 5 | .. | 95 | 75,450 | 9,907 | 439 | 7,503 | 5,284 | 1 |
| 2 | Arizona | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | .. | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 3 | ..... | 70 | .. | 28 | .. | .. | ..... | ... | .. | ... | .. | 76 | 35,078 | 4,564 | 206 | 3,265 | 2,040 | 2 |
| 3 | Arkansas | .. | ..... | ... | .. | ... | 1 | 252 | 82 | .. | 30 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 5 | 875 | 248 | .. | 165 | .. | 2 | 390 | 51 | 2 | 14 | 15 | 74 | 49,153 | 7,808 | 261 | 6,146 | 2,257 | 3 |
| 4 | California | 2 | 21 | 125 | 8 | 2 | 4 | 9,471 | 364 | .. | 257 | .. | 2 | 2,690 | 51 | .. | 25 | 3 | 1,690 | 159 | 144 | 14 | 4,073 | 1,728 | .. | 1,429 | .. | 10 | 1,662 | 374 | 2 | 208 | .. | 407 | 462,477 | 55,981 | 2,909 | 44,460 | 39,862 | 4 |
| 5 | Colorado | 2 | 308 | 94 | .. | 24 | 1 | 3,342 | 147 | 28 | 107 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 7 | 6,114 | 185 | .. | 63 | .. | .. | ..... | ... | .. | ... | .. | 110 | 85,286 | 12,663 | 593 | 9,110 | 6,456 | 5 |
| 6 | Connecticut | 3 | 1,408 | 250 | .. | 80 | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 1 | 134 | 200 | 194 | 13 | 2,559 | 871 | 12 | 541 | 35 | 1 | 865 | 24 | .. | 23 | .. | 87 | 115,538 | 15,857 | 957 | 12,941 | 16,020 | 6 |
| 7 | Delaware | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | 14 | 13,247 | 1,814 | 106 | 1,416 | 1,259 | 7 |
| 8 | Dist. Columbia | 1 | ..... | 41 | .. | ... | 1 | 3,833 | 171 | 11 | 108 | .. | 3 | 5,402 | 116 | .. | 65 | .. | ..... | ... | ... | 4 | 207 | 218 | .. | 181 | .. | .. | ..... | ... | .. | ... | .. | 36 | 79,309 | 10,861 | 477 | 8,783 | 7,380 | 8 |
| 9 | Florida | .. | ..... | ... | .. | ... | 1 | 570 | 26 | .. | 8 | .. | .. | ..... | ... | .. | ... | 1 | 79 | 30 | 12 | 6 | 2,503 | 209 | 1 | 101 | 4 | .. | ..... | ... | .. | ... | .. | 88 | 56,504 | 8,602 | 512 | 6,333 | 4,501 | 9 |
| 10 | Georgia | 1 | 431 | 50 | .. | ... | 1 | 919 | 50 | 3 | 26 | .. | .. | ..... | ... | .. | ... | 2 | 626 | 150 | 59 | 6 | 1,826 | 335 | .. | 234 | .. | 3 | 3,632 | 126 | 2 | 83 | .. | 114 | 98,648 | 12,793 | 539 | 10,074 | 7,166 | 10 |
| 11 | Idaho | 1 | 4 | 10 | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 3 | 413 | 61 | .. | 19 | .. | 1 | ..... | 10 | .. | 2 | .. | 56 | 24,212 | 3,025 | 246 | 2,098 | 2,279 | 11 |
| 12 | Illinois | 4 | 5,671 | 573 | .. | 336 | 3 | 6,948 | 332 | 36 | 229 | .. | 3 | 5,742 | 263 | .. | 170 | 2 | 269 | 180 | 142 | 24 | 10,347 | 1,327 | 2 | 824 | .. | .. | ..... | ... | .. | ... | .. | 344 | 539,167 | 69,630 | 4,285 | 54,418 | 64,930 | 12 |
| 13 | Indiana | 4 | ..... | 38 | .. | ... | 1 | 3,085 | 210 | .. | 183 | .. | 2 | 152 | 19 | .. | 4 | .. | ..... | ... | ... | 14 | 4,681 | 757 | 8 | 376 | .. | 1 | 428 | 14 | .. | 11 | .. | 146 | 151,610 | 21,999 | 1,126 | 17,353 | 14,040 | 13 |
| 14 | Iowa | 4 | 529 | 93 | .. | 15 | .. | ..... | ... | .. | ... | .. | 1 | ..... | 10 | .. | ... | .. | ..... | ... | ... | 10 | 3,507 | 453 | 3 | 255 | .. | 1 | 60 | 6 | .. | ... | .. | 171 | 137,343 | 18,015 | 1,070 | 14,678 | 13,020 | 14 |
| 15 | Kansas | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 14 | 2,711 | 619 | .. | 363 | .. | .. | ..... | ... | .. | ... | .. | 132 | 89,391 | 12,695 | 727 | 9,495 | 8,176 | 15 |
| 16 | Kentucky | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 1 | 254 | 60 | 48 | 8 | 3,926 | 372 | .. | 158 | .. | 1 | ..... | 37 | .. | 35 | .. | 114 | 79,947 | 13,166 | 574 | 10,240 | 5,666 | 16 |
| 17 | Louisiana | 1 | 383 | 125 | .. | 15 | .. | ..... | ... | .. | ... | .. | 1 | 5,115 | 68 | .. | 20 | 1 | 153 | 60 | 60 | 4 | 7 | 210 | .. | 154 | .. | 1 | 81 | 425 | .. | 322 | .. | 67 | 126,042 | 12,397 | 358 | 10,287 | 7,689 | 17 |
| 18 | Maine | 1 | 34 | 25 | .. | 2 | 1 | 483 | 100 | .. | 74 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | 73 | 43,800 | 6,400 | 431 | 5,173 | 3,590 | 18 |
| 19 | Maryland | 1 | 1,359 | 110 | .. | 65 | .. | ..... | ... | .. | ... | .. | 2 | 4,994 | 110 | .. | 34 | 2 | 404 | 200 | 150 | 9 | 2,468 | 329 | .. | 201 | .. | 1 | ..... | 30 | .. | 11 | .. | 87 | 103,463 | 15,705 | 566 | 12,925 | 7,596 | 19 |
| 20 | Massachusetts | 7 | 2,403 | 566 | 4 | 233 | 7 | 6,624 | 680 | 92 | 516 | .. | 1 | 7,720 | 219 | 12 | 135 | 5 | 7,875 | 700 | 575 | 20 | 4,206 | 1,117 | 6 | 749 | .. | 10 | 4,554 | 415 | 1 | 295 | .. | 295 | 332,536 | 54,304 | 3,203 | 44,617 | 42,162 | 20 |
| 21 | Michigan | 6 | 1,606 | 313 | 4 | 121 | 1 | 5,789 | 239 | .. | 229 | .. | 1 | 3,173 | 150 | .. | 86 | 1 | 200 | 50 | 48 | 13 | 5,841 | 883 | 8 | 430 | 161 | 3 | 920 | 44 | .. | 19 | .. | 238 | 304,087 | 42,936 | 2,012 | 32,342 | 32,673 | 21 |
| 22 | Minnesota | 4 | 115 | 95 | 2 | 9 | .. | ..... | ... | .. | ... | .. | 1 | 10,159 | 191 | .. | 135 | 3 | 2,136 | 380 | 330 | 9 | 3,970 | 457 | .. | 309 | .. | 3 | 322 | 182 | .. | 148 | .. | 224 | 220,233 | 25,668 | 1,507 | 20,826 | 20,956 | 22 |
| 23 | Mississippi | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 4 | 1,304 | 157 | .. | 84 | .. | .. | ..... | ... | .. | ... | .. | 77 | 54,031 | 8,007 | 325 | 5,997 | 2,822 | 23 |
| 24 | Missouri | 2 | 3,222 | 320 | .. | 105 | 2 | 5,533 | 352 | 12 | 280 | .. | 1 | 6,110 | 14 | .. | 7 | 1 | 387 | 120 | 110 | 10 | 3,116 | 778 | .. | 647 | .. | 2 | 935 | 81 | .. | 69 | .. | 153 | 195,781 | 26,578 | 1,371 | 22,090 | 17,425 | 24 |
| 25 | Montana | 1 | ..... | 35 | .. | 5 | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 2 | 195 | 35 | 3 | 6 | .. | .. | ..... | ... | .. | ... | .. | 64 | 44,332 | 4,873 | 408 | 3,365 | 3,952 | 25 |
| 26 | Nebraska | 2 | 12 | 45 | 11 | 1 | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 1 | 108 | 120 | 99 | 8 | 727 | 287 | 10 | 198 | 56 | 2 | 302 | 34 | 2 | 18 | .. | 107 | 69,674 | 9,780 | 573 | 7,411 | 6,053 | 26 |
| 27 | Nevada | .. | ..... | ... | .. | ... | 1 | 487 | 40 | .. | 16 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | 21 | 5,382 | 965 | 49 | 685 | 476 | 27 |
| 28 | New Hampshire | 1 | 69 | 61 | .. | 2 | 1 | 313 | 30 | .. | 20 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 5 | 54 | 168 | .. | 68 | .. | .. | ..... | ... | .. | ... | .. | 47 | 31,317 | 4,770 | 317 | 3,709 | 3,610 | 28 |
| 29 | New Jersey | 6 | 3,322 | 911 | 12 | 407 | 2 | 862 | 95 | .. | 53 | .. | 4 | 4,751 | 112 | 5 | 67 | 5 | 3,050 | 711 | 412 | 14 | 4,168 | 625 | 3 | 421 | 19 | 3 | 767 | 173 | .. | 94 | .. | 169 | 250,543 | 37,190 | 2,143 | 29,213 | 30,588 | 29 |
| 30 | New Mexico | .. | ..... | ... | .. | ... | 1 | ..... | 30 | 8 | 14 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 1 | ..... | 100 | .. | 10 | .. | .. | ..... | ... | .. | ... | .. | 48 | 17,045 | 3,870 | 150 | 2,492 | 1,087 | 30 |
| 31 | New York | 8 | 10,159 | 1,245 | .. | 520 | 6 | 10,053 | 821 | 39 | 579 | 469 | 11 | 36,742 | 790 | 2 | 434 | 13 | 13,048 | 1,677 | 1,318 | 50 | 17,175 | 4,281 | 38 | 2,974 | 29 | 8 | 7,128 | 1,228 | .. | 1,048 | .. | 599 | 1,069,504 | 143,025 | 7,093 | 118,821 | 117,730 | 31 |
| 32 | North Carolina | .. | ..... | ... | .. | ... | 5 | 987 | 200 | 13 | 98 | 147 | 4 | 3,087 | 72 | .. | 25 | 1 | 327 | 160 | 137 | 7 | 1,014 | 215 | 6 | 30 | .. | 1 | ..... | 8 | .. | 6 | .. | 158 | 94,635 | 15,416 | 705 | 11,277 | 6,214 | 32 |
| 33 | North Dakota | 2 | 94 | 63 | .. | 3 | .. | ..... | ... | .. | ... | .. | 1 | 675 | 15 | 1 | 10 | .. | ..... | ... | ... | 1 | ..... | 50 | .. | 28 | .. | .. | ..... | ... | .. | ... | .. | 53 | 38,720 | 4,918 | 368 | 3,652 | 4,235 | 33 |
| 34 | Ohio | 3 | 258 | 150 | 3 | 24 | 5 | 7,250 | 501 | 8 | 339 | .. | 7 | 2,263 | 72 | 2 | 21 | 3 | 253 | 174 | 134 | 29 | 13,277 | 2,355 | 10 | 1,675 | 2 | 3 | 691 | 68 | .. | 42 | .. | 269 | 342,754 | 47,296 | 2,526 | 39,821 | 37,155 | 34 |
| 35 | Oklahoma | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 2 | 619 | 65 | 29 | 6 | 4,722 | 220 | .. | 73 | .. | .. | ..... | ... | .. | ... | .. | 126 | 84,721 | 11,573 | 566 | 9,204 | 6,671 | 35 |
| 36 | Oregon | 1 | 595 | 70 | 6 | 14 | 2 | 2,347 | 115 | .. | 51 | .. | 1 | 1,650 | 38 | .. | 14 | 1 | 193 | 60 | 50 | 5 | 1,234 | 141 | .. | 52 | .. | 1 | 604 | 35 | .. | 32 | .. | 84 | 67,765 | 8,723 | 543 | 7,201 | 6,462 | 36 |
| 37 | Pennsylvania | 6 | 5,832 | 1,386 | .. | 486 | 6 | 8,361 | 482 | 4 | 325 | .. | 3 | 6,068 | 188 | 5 | 117 | 8 | 1,325 | 719 | 591 | 29 | 5,738 | 1,587 | .. | 1,191 | 6 | 5 | 949 | 196 | .. | 129 | .. | 376 | 572,799 | 74,444 | 4,331 | 59,764 | 61,162 | 37 |
| 38 | Rhode Island | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 4 | 200 | 124 | .. | 92 | .. | 2 | 2,194 | 275 | .. | 160 | .. | 33 | 34,331 | 6,535 | 359 | 5,730 | 4,470 | 38 |
| 39 | South Carolina | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | 1 | 275 | 15 | .. | 5 | 1 | 368 | 60 | 61 | 7 | 682 | 193 | .. | 50 | .. | 1 | ..... | 12 | .. | 3 | .. | 64 | 44,531 | 6,338 | 236 | 5,186 | 2,716 | 39 |
| 40 | South Dakota | .. | ..... | ... | .. | ... | 1 | ..... | 24 | .. | 13 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 1 | 144 | 30 | .. | 15 | .. | .. | ..... | ... | .. | ... | .. | 65 | 41,658 | 5,083 | 346 | 3,923 | 3,718 | 40 |
| 41 | Tennessee | 2 | 250 | 170 | .. | 132 | 1 | 1,099 | 73 | 11 | 47 | 128 | 6 | 3,894 | 116 | .. | 25 | 3 | 1,233 | 146 | 98 | 6 | 1,286 | 275 | .. | 44 | .. | 2 | 84 | 28 | .. | 3 | .. | 109 | 101,883 | 12,937 | 504 | 10,346 | 7,281 | 41 |
| 42 | Texas | 1 | 37 | 50 | .. | ... | 2 | 894 | 95 | 5 | 51 | .. | 6 | 2,747 | 110 | .. | 38 | 2 | 580 | 83 | 69 | 11 | 2,297 | 778 | .. | 427 | .. | 3 | 771 | 51 | .. | 19 | .. | 305 | 229,097 | 28,601 | 1,395 | 20,615 | 18,816 | 42 |
| 43 | Utah | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 1 | ..... | 40 | 30 | 1 | ..... | 18 | .. | 3 | .. | .. | ..... | ... | .. | ... | .. | 34 | 27,074 | 2,507 | 211 | 1,788 | 4,312 | 43 |
| 44 | Vermont | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 4 | 100 | 84 | .. | 20 | .. | .. | ..... | ... | .. | ... | .. | 33 | 22,603 | 3,117 | 172 | 2,395 | 2,057 | 44 |
| 45 | Virginia | 1 | 218 | 60 | .. | 8 | 1 | ..... | 26 | .. | 16 | .. | 1 | ..... | 25 | .. | 4 | .. | ..... | ... | ... | 12 | 6,412 | 910 | 14 | 550 | 68 | .. | ..... | ... | .. | ... | .. | 114 | 110,495 | 16,460 | 580 | 13,750 | 6,608 | 45 |
| 46 | Washington | 2 | 332 | 126 | .. | 18 | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | 1 | 1,319 | 135 | 113 | 8 | 1,953 | 645 | .. | 392 | .. | .. | ..... | ... | .. | ... | .. | 121 | 111,487 | 15,772 | 973 | 12,191 | 10,846 | 46 |
| 47 | West Virginia | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | 1 | 353 | 10 | .. | 3 | 2 | 275 | 80 | 75 | 3 | 100 | 127 | .. | 110 | .. | .. | ..... | ... | .. | ... | .. | 78 | 92,205 | 8,687 | 453 | 6,761 | 3,521 | 47 |
| 48 | Wisconsin | 6 | 1,478 | 400 | .. | 120 | 1 | 3,373 | 155 | .. | 141 | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 10 | 1,162 | 457 | 12 | 313 | 12 | 4 | 8,212 | 165 | 10 | 46 | 4 | 229 | 205,597 | 27,807 | 1,553 | 21,817 | 22,499 | 48 |
| 49 | Wyoming | .. | ..... | ... | .. | ... | .. | ..... | ... | .. | ... | .. | .. | ..... | ... | .. | ... | .. | ..... | ... | ... | 1 | 10 | 6 | .. | ... | .. | .. | ..... | ... | .. | ... | .. | 29 | 13,491 | 2,053 | 120 | 1,507 | 1,401 | 49 |
| 50 | Totals..(1931) | 86 | 40,210 | 7,603 | 50 | 2,837 | 60 | 83,416 | 5,463 | 273 | 3,823 | 740 | 64 | 113,762 | 2,774 | 27 | 1,414 | 68 | 37,812 | 6,569 | 5,131 | 431 | 131,291 | 25,421 | 137 | 16,249 | 392 | 76 | 35,604 | 4,107 | 19 | 2,845 | 19 | 6,613 | 7,155,976 | 974,115 | 51,494 | 775,396 | 708,889 | 50 |
| 51 | (1930) | 88 | ...... | 7,608 | 44 | 2,490 | 62 | ...... | 5,597 | 258 | 3,756 | ... | 73 | ....... | 2,702 | 14 | 1,433 | 64 | ...... | 6,316 | 5,301 | 460 | ....... | 27,232 | 109 | 17,855 | ... | 126 | ...... | 10,140 | 95 | 7,943 | .. | 6,719 | ......... | 955,869 | 49,584 | 763,382 | ....... | 51 |
| 52 | (1929) | 86 | ...... | 7,422 | 29 | 2,077 | 61 | ...... | 5,443 | 248 | 3,586 | 862 | 68 | ....... | 2,646 | 12 | 1,263 | 61 | ...... | 5,943 | 4,768 | 473 | ....... | 24,732 | 170 | 15,584 | 277 | 127 | ...... | 9,305 | 79 | 6,943 | 1,539 | 6,665 | ......... | 907,133 | 47,939 | 726,766 | 621,896 | 52 |
| 53 | (1928) | 92 | ...... | 8,479 | 113 | ..... | 65 | ...... | 5,669 | 377 | ..... | ... | 77 | ....... | 2,879 | 21 | ..... | 64 | ...... | 5,713 | ..... | 529 | ....... | 22,831 | 161 | ...... | ... | 99 | ...... | 7,096 | 9 | ..... | .. | 6,825 | ......... | 892,934 | 43,313 | ....... | ....... | 53 |
| 54 | (1927) | 98 | ...... | 8,895 | ... | 3,264 | 58 | ...... | 5,050 | ... | 3,487 | ... | 77 | ....... | 2,832 | .. | 1,502 | 62 | ...... | 5,595 | 4,156 | 530 | ....... | 21,930 | ... | 12,453 | ... | 84 | ...... | 6,189 | .. | 5,139 | .. | 6,807 | ......... | 853,318 | ...... | 671,832 | ....... | 54 |

(CONTINUED FROM PAGE 2067)

### HOSPITALS ACCORDING TO TYPE OF SERVICE

The differentiation and classification of hospitals according to type of service has been a natural development. There are, for example, the general hospital, the hospital for nervous and mental patients, for those suffering from tuberculosis, and various other types. The general hospital naturally constitutes by far the largest group.

*Total Patient Days and Average Length of Stay in Hospitals According to Control*

| | 1923 | 1929 | 1931 | Percentage of Increase 1923 to 1931 | Average Length of Stay (Days) |
|---|---|---|---|---|---|
| Federal | 12,752,005 | 16,802,045 | 19,301,565 | 51.4 | 64 |
| State | 95,571,600 | 132,875,330 | 144,152,370 | 50.8 | 370 |
| County | 11,966,525 | 19,342,810 | 22,944,630 | 91.7 | 66 |
| City | 15,281,100 | 15,490,600 | 17,101,710 | 11.9 | 25 |
| City-county | 1,113,980 | 4,152,240 | 4,294,590 | 285.5 | 39 |
| Total governmental | 136,685,210 | 188,663,025 | 207,794,865 | 52.0 | 113 |
| Church | 17,901,790 | 27,656,050 | 26,977,515 | 50.7 | 13 |
| Fraternal | 1,163,255 | 1,323,855 | 1,394,300 | 19.8 | 31 |
| Industrial | 1,123,835 | 1,351,595 | 1,132,230 | 0.7 | 12 |
| Individual or partnership | 9,998,445 | 7,520,460 | 6,537,880 | 52.9* | 14 |
| Independent associations | 34,920,010 | 38,754,605 | 39,182,750 | 12.2 | 14 |
| Total nongovernmental | 65,107,335 | 76,606,565 | 75,224,675 | 15.5 | 14 |
| Grand total, all hospitals | 201,792,545 | 265,269,590 | 283,019,540 | 42.0 | 40 |

* Decrease.

### GENERAL HOSPITALS

In communities that are only large enough to support one hospital, and this is true of the majority of communities in the United States, that hospital will be general. General hospitals have about held their own in number, since there were 4,322 in 1927 and 4,309 in 1931. But they have increased steadily in number of beds. The total bed capacity is 384,333, the largest capacity ever shown by this group. There are, in addition, 45,434 bassinets. The general hospitals last year admitted 6,321,861 patients, about 88 per cent of all patients admitted to all hospitals during the year. Another evidence of the importance of general hospitals is the fact that in them there were 641,823 births, out of a total of 708,889 births in all hospitals. The general hospitals, therefore, conduct 90 per cent of all the maternity service in all hospitals—in fact, they take care of more than ten times as many births as the maternity hospitals themselves. The average number of patients in general hospitals has shown a constant and rather decided increase in each annual census, being 247,560 for the year 1931.

*Total Patient Days and Average Length of Stay in Hospitals According to Types of Service*

| | 1929 | 1930 | 1931 | Average Length of Stay (Days) |
|---|---|---|---|---|
| General | 85,413,285 | 87,740,160 | 90,359,400 | 14 |
| Nervous and mental | 144,323,555 | 151,490,330 | 155,904,275 | 1,593 |
| Tuberculosis | 18,508,055 | 20,575,780 | 20,472,120 | 254 |
| Maternity | 1,245,380 | 1,505,990 | 1,729,005 | 19 |
| Industrial | 1,395,760 | 1,330,790 | 1,138,070 | 12 |
| Convalescent and rest | 1,674,620 | 1,837,410 | 1,616,585 | 57 |
| Isolation | 977,105 | 908,850 | 1,035,505 | 26 |
| Chil | 1,308,890 | 1,370,940 | 1,395,395 | 17 |
| | 460,995 | 523,045 | 527,060 | 5 |
| | 1,740,320 | 1,934,865 | 1,872,815 | 50 |
| Hospital departments of institutions | 5,688,160 | 6,517,075 | 5,930,885 | 45 |
| All other hospitals | 2,533,465 | 2,899,195 | 1,038,425 | 29 |
| Totals | 265,269,590 | 278,634,430 | 283,019,540 | 40 |

The rate of occupancy in general hospitals was 64.4 in 1931 as compared with 65.5 for the year 1929. It is in the general hospitals that the majority of interns receive their fifth year in medicine; here, also, the majority of the schools of nursing are conducted. The term "general" is usually understood to include the care of all kinds of sickness and injuries with the exception of mental conditions, contagious diseases and tuberculosis. Those types of cases, however, will occasionally be included among the patients of all general hospitals—in fact, the present survey shows that 313 general hospitals have wards, buildings or departments set aside for mental patients. It is not unusual for a general hospital to have a tuberculosis ward, building or department; and a place for the isolation of contagious or infectious cases is a necessity generally provided for.

### HOSPITALS FOR NERVOUS AND MENTAL PATIENTS

Hospitals for nervous and mental patients have continued to increase in number during the last year, but data on this point must be interpreted with care. While the Register of Hospitals lists 587 such institutions this year, as against 561 last year, some of the additions to this list represent changes in classification made possible by more complete information rather than the building of new institutions.

*Unoccupied Beds in Hospitals*

| | Unoccupied Beds (Average) | | |
|---|---|---|---|
| | 1929 | 1930 | 1931 |
| (I) According to Ownership or Control | | | |
| Federal | 13,868 | 13,082 | 16,289 |
| State | 21,664 | 25,030 | 24,344 |
| County | 12,625 | 13,086 | 14,511 |
| City | 14,688 | 15,184 | 14,497 |
| City-county | 2,807 | 2,607 | 2,582 |
| Church | 37,785 | 41,684 | 43,024 |
| Fraternal | 1,656 | 1,827 | 1,708 |
| Industrial | 3,107 | 3,145 | 3,335 |
| Individual or partnership | 17,373 | 18,609 | 18,852 |
| Independent associations | 54,794 | 58,233 | 59,577 |
| Total unoccupied beds, all hospitals | 180,367 | 192,487 | 198,719 |
| (II) According to Type of Service | | | |
| General | 123,025 | 131,225 | 136,773 |
| Nervous and mental | 18,979 | 22,877 | 24,110 |
| Tuberculosis | 10,603 | 9,568 | 9,835 |
| Maternity | 2,022 | 2,401 | 3,341 |
| Industrial | 3,180 | 3,229 | 3,358 |
| Convalescent and rest | 1,886 | 2,340 | 1,694 |
| Isolation | 4,745 | 5,118 | 4,766 |
| Children's | 1,857 | 1,841 | 1,640 |
| Eye, ear, nose and throat | 1,383 | 1,269 | 1,330 |
| Orthopedic | 1,175 | 1,045 | 1,438 |
| Hospital departments of institutions | 9,148 | 9,377 | 9,172 |
| All other hospitals | 2,364 | 2,197 | 1,262 |
| Total unoccupied beds, all hospitals | 180,367 | 192,487 | 198,719 |

The bed capacity in this group of hospitals has experienced a more definite increase, the figures growing from 437,919 in 1930 to 451,245 in 1931. The number of patients during the same period has grov from 415,042 to 427,135. These figures recall the co ditional statement made in the Hospital Number THE JOURNAL two years ago to the effect that thei would be a half million patients in mental hospitals i the United States by 1934.

The Council has this year, for the first time, collected data regarding the number of admissions to hospitals. According to reports received, the first admissions to nervous and mental hospitals for the year numbered 97,889. Complete data regarding discharges are not available.

The increase in bed capacity and patient population of mental hospitals has taken place almost entirely in federal and state institutions. This would naturally be true in a year of economic depression, and it is more true of mental hospitals than of others, because here the custodial aspect of hospital care is more dominant.

In this connection the average period of a patient's hospitalization is interesting. In mental hospitals last year it was 1,593 days. In tuberculosis hospitals it was 254 days. In general hospitals it was 14 days. Such figures raise questions as to how long a patient ought to be hospitalized and what criteria should determine the length of his stay; and if a patient remains for a longer period, the question arises whether the care given him is primarily custodial or therapeutic. If a hospital bed is occupied by the same patient for five successive years, is it a hospital bed and is he a patient? While other mental patients may be truly ill and receiving hospital care, this particular patient may be disabled rather than ill and his bed may have no rightful place in hospital statistics. In any case, the data given regarding mental hospital capacities and patient populations must be interpreted with care before comparisons are made with other groups of hospitals in which custodial care is quite exceptional and therapy the primary reason for every day's hospitalization.

*Percentage of Beds Occupied in Hospitals According to Types of Service*

| | 1929 | 1930 | 1931 |
|---|---|---|---|
| General | 65.5 | 64.7 | 64.4 |
| Nervous and mental | 95.7 | 94.8 | 94.6 |
| Tuberculosis | 82.7 | 85.5 | 85.0 |
| Maternity | 62.8 | 63.2 | 58.6 |
| Industrial | 54.6 | 53.0 | 48.1 |
| Convalescent and rest | 70.9 | 68.3 | 72.3 |
| Isolation | 36.1 | 32.7 | 38.6 |
| Children's | 65.9 | 67.0 | 69.9 |
| Eye, ear, nose and throat | 47.7 | 53.0 | 52.0 |
| Orthopedic | 80.2 | 83.5 | 78.1 |
| Hospital departments of institutions | 63.0 | 65.5 | 63.9 |
| All other hospitals | 74.6 | 78.3 | 69.2 |
| Total hospitals | 80.1 | 79.8 | 79.6 |

Increased attention has been called to the mental hospital group this year by a survey now being conducted by the Council on Medical Education and Hospitals, and already nearing completion. Thus far two steps have been taken in this investigation. Questionnaires have been mailed to all mental hospitals, and personal visits have been made to nearly all of them. The responses from these hospitals have been unusually hearty and, as a result, a great body of information never before in the Council's possession is now being organized and prepared for publication.

The treatment of mental patients has by no means been confined to mental hospitals. Three hundred and thirteen general hospitals report that they have separate departments for mental patients. These departments have a combined capacity of 12,066, and last year their total admissions were 78,122. A larger number of mental patients are being treated in outpatient departments of mental hospitals and in mental hygiene clinics. Many of these were formerly patients in mental hospitals and are still carried on parole.

### TUBERCULOSIS HOSPITALS

Whether or not patients suffering from tuberculosis should be admitted to general hospitals has been a question under discussion, and it is generally believed that such patients can be handled in general hospitals safely and often to the convenience and economic advantage of the community. Just the extent to which general hospitals have instituted tuberculosis departments is not known. It is known, however, that special hospitals for tuberculosis number 509, with a bed capacity of 65,923. They admitted 80,562 patients last year, and the average daily census of patients in those hospitals was 56,088. Tuberculosis hospitals remain practically stationary in number but have increased in bed capacity since 1927 from 63,170 to 65,923. The average daily census of patients in those hospitals has increased in the same time from 50,784 to 56,088.

### MATERNITY HOSPITALS

Maternity hospitals number 145, showing a constant decrease in number from 178 five years ago. They admitted 91,496 patients, and the average daily census of patients in those hospitals was 4,737. The total births numbered 61,363. Maternity hospitals, although becoming fewer in number, show a decided increase in bed capacity as well as in the number of bassinets and the number of births.

### INDUSTRIAL HOSPITALS

As the result, no doubt, of the depression, industrial hospitals have decreased during the past year from a capacity of 6,875 beds to 6,476 beds. The number of bassinets has dropped from 474 to 438, and the average daily census of patients from 3,646 to 3,118. It is only in the number of births in industrial hospitals, 4,543, that this type of institution has held its ground. The apparent slump here is due not only to the business depression but also, doubtless, to the fact that some industries which heretofore have hospitalized their own patients are now making use of other hospitals in the communities.

### CONVALESCENT AND REST HOSPITALS

In no other type of institution is there indicated a more decided decrease during the past year than in the institutions for convalescence and rest. First, there is a decrease in number from 162 to 133 and in bed capacity from 7,374 to 6,123, while the average daily census of patients dropped from 5,034 to 4,429.

*Percentage of Beds Occupied in Hospitals According to Ownership or Control*

| | 1929 | 1930 | 1931 |
|---|---|---|---|
| Federal | 76.8 | 79.2 | 76.5 |
| State | 94.6 | 93.8 | 94.2 |
| County | 80.7 | 82.2 | 81.2 |
| City | 74.3 | 75.9 | 76.3 |
| City-county | 80.2 | 81.6 | 82.0 |
| Governmental | 88.9 | 88.8 | 88.7 |
| Church | 66.7 | 64.2 | 63.2 |
| Fraternal | 68.7 | 67.4 | 69 0 |
| | 54.4 | 53.1 | 48.2 |
| | 54.2 | 51.7 | 48.7 |
| | 65.9 | 65.4 | 64.3 |
| Nongovernmental | 64.6 | 63.2 | 61.9 |
| All hospitals | 80.1 | 79.8 | 79.6 |

### ISOLATION HOSPITALS

The census shows that there are 86 isolation hospitals which admitted 40,210 patients during the last year, the average number of patients being 2,837. There is little change in the number and capacity of this type of institution, except an increase of about 400 for the year in the average daily census of patients. But if the statistics on isolation hospitals are taken for a five year period, there has been a decrease of 12 hospitals and of 1,200 beds. Part of this general decrease may be due to the increased use of general hospitals for certain types of contagious diseases.

### CHILDREN'S HOSPITALS

The 60 existing children's hospitals with their 5,463 beds and 273 bassinets admitted 83,416 patients last year; the average daily census of patients was 3,823.

Evidently the practice of pediatrics is carried on to a much larger extent in the pediatric departments of general hospitals than in children's hospitals. The amount of work handled by children's hospitals seems to about keep pace with the increase in population. It is not unusual to find the care of children combined, in small institutions, with a maternity service, and in some instances with orthopedics or throat, nose and ear services.

*Increase in Eight Years According to Ownership or Control*

| Control | Hospitals 1923 | Hospitals 1931 | Bed Capacity 1923 | Bed Capacity 1931 | Aver. Patients 1923 | Aver. Patients 1931 |
|---|---|---|---|---|---|---|
| Federal | 220 | 291 | 53 869 | 69,170 | 34,937 | 52,881 |
| State | 601 | 576 | 302,208 | 419,282 | 261,840 | 394,938 |
| County | 465 | 508 | 46,571 | 77,373 | 32,785 | 62,862 |
| City | 415 | 364 | 64,599 | 61,351 | 42,140 | 46,854 |
| City-county | 35 | 77 | 4,701 | 14,348 | 3,052 | 11,766 |
| Total governmental | 1,736 | 1,816 | 471,948 | 641,524 | 374,754 | 569,301 |
| Church | 893 | 1,011 | 77,941 | 116,935 | 49,046 | 73,911 |
| Fraternal | 97 | 76 | 5,043 | 5,528 | 3,187 | 3,820 |
| Industrial | 146 | 135 | 5,750 | 6,437 | 3,079 | 3,102 |
| Individual or partnership | 1,762 | 1,560 | 45,719 | 36,764 | 27,393 | 17,912 |
| Independent associations | 2,196 | 2,015 | 149,341 | 166,927 | 95,674 | 107,350 |
| Total nongovernmental | 5,094 | 4,797 | 283,774 | 332,591 | 178,379 | 206,095 |
| Grand total, all hospitals | 6,830 | 6,613 | 755,722 | 974,115 | 553,133 | 775,396 |

EYE, EAR, NOSE AND THROAT HOSPITALS

The census of hospitals from year to year indicates a decline in this classification until, at the present, there are only 64 in the Register with a total bed capacity of 2,774 and an average daily census of 1,444 patients. There were 113,762 patients admitted. The majority of these hospitals are maintained by, or for, individual practitioners. The average length of stay per patient is five days.

ORTHOPEDIC HOSPITALS

The growth of orthopedic hospitals, which now number 68 with a total bed capacity of 6,569, seems to offer some justification for maintenance as specialized institutions. Figures are not obtainable by which the work of these institutions could be compared with that of the orthopedic departments of general hospitals. Reference to table 2 will enable the reader to trace the advance in the number and capacity of orthopedic hospitals. They admitted 37,842 patients during the last fiscal year.

*Summary of Growth of Hospitals, 1909 to 1931*

| | Federal Hospitals | | State Hospitals | | All Other Hospitals | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Number | Capacity | Number | Capacity | Number | Capacity | Number | Capacity |
| 1909 | 71 | 8,827 | 232 | 189,049 | 4,056 | 223,189 | 4,359 | 421,065 |
| 1914 | 93 | 12,602 | 294 | 232,834 | 4,650 | 287,045 | 5,037 | 532,481 |
| 1918 | 110 | 18,815 | 303 | 262,254 | 4,910 | 331,182 | 5,323 | 612,251 |
| 1923 | 220 | 53,869 | 601 | 302,208 | 6,009 | 399,645 | 6,830 | 755,722 |
| 1928 | 294 | 61,765 | 595 | 369,759 | 5,963 | 481,410 | 6,852 | 892,934 |
| 1931 | 291 | 69,170 | 576 | 419,282 | 5,746 | 485,663 | 6,613 | 974,115 |

HOSPITAL DEPARTMENTS OF INSTITUTIONS

The census of hospitals would not be complete without taking account of the small institutional hospitals maintained by schools, homes and other custodial institutions for the care of their own sick inmates. While there are 434 such hospitals, they have a capacity of 25,421 beds and an average of only 16,249 patients. Evidence seems to show that institutions are hospitalizing their patients in the existing hospitals of the community to an increasing extent.

ALL OTHER HOSPITALS

Hospitals that do not belong in any of the preceding classifications number 76 and have a total capacity of 4,107. They include such hospitals as those for pellagra, goiter, proctology and diabetes, and a few others.

LABORATORIES IN HOSPITALS

Laboratories in hospitals have increased faster than the number of hospitals. This growth can easily be noted in the accompanying table, in which it will be seen that the number of laboratories has mounted from 3,035 in 1923 to 4,233 in 1931, a gain of 39.5 per cent in eight years. In California alone, the number of hospital laboratories increased during the past eight years from 163 to 231; in Georgia from 47 to 86; Illinois, 174 to 250; Kentucky, 44 to 80; New York, 249 to 377; Oklahoma, 49 to 91; Texas, 92 to 215, and Virginia, 48 to 88.

*Laboratories, Roentgen-Ray Departments, Schools of Nursing and Social Service Departments*

| State | Laboratories 1923 | Laboratories 1931 | X-Ray Departments 1923 | X-Ray Departments 1931 | Schools of Nursing 1927 | Schools of Nursing 1931 | Social Service Departments 1931 |
|---|---|---|---|---|---|---|---|
| Alabama | 43 | 63 | 35 | 71 | 40 | 43 | 7 |
| Arizona | 27 | 26 | 18 | 35 | 3 | 4 | 5 |
| Arkansas | 30 | 52 | 29 | 55 | 26 | 16 | 5 |
| California | 163 | 231 | 184 | 269 | 55 | 61 | 87 |
| Colorado | 53 | 64 | 46 | 70 | 21 | 20 | 13 |
| Connecticut | 43 | 55 | 40 | 51 | 23 | 23 | 18 |
| Delaware | 8 | 10 | 6 | 11 | 5 | 7 | 4 |
| Dist. of Columbia | 17 | 21 | 19 | 19 | 13 | 12 | 15 |
| Florida | 26 | 57 | 26 | 67 | 18 | 16 | 14 |
| Georgia | 47 | 86 | 38 | 87 | 44 | 30 | 10 |
| Idaho | 26 | 31 | 27 | 38 | 9 | 10 | 1 |
| Illinois | 174 | 250 | 171 | 263 | 128 | 133 | 49 |
| Indiana | 63 | 98 | 67 | 103 | 34 | 30 | 19 |
| Iowa | 110 | 103 | 110 | 130 | 54 | 39 | 12 |
| Kansas | 74 | 82 | 70 | 96 | 57 | 43 | 9 |
| Kentucky | 44 | 80 | 42 | 84 | 29 | 29 | 8 |
| Louisiana | 37 | 53 | 33 | 53 | 20 | 17 | 10 |
| Maine | 32 | 40 | 30 | 52 | 31 | 30 | 8 |
| Maryland | 43 | 58 | 34 | 56 | 28 | 25 | 18 |
| Massachusetts | 140 | 178 | 118 | 186 | 94 | 97 | 63 |
| Michigan | 91 | 148 | 93 | 179 | 48 | 48 | 46 |
| Minnesota | 106 | 116 | 102 | 149 | 56 | 60 | 23 |
| Mississippi | 40 | 56 | 36 | 66 | 39 | 36 | 5 |
| Missouri | 75 | 112 | 67 | 111 | 42 | 44 | 27 |
| Montana | 27 | 35 | 30 | 43 | 17 | 14 | 3 |
| Nebraska | 58 | 59 | 55 | 70 | 27 | 18 | 5 |
| Nevada | 9 | 6 | 9 | 13 | .. | .. | .. |
| New Hampshire | 21 | 33 | 16 | 35 | 22 | 22 | 2 |
| New Jersey | 77 | 111 | 77 | 119 | 45 | 55 | 52 |
| New Mexico | 28 | 22 | 21 | 25 | 2 | 2 | 5 |
| New York | 249 | 377 | 242 | 401 | 142 | 143 | 176 |
| North Carolina | 76 | 113 | 63 | 114 | .. | 49 | 12 |
| North Dakota | 25 | 28 | 21 | 34 | 16 | 17 | 1 |
| Ohio | 139 | 189 | 134 | 179 | 72 | 80 | 56 |
| Oklahoma | 49 | 91 | 46 | 100 | 36 | 21 | 7 |
| Oregon | 27 | 39 | 20 | 55 | 15 | 12 | 8 |
| Pennsylvania | 245 | 274 | 212 | 269 | 165 | 153 | 121 |
| Rhode Island | 13 | 17 | 9 | 16 | 9 | 11 | 13 |
| South Carolina | 24 | 43 | 19 | 44 | 30 | 29 | 9 |
| South Dakota | 35 | 47 | 31 | 45 | 19 | 19 | 3 |
| Tennessee | 50 | 75 | 43 | 73 | 34 | 32 | 17 |
| Texas | 92 | 215 | 77 | 230 | 72 | 65 | 18 |
| Utah | 17 | 15 | 13 | 26 | 6 | 6 | 4 |
| Vermont | 12 | 20 | 11 | 22 | 12 | 12 | 3 |
| Virginia | 48 | 88 | 38 | 91 | 43 | 41 | 12 |
| Washington | 54 | 68 | 64 | 84 | 26 | 29 | 10 |
| West Virginia | 37 | 60 | 40 | 66 | 42 | 40 | 4 |
| Wisconsin | 96 | 121 | 85 | 139 | 38 | 41 | 22 |
| Wyoming | 15 | 17 | 15 | 21 | 7 | 4 | 5 |
| Totals | 3,035 | 4,233 | 2,841 | 4,615 | 1,814 | 1,788 | 1,044 |

Through the inspection of hospitals, and also by the Council's survey of pathologists and clinical pathologists, it is learned that practically all hospitals of standing—whether they train interns or not—have their laboratory work supervised by competent physician-pathologists.

ROENTGEN-RAY DEPARTMENTS

From 2,841 roentgen-ray departments in 1923 to 4,615 at the present time, or an increase of 62 per cent in eight years, is the record which hospitals have set. The state of New York, which reported 242 roentgen-ray departments eight years ago, now has 401. Large increases are registered for Florida, Kentucky, New Hampshire, Oklahoma, South Carolina, Utah, Vermont and Virginia, each of which has a growth of 100 per cent or more over the number of roentgen-ray departments reported in 1923. Through the inspection of hospitals and correspondence with those which are not inspected we are able to know that the hospitals which had not already made arrangements to have the roentgen-ray work supervised by competent physician-radiologists are rapidly establishing such services.

### SCHOOLS OF NURSING

The number of schools of nursing, as shown in the accompanying table, includes all schools that are approved by their respective state boards of nursing examiners. Schools that are affiliated on a basis approved by the state boards are also included. The figures, which indicate a decline in the number of schools from 1,814 to 1,788, require some study and interpretation. For example, North Carolina is credited with 49 schools in 1931 and with none in 1927, because in the former year the board of nursing examiners in that state had not established its list of accredited schools. A considerable number of hospitals have discontinued their schools of nursing. Some hospitals also have had recognition of their schools withdrawn by their state board of nurse examiners. Arkansas in the past five years has reduced its number of schools of nursing from 26 to 16; Georgia, 44 to 30; Iowa, 54 to 39; Kansas, 57 to 43; Nebraska, 27 to 18; Oklahoma, 36 to 21; Wyoming, 7 to 4, and Texas, with an increase of 28 hospitals for that period, shows a decrease of schools of nursing from 72 to 65.

### SOCIAL SERVICE DEPARTMENTS

This year, for the first time, the census included the social service departments by asking each hospital whether it has such a department. An affirmative reply was made by 1,044 hospitals. No definition or qualification was placed on the term "social service department." As would be expected, New York leads with a total of 176, followed by Pennsylvania with 121; California, 87; Massachusetts, 63; Ohio, 56, and New Jersey, 52.

### PHYSICIANS CONNECTED WITH HOSPITALS

With each annual census, particular attention is paid to the number of physicians connected with hospitals. By the census of 1931, it is learned that 116,363 physicians have hospital connection. Serving as superintendents or administrative officers are 2,346 physicians; interns, 7,054; resident physicians, 4,580, and staff, including regular, consultant and courtesy staffs, and physicians bringing patients occasionally, 102,383. Under interns were included those who were taking their fifth year in medicine, or hospital year; also those who were continuing their internship for a second or third year of additional experience and some who were serving partial terms as interns pending the beginning of their regular internships. Under resident physicians were included those who are receiving training in some specialty as well as those who were engaged on salary to do the work of a resident, whether actually residing in a hospital building or not.

In order to find out the actual number of physicians on the regular, consultant and courtesy staffs, including those who occasionally use the hospital, it was necessary to eliminate duplicates. The Committee on the Costs of Medical Care, using the Council's lists of physicians connected with hospitals in ten representative states in 1928, found by actual count that the duplicate appointments constituted thirty-four one hundredths of the total. Since this factor of duplication is presumably applicable to all states, and since it would not change materially from year to year, the coefficient 0.34 was employed to eliminate duplicates from our 1931 census, which gives a net total of 116,363 physicians connected with hospitals. This is comparable with 90,903 physicians connected with hospitals in 1928.

*Physicians Connected with Hospitals*

| State | Physicians Serving as Superintendents | Interns | Resident Physicians | Staff* | Total, 1931 | Total, 1928 |
|---|---|---|---|---|---|---|
| Alabama | 31 | 35 | 30 | 990 | 1,086 | 950 |
| Arizona | 37 | ... | 8 | 480 | 525 | 364 |
| Arkansas | 35 | 21 | 30 | 790 | 876 | 603 |
| California | 146 | 419 | 390 | 6,882 | 7,837 | 6,422 |
| Colorado | 41 | 34 | 69 | 1,982 | 2,126 | 1,418 |
| Connecticut | 30 | 126 | 116 | 1,669 | 1,941 | 1,351 |
| Delaware | 4 | 9 | 13 | 222 | 248 | 180 |
| Dist. of Columbia | 20 | 127 | 80 | 1,188 | 1,415 | 825 |
| Florida | 33 | 22 | 29 | 928 | 1,012 | 729 |
| Georgia | 48 | 80 | 69 | 1,363 | 1,560 | 1,343 |
| Idaho | 20 | 1 | ... | 230 | 251 | 259 |
| Illinois | 103 | 576 | 212 | 6,684 | 7,575 | 5,467 |
| Indiana | 45 | 113 | 64 | 2,591 | 2,813 | 1,990 |
| Iowa | 48 | 83 | 38 | 2,009 | 2,178 | 1,865 |
| Kansas | 32 | 26 | 33 | 1,287 | 1,378 | 1,141 |
| Kentucky | 50 | 48 | 48 | 1,412 | 1,558 | 1,084 |
| Louisiana | 27 | 160 | 66 | 1,218 | 1,471 | 1,080 |
| Maine | 27 | 12 | 16 | 646 | 701 | 645 |
| Maryland | 39 | 194 | 207 | 1,832 | 2,272 | 2,041 |
| Massachusetts | 109 | 391 | 373 | 5,995 | 6,868 | 5,770 |
| Michigan | 90 | 304 | 280 | 3,562 | 4,236 | 3,425 |
| Minnesota | 81 | 179 | 69 | 2,779 | 3,108 | 2,543 |
| Mississippi | 39 | 8 | 19 | 534 | 600 | 480 |
| Missouri | 66 | 289 | 105 | 3,374 | 3,834 | 2,919 |
| Montana | 22 | 3 | 27 | 329 | 381 | 304 |
| Nebraska | 40 | 46 | 40 | 858 | 984 | 820 |
| Nevada | 14 | ... | ... | 56 | 70 | 84 |
| New Hampshire | 11 | 5 | 8 | 456 | 480 | 402 |
| New Jersey | 56 | 277 | 171 | 3,712 | 4,216 | 3,099 |
| New Mexico | 21 | ... | 11 | 185 | 217 | 202 |
| New York | 216 | 1,603 | 888 | 16,162 | 18,869 | 15,163 |
| North Carolina | 52 | 48 | 60 | 1,620 | 1,780 | 1,209 |
| North Dakota | 13 | 2 | 2 | 336 | 353 | 288 |
| Ohio | 78 | 361 | 242 | 4,733 | 5,414 | 4,483 |
| Oklahoma | 42 | 33 | 34 | 1,023 | 1,132 | 921 |
| Oregon | 24 | 42 | 15 | 980 | 1,061 | 986 |
| Pennsylvania | 115 | 719 | 282 | 7,638 | 8,754 | 6,889 |
| Rhode Island | 14 | 42 | 32 | 1,101 | 1,189 | 888 |
| South Carolina | 22 | 38 | 25 | 716 | 801 | 617 |
| South Dakota | 23 | ... | 8 | 268 | 299 | 270 |
| Tennessee | 57 | 100 | 70 | 1,368 | 1,595 | 1,252 |
| Texas | 117 | 129 | 113 | 3,574 | 3,933 | 2,379 |
| Utah | 16 | 22 | 2 | 324 | 364 | 250 |
| Vermont | 10 | 12 | 8 | 360 | 390 | 273 |
| Virginia | 40 | 96 | 63 | 1,361 | 1,560 | 1,357 |
| Washington | 44 | 65 | 20 | 1,606 | 1,735 | 1,311 |
| West Virginia | 35 | 31 | 20 | 817 | 903 | 656 |
| Wisconsin | 50 | 123 | 75 | 2,011 | 2,259 | 1,778 |
| Wyoming | 13 | ... | ... | 124 | 137 | 128 |
| Totals | 2,346 | 7,054 | 4,580 | 102,383 | 116,363 | 90,903 |

* Duplicates eliminated.

### PHYSICIANS' OFFICES IN HOSPITALS

Inquiry was made as to whether any physicians have offices in the hospital, where they meet their private ambulatory patients in the same way that they see patients in their own offices. This, it is recognized, is different from an outpatient service conducted under the auspices of the hospital. Nine hundred and fifty-three hospitals reported that physicians do see their own private ambulatory patients in the hospital, and it appears that most of these have an office, or office hours, in the hospital. The number of physicians using hospital facilities in this way is 4,510, and the number of ambulatory patients is 731,351.

### HOSPITALS IN THE UNITED STATES POSSESSIONS

Although Alaska, the Canal Zone and the insular possessions of the United States are scattered far and are not dependent on one another, the statistics regarding their hospital service are for convenience shown in one table. Their 202 hospitals are not included in the 6,613 hospitals included in the main report.

Reports were received from 90 registered hospitals in the Philippine Islands as compared to 76 one year ago. The number of hospitals in other territories remains about stationary, with a slight increase in the number of beds and the average daily census of patients.

*Hospitals in United States Possessions*

| | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births |
|---|---|---|---|---|---|---|
| Alaska | 17 | 1,785 | 445 | 45 | 218 | 126 |
| Canal Zone | 10 | 16,605 | 1,986 | 40 | 1,396 | 982 |
| Guam | 1 | 2,777 | 120 | ... | 104 | 90 |
| Hawaii | 42 | 24,693 | 4,328 | 141 | 2,992 | 1,090 |
| Philippine Islands | 90 | 53,734 | 8,340 | 325 | 5,914 | 4,962 |
| Porto Rico | 40 | 5,250 | 2,554 | 88 | 1,750 | 298 |
| Virgin Islands | 2 | ...... | 128 | 12 | 64 | ..... |
| Totals | 202 | 104,844 | 17,901 | 651 | 12,438 | 7,548 |

## OUTPATIENT DEPARTMENTS OF HOSPITALS

Outpatient departments were reported by 2,042 hospitals. The number of visits made by outpatients during the year was told us by 1,361 hospitals, and the total number of visits reported amount to 23,431,382, as compared with 13,804,566 visits by outpatients in 1927. The questionnaire by which these results were obtained simply asked: "Is there an outpatient department, or outpatient clinic, maintained by the hospital?" and if so, "Total number of outpatients last fiscal year. . . . Total visits by outpatients last fiscal year." Purposely, no limit was placed on the size or other qualifications necessary to constitute an outpatient department. The accompanying table of outpatient service by states, comparing 1927 and 1931, serves to show a slight decrease in the number of outpatient departments, but an increase in number of outpatients and the number of outpatient visits during the past five years, the only period for which comparable figures are available.

*Outpatient Service by States—Comparing 1927 and 1931*

| State | Number of Outpatient Departments 1927 | Number of Outpatient Departments 1931 | Number of Outpatients 1927 | Number of Outpatients 1931 | Number of Visits by Outpatients 1927 | Number of Visits by Outpatients 1931 |
|---|---|---|---|---|---|---|
| Alabama | 34 | 27 | 83,337 | 54,500 | 95,391 | 231,403 |
| Arizona | 41 | 27 | 171,592 | 85,388 | 33,088 | 253,219 |
| Arkansas | 17 | 13 | 8,043 | 34,740 | 10,343 | 38,155 |
| California | 116 | 117 | 558,569 | 478,664 | 762,819 | 1,752,496 |
| Colorado | 26 | 22 | 36,868 | 23,764 | 56,408 | 109,982 |
| Connecticut | 20 | 32 | 60,109 | 97,628 | 82,903 | 153,306 |
| Delaware | 10 | 9 | 20,346 | 14,606 | 3,424 | 36,595 |
| Dist. of Columbia | 20 | 16 | 46,957 | 104,983 | 139,499 | 224,430 |
| Florida | 28 | 29 | 23,453 | 43,796 | 60,824 | 110,317 |
| Georgia | 35 | 33 | 184,654 | 55,243 | 335,926 | 839,784 |
| Idaho | 13 | 9 | 2,555 | 4,045 | 6,205 | 16,207 |
| Illinois | 97 | 91 | 357,044 | 319,379 | 471,363 | 991,405 |
| Indiana | 38 | 30 | 51,301 | 56,002 | 87,960 | 196,846 |
| Iowa | 35 | 28 | 44,551 | 52,600 | 52,576 | 90,417 |
| Kansas | 39 | 31 | 87,787 | 81,890 | 24,345 | 203,939 |
| Kentucky | 43 | 27 | 61,396 | 86,664 | 23,821 | 138,884 |
| Louisiana | 25 | 21 | 318,490 | 39,696 | 220,891 | 519,862 |
| Maine | 19 | 27 | 23,420 | 22,918 | 42,637 | 84,300 |
| Maryland | 43 | 33 | 111,089 | 180,733 | 476,891 | 615,486 |
| Massachusetts | 113 | 122 | 271,950 | 354,491 | 1,059,847 | 1,636,043 |
| Michigan | 73 | 82 | 275,443 | 258,252 | 710,568 | 1,219,370 |
| Minnesota | 49 | 45 | 145,356 | 129,375 | 223,491 | 336,379 |
| Mississippi | 20 | 25 | 34,048 | 15,368 | 27,803 | 37,588 |
| Missouri | 43 | 38 | 122,718 | 164,136 | 378,590 | 448,508 |
| Montana | 19 | 15 | 85,059 | 26,173 | 31,578 | 64,395 |
| Nebraska | 24 | 16 | 25,766 | 17,531 | 62,556 | 49,802 |
| Nevada | 7 | 4 | 6,994 | 2,728 | 14,863 | 19,948 |
| New Hampshire | 18 | 22 | 5,841 | 9,447 | 23,507 | 18,773 |
| New Jersey | 89 | 85 | 256,210 | 366,947 | 408,258 | 930,146 |
| New Mexico | 21 | 15 | 31,342 | 41,268 | 25,780 | 146,068 |
| New York | 216 | 230 | 1,528,776 | 1,753,315 | 3,907,752 | 6,373,959 |
| North Carolina | 65 | 69 | 62,922 | 99,218 | 82,282 | 150,667 |
| North Dakota | 8 | 7 | 8,117 | 9,506 | 965 | 7,131 |
| Ohio | 84 | 80 | 116,097 | 221,872 | 708,793 | 781,039 |
| Oklahoma | 34 | 35 | 73,611 | 63,599 | 106,007 | 164,202 |
| Oregon | 15 | 17 | 22,572 | 33,388 | 5,335 | 122,475 |
| Pennsylvania | 199 | 191 | 723,640 | 911,651 | 2,163,024 | 2,827,412 |
| Rhode Island | 18 | 15 | 40,788 | 39,587 | 124,499 | 190,531 |
| South Carolina | 18 | 25 | 39,509 | 56,274 | 63,579 | 121,761 |
| South Dakota | 18 | 14 | 22,194 | 11,503 | 50,599 | 70,982 |
| Tennessee | 27 | 34 | 81,343 | 126,903 | 153,281 | 357,680 |
| Texas | 73 | 69 | 196,315 | 182,906 | 179,867 | 455,888 |
| Utah | 8 | 9 | 32,221 | 4,822 | 19,145 | 27,691 |
| Vermont | 10 | 10 | 4,273 | 8,215 | 3,461 | 12,119 |
| Virginia | 40 | 39 | 94,689 | 72,405 | 129,666 | 240,372 |
| Washington | 41 | 31 | 67,953 | 63,440 | 51,680 | 160,740 |
| West Virginia | 28 | 29 | 40,660 | 20,020 | 42,717 | 68,894 |
| Wisconsin | 42 | 39 | 64,893 | 36,123 | 54,543 | 232,412 |
| Wyoming | 11 | 8 | 17,527 | 25,022 | 3,216 | 31,374 |
| Totals | 2,130 | 2,042 | 6,750,388 | 6,962,724 | 13,804,566 | 23,431,382 |

Especially significant is the number of visits per outpatient in 1927 as compared with 1931. In 1927 the 6,750,388 outpatients made 13,804,566 visits, a ratio of one and nine-tenths visits per outpatient. In 1931, the 6,962,724 outpatients made 23,431,382 visits, a ratio of three and four-tenths visits per outpatient. The number of times that a patient goes to the outpatient department measures the efficiency of the work of that department.

*Outpatient Departments of Hospitals According to Number of Visits by Patients During the Year*

| | |
|---|---|
| Outpatient departments having less than 1,000 visits during 1931 | 296 |
| From 1,000 to 4,999 | 385 |
| From 5,000 to 19,999 | 386 |
| From 20,000 to 99,999 | 255 |
| 100,000 and over | 39 |
| Not reporting number of visits | 681 |
| Total outpatient departments reported | 2,042 |

## CLASSIFICATION

(*a*) *Hospitals and Sanatoriums;* (*b*) *Related Institutions.*—In this issue for the second time the list of hospitals registered by the American Medical Association is given in two sections, (*a*) 5,130 hospitals and sanatoriums, and (*b*) 1,483 related institutions.

The related institutions, because of their special or limited nature, do not deserve to be regarded as hospitals but are, so far as we know, entirely ethical and render a needed nursing or medical service to their communities.

Among the related institutions will be noted some that bear the name of general hospitals. The majority of these have been found lacking in some of the services that are usually found in a general hospital.

*Hospitals, Sanatoriums and Related Institutions*

| | Hospitals | Patients Admitted | Beds | Bassinets | Average Patients | Births |
|---|---|---|---|---|---|---|
| Hospitals and sanatoriums | 5,130 | 6,851,403 | 823,744 | 49,283 | 651,983 | 698,328 |
| Related institutions | 1,483 | 304,574 | 150,371 | 2,211 | 123,413 | 10,561 |
| Total registered hospitals | 6,613 | 7,155,976 | 974,115 | 51,494 | 775,396 | 708,889 |

Among the essential features, one or more of which is usually lacking in these small institutions, are adequate laboratory service, staff organization, radiologic service, record system, and consultation to safeguard the best interests of patients.

Among the 6,613 institutions appearing on the registered list are 5,130 hospitals having a capacity of 823,744 beds, and 1,483 related institutions with a total capacity of 150,371 beds.

## HOW THE FACTS WERE OBTAINED

The figures shown in these articles were obtained through: (1) reports made by the hospitals themselves using a form which is ordinarily filled out in the superintendent's office and signed by the superintendent; (2) verification, when necessary, and additional facts, if desired, obtained by special correspondence; (3) by inspection, and (4) finally, the Association's county correspondents, district councilors and others.

The response of hospitals in cooperating with the Association to make the census as complete as possible has been highly gratifying.

HOSPITALS REFUSED REGISTRATION

Not included in any of the lists of statistics in this issue are 490 institutions which because of alleged unethical or criminal practices, admission to their staffs of members who are seriously unqualified, either morally or professionally, flagrant methods of advertising or for other valid reasons, are deemed unworthy of being included in any published list of reputable hospitals. The exclusion of such institutions from the Council's published lists marks the development of an aggressive campaign to establish safeguards against irresponsible or malicious institutions which are a menace to the public. For these reasons, therefore, they are excluded from lists of institutions held out as worthy of receiving the public's patronage. The 490 unregistered institutions have only 14,968 beds.

*Hospitals Not Registered by the American Medical Association*

| State | Number of Hospitals | Beds | Bassinets |
|---|---|---|---|
| Alabama | 2 | 40 | 7 |
| Arizona | 2 | 49 | 6 |
| Arkansas | 7 | 172 | 17 |
| California | 67 | 2,320 | 333 |
| Colorado | 15 | 552 | 44 |
| Connecticut | .. | ..... | ... |
| Delaware | .. | ..... | ... |
| Dist. of Columbia | .. | ..... | ... |
| Florida | 16 | 280 | 25 |
| Georgia | 2 | 35 | 6 |
| Idaho | 3 | 94 | 11 |
| Illinois | 30 | 1,026 | 107 |
| Indiana | 17 | 842 | 33 |
| Iowa | 14 | 433 | 38 |
| Kansas | 22 | 616 | 58 |
| Kentucky | 8 | 202 | 8 |
| Louisiana | 1 | 26 | 2 |
| Maine | 5 | 61 | 14 |
| Maryland | 4 | 81 | ... |
| Massachusetts | 10 | 307 | 67 |
| Michigan | 17 | 511 | 90 |
| Minnesota | 8 | 212 | 14 |
| Mississippi | 2 | 90 | 1 |
| Missouri | 30 | 1,572 | 63 |
| Montana | 5 | 81 | 10 |
| Nebraska | 22 | 530 | 77 |
| Nevada | 1 | 20 | .. |
| New Hampshire | 1 | 25 | .. |
| New Jersey | 4 | 131 | 8 |
| New Mexico | 1 | 20 | 1 |
| New York | 23 | 640 | 182 |
| North Carolina | 6 | 183 | 4 |
| North Dakota | 3 | 55 | 3 |
| Ohio | 28 | 779 | 83 |
| Oklahoma | 18 | 451 | 38 |
| Oregon | 7 | 245 | 23 |
|  | 21 | 388 | 44 |
|  | 1 | 60 | .. |
|  | 1 | 22 | 2 |
|  | 3 | 130 | 11 |
|  | 9 | 149 | 2 |
| Texas | 21 | 579 | 34 |
| Utah | .. | ... | .. |
| Vermont | .. | ... | .. |
| Virginia | 3 | 54 | 4 |
| Washington | 16 | 395 | 47 |
| West Virginia | 2 | 60 | 12 |
| Wisconsin | 10 | 365 | 21 |
| Wyoming | 2 | 85 | 10 |
| Totals | 490 | 14,968 | 1,560 |

HOSPITALS AS EDUCATIONAL INSTITUTIONS

Retrenchments which all hospitals have had to make in expenditures as the result of current economic circumstances do not seem to have affected internships in any readily discernible way. More positions are being offered than ever before and the keen competition among hospitals for suitable interns continues. The explanation probably lies in the fact that an intern corps is a relatively small drain on the financial resources of a hospital when the type of service which the interns are prepared to give is considered.

On the other hand, economic conditions are making interns timorous of entering active practice in the face of limited opportunities and strong established competition. We find them remaining longer in hospitals and protracting their term of training as senior interns, assistant residents or the like.

This presentation of statistics reveals 691 approved hospitals offering 6,054 internships. These are the highest figures yet attained. In 1914, when the first accurate statistics on internships were collected by the American Medical Association, 508 hospitals were provisionally approved, in which 2,667 interns were employed. The actual conditions under which interns serve are in much greater contrast than the figures indicate. Eighteen years ago hospitals were not anxious to have interns. Many of them were unmindful of the future importance to medical education of intern training. However, the years witnessed a steady increase in the interest which hospitals were developing regarding internships. This trend is largely explained by the fact that the medical colleges were producing far better qualified graduates, men who because of real ability were welcome within the hospitals. Furthermore, hospitals had for a long time been interested in education, a development first exemplified by the rise in standards for nursing education and the attention that was being focused on hospitals as the principal means for self improvement on the part of the average staff member. In other words, it was not difficult for individual hospitals to develop a consciousness of their true educational importance.

THE AVERAGE APPROVED INTERNSHIP HOSPITAL OF 1932

The table presents in compact form some of the characteristics of the present internship hospital. Six hundred and nineteen hospitals, offering 6,054 openings, compete strongly for the 4,735 members in graduating classes. This is a discrepancy of 1,319 positions as contrasted with 1,019 positions in 1931. These figures tell in realistic fashion the popularity which the intern enjoys in hospitals.

The difference in the totals of columns three and one represents the tendency on the part of hospitals to retain interns for a second year of intern service. Three hundred and eighty-nine interns are employed in excess of the number of graduates. It also represents the willingness of many interns to defer the plunge into actual practice under present conditions.

The figures in the table are presented by states in order to illustrate certain facts about the distribution of interns, where the greatest demand lies for their services and also which localities produce the greatest number. *It will be seen that in most cases the production and demand go hand in hand; that is, the populous centers which need a greater number of doctors usually produce the most. Notable exceptions are Nebraska, which produces four times the actual number of interns that are serving in that state, whereas New Jersey produces none and offers 244 positions.*

The fifth and sixth columns indicate in quite convincing fashion the present incomplete coverage of available clinical material. No intern can successfully serve the number of patients which forty-two beds represent in the average hospital—daily occupancy and average length of stay considered. Some hospitals still require their interns in addition to other duties to maintain acceptable charts on all admissions. The result of this practice is bad from the standpoint both of the records and of the interns. On the one hand the charts are hurriedly and sketchily compiled and on the other the interns develop hasty and slipshod tendencies entirely incompatible with present careful methods of study.

*Characteristics of Internship Hospitals*

| State | Number of Med. Grad. | No. of Internships Offered | No. of Interns (Actual) | No. of Hospitals Approved | Total Bed Capacity App. Hosp. | Beds per Intern | Interns per Hosp. |
|---|---|---|---|---|---|---|---|
| Alabama | ... | 27 | 21 | 4 | 934 | 45 | 5 |
| Arizona | ... | 1 | 1 | 1 | 184 | 184 | 1 |
| Arkansas | 32 | 11 | 7 | 4 | 706 | 101 | 2 |
| California | 183 | 410 | 369 | 37 | 15,023 | 41 | 10 |
| Colorado | 48 | 40 | 27 | 12 | 4,155 | 154 | 2 |
| Connecticut | 48 | 110 | 97 | 17 | 4,736 | 49 | 6 |
| Delaware | ... | 6 | 6 | 1 | 200 | 33 | 6 |
| Dist. of Columbia | 230 | 97 | 109 | 12 | 4,768 | 44 | 9 |
| Florida | ... | 24 | 20 | 5 | 1,082 | 54 | 4 |
| Georgia | 73 | 59 | 47 | 7 | 1,385 | 32 | 7 |
| Idaho | ... | ... | ... | ... | ..... | ... | .. |
| Illinois | 501 | 541 | 421 | 53 | 15,785 | 38 | 8 |
| Indiana | 102 | 107 | 102 | 15 | 4,389 | 43 | 7 |
| Iowa | 90 | 79 | 63 | 11 | 2,684 | 43 | 6 |
| Kansas | 58 | 26 | 22 | 5 | 1,125 | 51 | 4 |
| Kentucky | 87 | 51 | 31 | 8 | 1,954 | 62 | 4 |
| Louisiana | 100 | 133 | 140 | 8 | 3,798 | 27 | 17 |
| Maine | ... | 10 | 8 | 4 | 705 | 88 | 2 |
| Maryland | 160 | 207 | 178 | 16 | 5,835 | 27 | 11 |
| Massachusetts | 302 | 301 | 206 | 31 | 10,585 | 51 | 7 |
| Michigan | 213 | 256 | 235 | 25 | 10,857 | 46 | 9 |
| Minnesota | 123 | 131 | 88 | 19 | 5,369 | 61 | 5 |
| Mississippi | ... | ... | ... | ... | ..... | ... | .. |
| Missouri | 191 | 267 | 231 | 24 | 6,930 | 30 | 10 |
| Montana | ... | 4 | 2 | 2 | 291 | 145 | 1 |
| Nebraska | 161 | 50 | 39 | 11 | 2,055 | 53 | 4 |
| Nevada | ... | ... | ... | ... | ..... | ... | .. |
| New Hampshire | ... | 4 | 2 | 1 | 140 | 70 | 2 |
| New Jersey | ... | 244 | 226 | 36 | 9,578 | 42 | 6 |
| New Mexico | ... | ... | ... | ... | ..... | ... | .. |
| New York | 645 | 1,225 | 989 | 93 | 34,696 | 35 | 11 |
| North Carolina | ... | 35 | 38 | 11 | 1,783 | 47 | 4 |
| North Dakota | ... | 4 | 2 | 2 | 340 | 170 | 1 |
| Ohio | 196 | 305 | 285 | 36 | 11,438 | 40 | 8 |
| Oklahoma | 43 | 31 | 15 | 5 | 1,392 | 96 | 3 |
| Oregon | 59 | 40 | 35 | 5 | 1,450 | 42 | 7 |
| Pennsylvania | 517 | 682 | 597 | 78 | 23,366 | 39 | 8 |
| Rhode Island | ... | 31 | 28 | 4 | 1,250 | 45 | 7 |
| South Carolina | 41 | 24 | 26 | 4 | 693 | 27 | 7 |
| South Dakota | ... | ... | ... | ... | ..... | ... | .. |
| Tennessee | 154 | 84 | 58 | 10 | 2,547 | 44 | 6 |
| Texas | 145 | 108 | 82 | 20 | 5,244 | 64 | 4 |
| Utah | ... | 21 | 19 | 5 | 1,297 | 67 | 4 |
| Vermont | 31 | 5 | 4 | 1 | 145 | 36 | 4 |
| Virginia | 141 | 66 | 66 | 9 | 2,583 | 39 | 7 |
| Washington | ... | 50 | 52 | 13 | 3,304 | 64 | 4 |
| West Virginia | ... | 17 | 20 | 4 | 896 | 45 | 5 |
| Wisconsin | 106 | 130 | 110 | 22 | 5,572 | 51 | 5 |
| Wyoming | ... | ... | ... | ... | ..... | ... | .. |
| Totals | 4,735 | 6,054 | 5,124 | 691 | 213,269 | 42 | 7 |

The comparison between columns six and seven is a further indication that not many hospitals in the United States are overstaffed with interns—if twenty-five beds per intern may be accepted as representing an ideal ratio. Actually a few hospitals do provide more interns than one for each twenty-five beds, but the great majority of institutions do not reach these figures and in some instances are grossly understaffed.

### FUTURE INTERNSHIPS

More and more hospitals each year are asking for approval based on a genuine compliance with the "Essentials of a Hospital Approved for Interns." The necropsy requirement of 15 per cent on hospital deaths, which proved a stumbling block for many, presents no longer any marked difficulty. Other features that are desirable in an educational program must in the future be emphasized. In place of the size of hospitals and actual amount of clinical material, greater consideration may be placed on how the clinical material is used and whether it is sufficiently diversified. Above all, much more complete dependence must be placed on the teaching ability of the staff. The approved internship hospital of the future will no doubt take on more and more the aspects of an organized educational institution with teaching duties designated to capable staff members. Quite possibly a recurring evaluation at periodic intervals of the results being obtained in the training of interns will occur and the correction of obviously faulty or inadequate methods will result. The internship committee is becoming a more and more important body, and none but the ablest staff members should be included in its membership.

### COMPENSATION FOR INTERNS

Reference to the table, which presents the latest available figures, will furnish indisputable proof that compensation in itself is still an unimportant consideration in the choice of internships. It will be noticed that although a greater number of hospitals must pay their interns in order to attract applicants, even so fewer interns are paid. The large hospitals using more interns per hospital usually offer such valuable teaching opportunities as to make the receipt of a salary a minor consideration. The smaller general hospitals in which organized teaching is relatively meager find themselves unable to compete with the larger institutions unless a financial consideration is introduced as an attraction. The best salaries are paid by the service hospitals (army, navy, public health), which are established by government pay tables according to rank and length of service.

*Salaries of Interns in Approved Hospitals, 1923-1930*

| | Number of Hospitals | | | | | Number of Interns | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1923 | 1925 | 1927 | 1929 | 1930 | 1923 | 1925 | 1927 | 1929 | 1930 |
| No salary | 195 | 192 | 184 | 169 | 159 | 1,660 | 2,187 | 2,541 | 2,675 | 2,842 |
| $25 per month or less | 151 | 148 | 201 | 218 | 228 | 907 | 905 | 1,446 | 1,588 | 1,653 |
| $26 to $50 per month | 96 | 95 | 130 | 152 | 158 | 323 | 379 | 567 | 631 | 628 |
| $51 to $100 per month | 15 | 15 | 9 | 15 | 12 | 44 | 42 | 28 | 58 | 40 |
| Over $100 per month | 2 | 3 | 20 | 21 | 22 | 27 | 40 | 178 | 150 | 196 |
| Salary and bonus | .. | 8 | 23 | 26 | 61 | .. | 50 | 145 | 138 | 445 |
| Bonus only | 5 | 6 | 1 | 4 | 6 | 24 | 37 | 5 | 63 | 125 |
| Fees; salary and fees | 3 | 1 | 1 | .. | .. | 10 | 8 | 9 | .. | .. |
| Varies each 3 or 6 months | .. | .. | 8 | 13 | 10 | .. | .. | 31 | 60 | 139 |
| In lieu of maintenance | .. | .. | .. | 4 | 3 | .. | .. | .. | 37 | 41 |
| No fixed amount | 23 | 22 | .. | .. | .. | 78 | 87 | .. | .. | .. |
| No report | 20 | 34 | 1 | 4 | 5 | 46 | 90 | 2 | 15 | 15 |
| Totals | 510 | 524 | 578 | 626 | 664 | 3,110 | 3,825 | 4,952 | 5,415 | 6,124 |

### RESIDENCIES IN SPECIALTIES

The hospital internship is not considered in any sense as graduate medical education. It is widely known as the fifth year in medicine, culminating in effective fashion the preceding years in medical school and of demonstrated value as an introduction to the actual practice of medicine. For physicians planning to enter into a specialty, the internship is now considered as a preliminary requirement and is demanded in all recognized postgraduate medical schools.

The hospitals do, however, afford many admirable facilities useful in advanced training. Residencies in specialties as now served by 2,144 men in 372 hospitals exemplify in true fashion the acknowledgment on the part of the younger medical profession of the value of these opportunities.

The usual residency as offered in most hospitals is a continuous twelve months' service under the direct supervision of competent attending physicians, proficient in the theory and practice of the specialty. There can be no doubt that such training is insufficient for the development of sound, safe specialists. The opinion of medical educators, many of whom deplore the present emphasis on specialization, is that such a term of service should be introductory only to the particular clinical branch of medicine, preparatory to or concurrent with study in a recognized postgraduate medical center. In recognition of these obvious facts, some of the leading teaching hospitals, mostly associated with medical schools, require periods of resident service for three, and in a few instances as long as five, years.

Residents, often, are required to teach undergraduates and interns. As may be expected, this is by no means the least effective part of the training of the resident himself. Also, a great deal of confidence can be placed in the quality of instruction which these men impart:

The Council on Medical Education and Hospitals of the American Medical Association approves residencies in twenty-eight specialties, basing its approval on certain well defined principles. It is in entire accord with the view that a residency is in itself no adequate preparation for the practice of a specialty. But the increasing interest manifested in the certification of specialists makes the residency increasingly important. No doubt, the demand for these positions will increase.

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## ESSENTIALS OF A REGISTERED HOSPITAL

*General Statement.*—The American Medical Association gives recognition to hospitals by admitting to the Hospital Register those that are found to qualify according to the essentials contained in the following paragraphs.

Registration is a basic distinction between all recognized hospitals and those that are refused recognition. It is a prerequisite to the consideration of a hospital for approval for interns or for residencies in specialties.

The registration of hospitals, the approval of hospitals for interns, approval for residencies in specialties, and all other service of the Association regarding hospitals is carried on by the Council on Medical Education and Hospitals.

It is the desire of the Council to cooperate in every way for the improvement of hospital service, whereby the sick and injured may be provided with scientific and ethical medical care.

The Council does not have nor does it assume legal authority over any hospital. It recognizes clearly that the officers in charge of such institutions have the unquestioned right to conduct the hospitals in any way they may deem wise. If a hospital desires to have its name appear on the American Medical Association Hospital Register and thus have the endorsement of that Association, it should be willing to comply with the principles which the Council on Medical Education and Hospitals considers necessary.

*Essentials of a Registered Hospital.*—Hospitals seeking admission to the register should have the following qualifications:

1. *Organization.*—The organization should consist of a board of trustees or other supreme governing body having final authority and responsibility and an executive officer or superintendent to carry out the policies adopted by the governing body. The executive officer should be assisted by adequate competent personnel.

Regardless of the form of organization, the hospital should function primarily in the interests of the sick and injured of the community.

2. *Staff.*—This constitutes the most important essential. The staff should be organized and composed of regular physicians who are properly qualified as to training, licensure and ethical standing.

Staff membership and the use of the hospital's facilities must be limited to doctors in medicine. Where cult practitioners, osteopaths, chiropractors or other healers outside the scope of regular medicine are allowed to use the hospital's diagnostic facilities, to prescribe for or treat patients in the hospital, or to enter orders or other data on the case records, such a hospital obviously cannot be recognized or endorsed by the American Medical Association.

Regular staff conferences should be held at least monthly and preferably more often. All deaths that occur during the period intervening between meetings, perplexing cases, and patients who do not respond to treatment should be discussed. When postmortem examinations have been performed there should be a presentation of the clinical aspect of the patient and the postmortem observations. Interesting pathological specimens from surgery or removed at postmortem should be presented and discussed with regard to the preoperative or antemortem findings.

Minutes of staff conferences should be kept and filed with the hospital records. The activity of the staff as to scientific meetings and clinical and pathologic conferences is an index to the scientific mindedness and progressiveness of the group.

3. *Nurses.*—A competent nursing staff should be provided by employing an adequate number of registered nurses who are graduates of schools of nursing recognized by the state board of nurse examiners, or by maintaining such a school.

All nursing should be supervised by qualified registered graduates.

4. *Records.*—An adequate record system should be maintained. No particular system or set of forms is recommended, since requirements are not the same under varying circumstances. The average case record should include at least a brief medical history, physical examination, laboratory reports, diagnosis, operative record, progress notes, nurses' notes and summary. Case records should be complete in every department and reviewed and signed by the attending physicians before they are placed in the permanent file. Roentgenologic interpretations, pathologic descriptions and diagnoses of tissues removed in the operating room, and (when an autopsy has been performed) a description of postmortem observations, should be included with the patient's record.

Case histories and physical examinations should be recorded in the patient's chart within twenty-four hours after the patient has been admitted to the hospital. A patient should not be operated on, except in the case of emergency, when the history, physical examination and routine laboratory work have not been completely recorded in the chart. The duty of recording these data falls on the attending physician and he should be held directly responsible for the case records.

Monthly and annual analyses of hospital service should be made in order that the staff may be in a position to improve its service.

5. *Pathology.*—All tissues removed in the operating room should be examined, described and diagnosed by a competent pathologist excepting tissues, such as tonsils and teeth, in which the pathologic changes are quite obvious.

A physician-pathologist should be employed on a full time or part time basis. When this is not practicable, arrangements should be made with a consulting pathologist for tissue diagnosis, postmortem work and the interpretation of the more complicated tests and determinations in clinical and surgical pathology, as well as in general clinical laboratory work. The pathologist preferably should be one listed by the Council on Medical Education and Hospitals of the American Medical Association. The Council's list of physicians specializing in clinical pathology or pathology is available on application.

*Autopsies.*—Every effort should be made to secure consent for autopsies, which should be performed by a pathologist or the best qualified other physician available.

6. *Radiology.*—The hospital should provide or have ready access to radiologic equipment and service. When a full time or part time physician-roentgenologist cannot be employed, the services of such a consultant should be secured. Radiologic interpretations must be made only by a competent roentgenologist. A description of the roentgenologic examinations should be placed in the patient's chart. The physician-roentgenologist preferably should be one listed by the Council on Medical Education and Hospitals of the American Medical Association.

A list of physicians specializing in radiology and roentgenology is available on application.

7. *Ethics.*—In order that a hospital may be eligible for registration it will, of course, be expected that the staff and management conform to the principles of medical ethics of the American Medical Association with regard to advertising, commissions, division of fees, secret remedies, extravagant claims, overcommercialization and in all other respects.

# HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,613 hospitals, sanatoriums and related institutions that are located in the United States and 202 in the insular possessions. It omits the names of 490 hospitals which, after investigation, were not accepted. The inclusion of the name of any institution may be taken as an indication that evidence concerning irregular or unsafe practices in that institution has not come to the attention of the Council on Medical Education and Hospitals. For convenience, the list in each state is given in two sections: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include nursing homes, school infirmaries, prison infirmaries, custodial and other institutions designed to give some medical, nursing or convalescent care in an ethical and acceptable manner, but not strictly hospitals; also some general hospitals lacking certain essentials. In the statistics the two classifications are consolidated.

## KEY TO SYMBOLS AND ABBREVIATIONS

★ Approved for general internship, the fifth year in medicine, by the Council on Medical Education and Hospitals.

+ Approved for residency in a specialty for graduates in medicine who have already had a general internship or its equivalent in practice.

◊ School of nursing accredited by board of nurse examiners for state in which it is located.

⊙ Affiliated for nurse training on state accredited basis.

■ Accepts Negro patients (not applicable to nervous and mental hospitals).

▲ Department for mental patients.

The column headed "Type of Service" tells what diseases or conditions are treated in each institution, as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Chil | Children's | Epil | Epileptic | Iso | Isolation | N&M | Nervous and mental |
| Conv | Convalescence and Rest | EENT | Eye, Ear, Nose and Throat | Inst | Institutional | Ortho | Orthopedic |
| Chron | Chronic | Gen | General | Mater | Maternity | Sk&Ca | Skin and Cancer |
| Dr&Al | Drug and Alcoholic | Indus | Industrial | MenDef | Mentally Deficient | TB | Tuberculosis |

The column headed "Control" indicates for each institution the ownership, control, or auspices under which it is conducted as follows:

| | | | | | |
|---|---|---|---|---|---|
| Cy&Co | City and County | Indian | U. S. Indian Service | Part | Partnership |
| Fed | Federal | Indiv | Individually owned | USPHS | United States Public Health Service |
| Frat | Fraternal | Indus | Industrial | VetAd | Veterans Administration |
| Indep | Independent hospital association | | | | |

## ALABAMA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alabama City, 8,544—Etowah Co. | | | | | | | | |
| Etowah Co. Tuber. Hosp. | TB | County | 25 | 20 | .. | No | ... | ..... |
| Albertville, 2,716—Marshall Co. | | | | | | | | |
| Sand Mountain Infirmary | Gen | Indiv | 24 | 9 | 2 | No | 9 | 202 |
| Alexander City, 4,519—Tallapoosa Co. | | | | | | | | |
| *Russell Hospital*⊙■ | Gen | Indiv | 54 | 7 | 2 | No | 15 | 340 |
| Andalusia, 5,154—Covington Co. | | | | | | | | |
| Andalusia City Hospital⊙■ | Gen | Indep | 20 | 8 | 1 | No | 8 | ..... |
| Covington County Hosp.⊙ | Gen | County | 25 | 15 | 2 | Yes | ... | ..... |
| Anniston, 22,345—Calhoun Co. | | | | | | | | |
| Garner Hospital◊■ | Gen | City | 59 | 30 | 6 | Yes | 68 | 1,069 |
| Station Hospital | Gen | Army | 50 | 8 | .. | Yes | ... | 412 |
| Atmore, 3,035—Escambia Co. | | | | | | | | |
| Atmore General Hospital■ | Gen | Indep | 24 | 8 | 2 | No | 30 | 328 |
| Bellamy, 317—Sumter Co. | | | | | | | | |
| Bellamy Hospital■ | Gen | Indiv | 16 | 5 | 2 | No | 13 | 178 |
| Bessemer, 20,721—Jefferson Co. | | | | | | | | |
| Bessemer General Hosp.◊ | Gen | Indep | 70 | 33 | 5 | No | 62 | 1,267 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 50 | 15 | 8 | No | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible] pital+◊ | Gen | Church | 153 | 73 | 14 | Yes | 260 | 3,288 |
| Children's Hospital | Chil | Indep | 50 | 34 | .. | Yes | ... | 937 |
| Hill Crest Sanitarium | N&M | Indiv | 50 | 25 | .. | No | ... | 170 |
| Hillman Hospital★◊■ | Gen | County | 300 | 274 | 40 | Yes | 1,138 | 7,650 |
| Jefferson Sanatorium | TB | County | 100 | 80 | .. | No | ... | 209 |
| Norwood Hospital★◊■ | Gen | Indep | 200 | 76 | 10 | Yes | 118 | 2,798 |
| St. Vincent's Hospital+◊■ | Gen | Church | 113 | 80 | 12 | No | 206 | 3,371 |
| South Highlands Infirm.◊■ | Gen | Part | 120 | 80 | 20 | No | 590 | 3,536 |
| Woodlawn Hospital | Gen | Indep | 75 | 27 | 9 | ... | 86 | ..... |
| [illegible] | | | | | | | | |
| [illegible]■ | Gen | Indiv | 15 | 2 | 1 | No | 4 | 94 |
| [illegible]■ | Gen | Indep | 28 | 13 | 2 | Yes | 7 | 238 |
| [illegible] | | | | | | | | |
| Benevolent Society Hosp.⊙ | Gen | Indep | 44 | 23 | 5 | No | 46 | 693 |
| Dothan, 16,046—Houston Co. | | | | | | | | |
| Dr. M. S. Davie's Private Hospital⊙ | Gen | Indiv | 50 | 17 | 6 | No | ... | ..... |
| Frasier-Ellis Hospital◊■ | Gen | Part | 65 | 52 | 6 | Yes | 61 | 2,856 |
| Moody Hospital◊■ | Gen | Indiv | 93 | 55 | 7 | Yes | 45 | 2,388 |
| Enterprise, 3,702—Coffee Co. | | | | | | | | |
| Coffee County Mem. Hosp.⊙ | Gen | County | 44 | 4 | 2 | Yes | ... | ..... |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | Indiv | 50 | 30 | 6 | Yes | 25 | 900 |
| [illegible]■ | Gen | Indiv | 45 | 12 | 6 | No | 20 | 489 |
| [illegible] Co. | | | | | | | | |
| [illegible] the Tennessee Coal, Iron and Railroad *Company*★+■ | Gen | Indus | 287 | 199 | 23 | Yes | 415 | 6,129 |
| Fairhope, 1,549—Baldwin Co. | | | | | | | | |
| Bay View Sanatorium | Gen | Indep | 15 | 5 | 4 | Yes | ... | ..... |
| Florala, 2,580—Covington Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 40 | 11 | 4 | ... | 18 | 483 |
| [illegible]■ | Gen | City | 50 | 28 | 6 | No | 46 | 882 |
| [illegible] | Gen | Indiv | 50 | 14 | 5 | Yes | ... | ..... |

## ALABAMA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Holy Name of Jesus Hospital⊙■ | Gen | Church | 120 | 17 | 10 | No | 47 | 1,090 |
| Greensboro, 1,795—Hale Co. | | | | | | | | |
| Greensboro Hospital■ | Gen | Indep | 16 | 4 | 2 | No | 10 | 135 |
| Greenville, 3,985—Butler Co. | | | | | | | | |
| *Speir's Hospital*■ | Gen | Indiv | 32 | 9 | 4 | No | 20 | 247 |
| Stabler Infirmary■ | Gen | Indiv | 18 | 8 | 3 | No | 16 | 207 |
| Gurley, 581—Madison Co. | | | | | | | | |
| *E. O. Williamson Hosp'tal.* | Gen | Indiv | 14 | 5 | 1 | No | ... | ..... |
| Huntsville, 11,554—Madison Co. | | | | | | | | |
| Huntsville Hospital⊙■ | Gen | City | 70 | 19 | 5 | No | 44 | 877 |
| Jackson, 1,828—Clarke Co. | | | | | | | | |
| South Alabama Infirmary■ | Gen | Indiv | 18 | 4 | 2 | No | 40 | 190 |
| Jasper, 5,313—Walker Co. | | | | | | | | |
| Walker County Hospital⊙■ | Gen | Indep | 50 | 22 | 3 | No | 55 | 813 |
| [illegible] | | | | | | | | |
| [illegible] | Surg | Indus | 15 | 5 | .. | No | ... | ..... |
| [illegible] | | | | | | | | |
| City Hospital◊■ | Gen | City | 162 | 125 | 18 | Yes | 323 | 5,848 |
| Mobile Co. Tuber. Sanit.■ | TB | Indep | 54 | 38 | .. | No | ... | 47 |
| Mobile Infirmary◊ | Gen | Indep | 56 | 48 | 8 | No | 175 | 2,062 |
| Providence Infirmary◊■ | Gen | Church | 100 | 52 | 12 | No | 229 | 2,048 |
| U. S. Marine Hospital■ | Gen | USPHS | 90 | 94 | .. | Yes | ... | 849 |
| M[illegible] Co. | | | | | | | | |
| [illegible] | | Indiv | 40 | 21 | 12 | No | 204 | 1,264 |
| [illegible]■ | | Indep | 65 | 32 | .. | No | ... | 69 |
| [illegible] | | Church | 125 | 60 | 12 | No | ... | ..... |
| [illegible] | | Army | 13 | 3 | .. | Yes | ... | 143 |
| Mt. Vernon, 810—Mobile Co. | | | | | | | | |
| Searcy Hospital (col.) | N&M | State | 1,203 | 1,290 | .. | No | ... | 379 |
| Opelika, 6,156—Lee Co. | | | | | | | | |
| East Alabama Hospital⊙ | Gen | Indep | 25 | 5 | 4 | No | 23 | 2,104 |
| Ozark, 3,103—Dale Co. | | | | | | | | |
| Grace Hospital | Gen | Indiv | 17 | 7 | 4 | No | 14 | ..... |
| Roanoke, 4,373—Randolph Co. | | | | | | | | |
| Knight Sanatorium⊙■ | Gen | Indiv | 39 | 15 | 3 | Yes | 18 | 521 |
| Scottsboro, 2,304—Jackson Co. | | | | | | | | |
| Hodges Hospital■ | Gen | Indiv | 20 | 10 | 2 | No | 6 | 125 |
| Selma, 18,012—Dallas Co. | | | | | | | | |
| *Burwell Infirmary (col.)*⊙ | Gen | Indiv | 25 | 7 | .. | No | 3 | 228 |
| Goldsby King Mem. Hosp. | Gen | Indep | 52 | 32 | 10 | No | 37 | 1,065 |
| Good Samaritan Hospital (col.) | Gen | Indep | 30 | 12 | .. | ... | ... | ..... |
| Selma Baptist Hospital | Gen | Church | 63 | 41 | 8 | Yes | 163 | 1,530 |
| [illegible] | Gen | Indep | 60 | 22 | 8 | Yes | 29 | 917 |
| [illegible] | | | | | | | | |
| [illegible]■ | Gen | Cy&Co | 75 | 9 | 5 | No | 23 | 552 |
| Sylacauga, 4,115—Talladega Co. | | | | | | | | |
| [illegible] Hosp.⊙■ | Gen | Indus | 50 | 26 | 15 | No | 103 | 367 |
| [illegible]■ | Gen | Part | 20 | 5 | 4 | No | 30 | 575 |
| [illegible]■ | Gen | Indep | 46 | 8 | 4 | No | 20 | 285 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | Indep | 30 | 9 | 4 | No | 16 | 471 |
| Troy, 6,814—Pike Co. | | | | | | | | |
| Beard Memorial Hospital⊙■ | Gen | Part | 35 | 10 | 2 | No | 14 | 753 |
| Edge Hospital⊙■ | Gen | Indiv | 25 | 10 | 4 | ... | 15 | 431 |
| T[illegible] Co. | | | | | | | | |
| [illegible] | N&M | State | 2,610 | 2,652 | .. | No | ... | ..... |
| [illegible] | Gen | City | 80 | 51 | 8 | No | ... | ..... |

## ALABAMA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Tuskegee, 3,314—Macon Co. | | | | | | | | |
| Veterans Admin. Hosp. (col.)▲ | Gen | VetAd | 747 | 569 | .. | Yes | ... | 988 |
| John A. Andrew Memorial Hospital (col.)★◊ | Gen | Indep | 75 | 40 | 5 | Yes | 42 | 1,583 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Altoona, 1,098—Etowah Co. | | | | | | | | |
| Klein Hospital | Gen | Indiv | 12 | 4 | 3 | Yes | 26 | 162 |
| Birmingham, 259,678—Jefferson Co. | | | | | | | | |
| Alabama Boys' Industrial School | Inst | State | 30 | 8 | .. | No | ... | 1,296 |
| Children's Home Hospital (col.) | Chil | Indep | 20 | 7 | 3 | Yes | 5 | 491 |
| Miss Quinn's Nursing Home | Conv | Indep | 10 | 8 | .. | No | ... | ..... |
| Salvation Army Home and Hospital | Mater | Church | 50 | 43 | 30 | No | 84 | 117 |
| Demopolis, 4,037—Marengo Co. | | | | | | | | |
| Hand-Bailey Hospital■ | Gen | Indiv | 14 | 2 | 4 | No | 9 | 45 |
| East Tallassee, 2,040—Tallapoosa Co. | | | | | | | | |
| Community Hospital | Gen | Indep | 18 | 4 | 1 | No | 8 | 161 |
| Flomaton, 915—Escambia Co. | | | | | | | | |
| Flomaton Hospital | Gen | Indiv | 12 | 7 | 4 | No | 28 | 320 |
| Livingston, 1,072—Sumter Co. | | | | | | | | |
| State Teachers College Infirmary | Inst | State | 9 | 3 | .. | No | ... | 304 |
| Mobile, 68,202—Mobile Co. | | | | | | | | |
| Mobile County Poor Asylum Hospital | Inst | County | 20 | 10 | .. | No | ... | 4 |
| Taylor's Infirmary (col.) | Gen | Indiv | 8 | 4 | .. | No | ... | ..... |
| Monroeville, 1,355—Monroe Co. | | | | | | | | |
| Monroeville Infirmary■ | Gen | Indiv | 10 | 2 | .. | No | ... | 100 |
| | | State | 30 | 4 | .. | No | ... | 1,012 |
| Co. | | | | | | | | |
| | | Indiv | 35 | 22 | 6 | No | 36 | 786 |
| Hale Infirmary (col.)⊙ | Gen | Indep | 35 | 17 | 8 | No | ... | ..... |
| Kilby Prison Hospital | Inst | State | 52 | 40 | .. | No | ... | ..... |
| Miriam Jackson Home | Inst | Church | 25 | 4 | .. | No | ... | 647 |
| Mountain Creek, 375—Chilton Co. | | | | | | | | |
| Jefferson Manly Falkner Soldiers' Home | Inst | State | 20 | 18 | .. | No | ... | ..... |
| Selma, 18,012—Dallas Co. | | | | | | | | |
| Alabama Methodist Orphanage | | Church | 6 | 3 | .. | No | ... | 165 |
| Talladeg | | | | | | | | |
| Goodnc | | Indep | 18 | 1 | .. | No | ... | 98 |
| Tuscaloosa, 20,659—Tuscaloosa Co. | | | | | | | | |
| Partlow State School for Mental Defectives | MenDef | State | 525 | 495 | .. | No | ... | ..... |
| Wetumpka, 2,357—Elmore Co. | | | | | | | | |
| State Convict Tuberculosis Hospital□ | Inst | State | 100 | 85 | .. | No | ... | 72 |

| Summary for Alabama: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 73 | 8,836 | 6,708 | 69,680 |
| Related institutions | 22 | 1,071 | 797 | 5,770 |
| Totals | 95 | 9,907 | 7,505 | 75,450 |
| Refused registration | 2 | 40 | | |

## ARIZONA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ajo, 3,050—Pima Co. | | | | | | | | |
| New Cornelia Miner Hosp.■ | Gen | Indus | 30 | 16 | 5 | Yes | 76 | 353 |
| Bisbee, 8,023—Cochise Co. | | | | | | | | |
| Copper Queen Hospital■ | Gen | Indus | 35 | 17 | 6 | Yes | 132 | 827 |
| Douglas, 9,828—Cochise Co. | | | | | | | | |
| Cochise County Hospital■ | Gen | County | 100 | 70 | 4 | Yes | 18 | 367 |
| Station Hospital■ | Gen | Army | 15 | 5 | .. | Yes | ... | 165 |
| Florence, 1,318—Pinal Co. | | | | | | | | |
| Pinal County Hospital■ | Gen | County | 20 | 10 | 1 | No | 12 | 150 |
| Ft. Defiance, 39—Apache Co. | | | | | | | | |
| Southern Navajo General Hospital■ | Gen | Indian | 90 | 34 | 4 | Yes | 47 | 1,202 |
| Southern Navajo Sanat. | TB | Indian | 45 | 36 | .. | No | ... | 122 |
| Ft. Huachuca, 1,214—Cochise Co. | | | | | | | | |
| Station Hospital□ | Gen | Army | 40 | 19 | 4 | Yes | 15 | 558 |
| Ganado, 34—Apache Co. | | | | | | | | |
| Sage Memorial Hospital◊ | Gen | Church | 75 | 28 | 5 | Yes | 18 | 589 |
| Globe, 7,157—Gila Co. | | | | | | | | |
| Gila County Hospital■ | Gen | County | 55 | 48 | 5 | No | 61 | 700 |
| Jerome, 4,932—Yavapai Co. | | | | | | | | |
| United Verde Hospital□ | Gen | Indus | 52 | 30 | 4 | Yes | 77 | 1,190 |
| Keams Canyon, 36—Navajo Co. | | | | | | | | |
| Hopi Hospital | Gen | Indian | 42 | 15 | 4 | Yes | 9 | 576 |
| Kingman, 2,050—Mohave Co. | | | | | | | | |
| Mohave County Hospital | Gen | County | 35 | 11 | 5 | No | 34 | 192 |
| Leupp, 58—Coconino Co. | | | | | | | | |
| Leupp School and Agency Hospital | Gen | Indian | 50 | 21 | 4 | Yes | ... | 766 |
| Mesa, 3,711—Maricopa Co. | | | | | | | | |
| South Side District Hosp. | Gen | Indep | 25 | 11 | 1 | No | 29 | 497 |
| Miami, 7,693—Gila Co. | | | | | | | | |
| Miami-Inspiration Hosp.■ | Gen | Indus | 45 | 16 | 4 | Yes | 70 | 511 |

## ARIZONA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Morenci, 6,175—Greenlee Co. | | | | | | | | |
| Phelps-Dodge Hospital□ | Gen | Indus | 18 | 3 | 3 | Yes | 34 | 265 |
| Nogales, 6,006—Santa Cruz Co. | | | | | | | | |
| St. Joseph's Hospital□ | Gen | Church | 30 | 10 | 4 | No | ... | 304 |
| Station Hospital■▲ | Gen | Army | 50 | 11 | .. | Yes | ... | 227 |
| Phoenix, 48,118—Maricopa Co. | | | | | | | | |
| Arizona Sanatorium | TB | Indiv | 45 | 17 | .. | No | ... | 25 |
| Arizona State Hospital | N&M | State | 600 | 778 | .. | No | ... | 219 |
| Booker T. Washington Mem. Hospital & Sanat. (col.) | Gen | Indiv | 25 | 8 | 7 | Yes | 28 | 342 |
| Good Samaritan Hosp.◊■ | Gen | Church | 130 | 63 | 20 | Yes | 360 | 2,740 |
| Maricopa Co. Tuber. Hosp. | TB | County | 37 | 38 | .. | No | ... | 96 |
| Phoenix Indian Hospital | Gen | Indian | 60 | 21 | 3 | Yes | 18 | 1,052 |
| Phoenix Indian Sanat. | TB | Indian | 130 | 110 | .. | No | ... | 154 |
| Phoenix Sanatorium | TB | Indiv | 75 | 30 | .. | No | ... | 50 |
| St. Joseph's Hospital★◊■ | Gen | Church | 157 | 120 | 16 | No | 441 | 4,924 |
| Prescott, 5,517—Yavapai Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 33 | 5 | 8 | No | ... | ..... |
| Pamsetgaaf Sanatorium | TB | Indiv | 25 | 18 | .. | No | ... | ..... |
| Ray, 2,450—Pinal Co. | | | | | | | | |
| Ray Hospital■ | Gen | Indus | 20 | 9 | 4 | Yes | 32 | 268 |
| Sacaton, 315—Pinal Co. | | | | | | | | |
| Pima Indian Hospital | Gen | Indian | 50 | 32 | 10 | Yes | 68 | 886 |
| Safford, 1,706—Graham Co. | | | | | | | | |
| Morris-Squibb Hospital | Gen | Part | 20 | 5 | 2 | No | 15 | 260 |
| San Carlos, 48—Gila Co. | | | | | | | | |
| U. S. Indian Service Hosp. | Gen | Indian | 30 | 10 | 6 | Yes | 8 | 419 |
| Sells, 61—Pima Co. | | | | | | | | |
| Indian Oasis Hospital | Gen | Indian | 43 | 18 | 4 | Yes | 17 | 266 |
| Superior, 2,525—Pinal Co. | | | | | | | | |
| Magma Hospital■ | Gen | Indus | 15 | 3 | 4 | Yes | 6 | 35 |
| Tuba City, 100—Coconino Co. | | | | | | | | |
| Western Navajo Indian School Hospital | Gen | Indian | 40 | 16 | 4 | Yes | 1 | 565 |
| Tucson, 32,506—Pima Co. | | | | | | | | |
| Barfield Sanatorium | TB | Indiv | 32 | 26 | .. | No | ... | 36 |
| Desert Sanatorium and Institute of Research | Gen | Indep | 80 | 40 | .. | Yes | 1 | 335 |
| St. Luke's-in-the-Desert Sanitarium | TB | Church | 35 | 22 | .. | No | ... | 48 |
| St. Mary's Hosp. & Sanat.◊□ | Gen | Church | 160 | 58 | 15 | No | 165 | 1,840 |
| Southern Methodist Hospital and Sanatorium□ | Gen | Church | 72 | 47 | 12 | Yes | 67 | 1,142 |
| Southern Pacific Sanit. | TB | Indus | 100 | 55 | .. | No | ... | ..... |
| Veterans Admin. Hospital■ | TB | VetAd | 261 | 244 | .. | Yes | ... | 416 |
| Valentine, 168—Mohave Co. | | | | | | | | |
| Truxton Canon Indian Hospital | Gen | Indian | 16 | 3 | .. | No | ... | 322 |
| Whipple,—Yavapai Co. | | | | | | | | |
| Veterans Admin. Hospital■ | Gen | VetAd | 600 | 540 | .. | No | ... | 1,730 |
| Whiteriver, 52—Navajo Co. | | | | | | | | |
| Ft. Apache Indian Hosp. | Gen | Indian | 60 | 25 | 9 | Yes | 22 | 426 |
| Williams, 2,166—Coconino Co. | | | | | | | | |
| Williams Hospital | Gen | Indiv | 12 | 2 | 1 | No | 15 | 106 |
| Yuma, 4,892—Yuma Co. | | | | | | | | |
| Ft. Yuma Indian Hospital | Gen | Indian | 26 | 12 | .. | Yes | 7 | 4,358 |
| Yuma General Hospital□ | Gen | Indep | 50 | 25 | 6 | No | 70 | 700 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Flagstaff, 3,891—Coconino Co. | | | | | | | | |
| Coconino County Hospital■ | Inst | County | 18 | 13 | .. | No | ... | 54 |
| Mercy Hospital | Gen | Indus | 14 | 7 | 2 | No | 30 | 340 |
| Florence, 1,318—Pinal Co. | | | | | | | | |
| Arizona State Prison Hosp. | Inst | State | 30 | 12 | .. | No | ... | ..... |
| Ft. Apache, 98—Navajo Co. | | | | | | | | |
| Theodore Roosevelt School Hospital | Inst | Indian | 21 | 5 | .. | Yes | ... | 310 |
| Hayden, 2,550—Gila Co. | | | | | | | | |
| Hayden Hospital | Indus | Indus | 12 | 2 | .. | Yes | ... | 240 |
| McNary, 114—Apache Co. | | | | | | | | |
| McNary Hospital■ | Gen | Indus | 18 | 6 | 3 | Yes | ... | ..... |
| Phoenix, 48,118—Maricopa Co. | | | | | | | | |
| Harrisholm | Conv | Indiv | 7 | 7 | .. | ... | ... | 10 |
| Helen Lee Sanatorium | TB | Indiv | 8 | 7 | .. | No | ... | 15 |
| Maricopa County Farm | Inst | County | 60 | 10 | .. | No | ... | ..... |
| Monte Vista Lodge | TB | Indiv | 15 | 10 | .. | No | ... | 20 |
| Roanoke Sanatorium | TB | Indiv | 25 | 20 | .. | No | ... | 100 |
| St. Luke's Home | TB | Church | 70 | 50 | .. | Yes | ... | 104 |
| Shady Lawn Sanatorium | TB | Indiv | 20 | 15 | .. | No | ... | 14 |
| Sunny Rest Sanatorium | TB | Indiv | 20 | 10 | .. | No | ... | 21 |
| Prescott, 5,517—Yavapai Co. | | | | | | | | |
| Arizona Pioneers' Home and Miners' Hospital | Inst | State | 20 | 6 | .. | No | ... | ..... |
| St. Luke's in the Mountains | TB | Church | 50 | 45 | .. | No | ... | ..... |
| Yavapai County Hospital■ | Inst | County | 75 | 60 | 4 | No | 20 | 211 |
| Tucson, 32,506—Pima Co. | | | | | | | | |
| Anson Rest Home | TB | Part | 35 | 30 | .. | No | ... | 27 |
| Clark's Rest Home | TB | Indiv | 30 | 18 | .. | No | ... | ..... |
| Comstock Hospital | TB | Indep | 25 | 20 | .. | No | ... | ..... |
| Cottage Sanatorium | TB | Indiv | 12 | 10 | .. | No | ... | ..... |
| Fairview Sanatorium | TB | Indiv | 30 | 18 | .. | No | ... | 49 |
| Hillcrest Sanatorium | TB | Indiv | 32 | 20 | .. | No | ... | ..... |
| Pima County Hospital | Gen | County | 40 | 36 | .. | No | ... | ..... |
| Reardon Sanatorium | TB | Indiv | 16 | 15 | .. | No | ... | ..... |
| Wickenburg, 734—Maricopa Co. | | | | | | | | |
| Wickenburg Hospital | Gen | Indiv | 10 | 4 | 3 | No | 24 | 144 |

| Summary for Arizona: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 50 | 3,891 | 2,811 | 33,351 |
| Related institutions | 26 | 673 | 454 | 1,727 |
| Totals | 76 | 4,564 | 3,265 | 35,078 |
| Refused registration | 2 | 49 | | |

Key to symbols and abbreviations is on page 2078

## ARKANSAS

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alexander, 141—Pulaski Co. | | | | | | | | |
| McRae Tuber. Sanat. (col.) | TB | State | 26 | 20 | .. | No | ... | 64 |
| Arkadelphia, 3,380—Clark Co. | | | | | | | | |
| Moore and Wallis Sanit.■. | Gen | Indiv | 10 | 3 | 2 | No | 18 | 76 |
| Townsend Hospital■ | Gen | Part | 16 | 5 | .. | No | ... | 159 |
| Batesville, 4,484—Independence Co. | | | | | | | | |
| Dr. Gray's Infirmary | Gen | Indiv | 15 | 4 | .. | No | ... | ..... |
| Johnston Hospital | Gen | Indiv | 15 | 5 | .. | No | ... | ..... |
| Bauxite, 2,200—Saline Co. | | | | | | | | |
| Republic Mining & Manufacturing Company Hosp.■. | Gen | Indus | 20 | 4 | 1 | No | 15 | 70 |
| Benton, 3,445—Saline Co. | | | | | | | | |
| Blakley's Sanitarium■ | Gen | Indiv | 15 | 5 | 2 | No | 18 | 178 |
| Blytheville, 10,098—Mississippi Co. | | | | | | | | |
| Blytheville Hospital | Gen | Indiv | 45 | 13 | 3 | No | ... | ..... |
| Camden, 7,273—Ouachita Co. | | | | | | | | |
| Camden Hospital■ | Gen | Indep | 25 | 8 | 9 | No | 58 | 648 |
| Charleston, 851—Franklin Co. | | | | | | | | |
| Bollinger Hospital■ | Gen | Indiv | 20 | 6 | .. | No | 15 | ..... |
| Clarksville, 3,031—Johnson Co. | | | | | | | | |
| Johnson County Hospital. | Gen | Indep | 19 | 4 | 1 | No | ... | ..... |
| Conway, 5,534—Faulkner Co. | | | | | | | | |
| Faulkner County Hospital | Gen | Indep | 25 | 7 | 5 | No | 23 | 247 |
| Crossett, 2,811—Ashley Co. | | | | | | | | |
| Crossett Hospital■ | Gen | Indus | 30 | 12 | 6 | Yes | 32 | 350 |
| De Queen, 2,938—Sevier Co. | | | | | | | | |
| Archer Hospital■ | Gen | Indiv | 19 | 5 | 2 | No | 22 | 1,225 |
| Dumas, 1,669—Desha Co. | | | | | | | | |
| Dumas Hospital■ | Gen | Indiv | 15 | 5 | 3 | No | ... | 100 |
| El Dorado, 16,421—Union Co. | | | | | | | | |
| Henry C. Rosamond Memorial Hospital◊ | Gen | Part | 35 | 5 | 15 | No | 249 | 1,876 |
| Warner-Brown Hospital◊■ | Gen | Church | 75 | 39 | 6 | No | 137 | 1,429 |
| Eureka Springs, 2,276—Carroll Co. | | | | | | | | |
| Dan Sawyer Mem. Hosp. | Gen | Indep | 35 | 8 | 5 | No | 6 | 192 |
| Fayetteville, 7,394—Washington Co. | | | | | | | | |
| Fayetteville City Hosp.◊■. | Gen | City | 55 | 23 | 6 | No | 76 | 1,158 |
| Ft. Smith, 31,429—Sebastian Co. | | | | | | | | |
| St. Edward's Mercy Hosp.◊ | Gen | Church | 100 | 48 | 15 | No | 150 | 1,696 |
| St. John's Hospital | Gen | Indiv | 55 | 16 | 4 | No | 31 | 805 |
| Sparks' Memorial Hosp.◊. | Gen | Indep | 86 | 26 | 14 | No | 54 | 1,026 |
| Helena, 8,316—Phillips Co. | | | | | | | | |
| Helena Hospital■ | Gen | Indep | 36 | 18 | 5 | No | 53 | 832 |
| Hope, 6,008—Hempstead Co. | | | | | | | | |
| Josephine Hospital■ | Gen | Indiv | 24 | 6 | 4 | No | 21 | 355 |
| Julia Chester Hospital■ | Gen | Indep | 20 | 6 | 2 | No | 20 | 346 |
| Hot Springs National Park, 20,238—Garland Co. | | | | | | | | |
| Army and Navy General Hospital■ | Gen | Fed | 300 | 224 | .. | No | ... | 1,506 |
| Leo N. Levi Mem. Hosp.+◊ | Gen | Frat | 58 | 50 | 3 | Yes | 25 | 674 |
| Ozark Sanatorium◊ | Gen | Indep | 60 | 25 | 4 | No | 26 | 325 |
| St. Joseph's Hospital◊ | Gen | Church | 147 | 54 | 6 | No | 34 | 1,603 |
| Woodmen of Union Hospital (col.)★◊ | Gen | Frat | 100 | 64 | 4 | Yes | ... | ..... |
| Jonesboro, 10,326—Craighead Co. | | | | | | | | |
| St. Bernard's Hospital◊■. | Gen | Church | 100 | 61 | 8 | No | 95 | 1,670 |
| Lake Village, 1,582—Chicot Co. | | | | | | | | |
| Lake Village Infirmary■.. | Surg | Indiv | 35 | 10 | .. | No | 15 | 390 |
| Little Rock, 81,679—Pulaski Co. | | | | | | | | |
| Arkansas Children's Hosp. | Chil | Indep | 82 | 30 | .. | Yes | ... | 252 |
| Baptist State Hospital★◊■ | Gen | Church | 300 | 58 | 40 | No | 149 | 2,117 |
| Little Rock Gen. Hosp.★◊■ | Gen | City | 128 | 72 | 12 | Yes | 160 | 2,732 |
| Missouri Pacific Hospital■ | Indus | Indus | 125 | 50 | .. | Yes | ... | 1,784 |
| Mosaic State Hosp. (col.) | Gen | Frat | 30 | 13 | 4 | Yes | 16 | 492 |
| Pulaski County Hosp.◊■.. | Gen | County | 200 | 174 | .. | Yes | 28 | 986 |
| St. Vincent's Infirmary★◊.. | Gen | Church | 135 | 100 | 15 | No | 303 | 3,565 |
| State Hospital for Nervous Diseases | N&M | State | 2,900 | 3,149 | .. | No | ... | 1,605 |
| Trinity Hospital | Gen | Indep | 44 | 16 | 6 | Yes | 43 | 795 |
| United Friends Hosp. (col.) | Gen | Frat | 27 | 15 | 2 | Yes | 44 | 2,974 |
| Monticello, 3,076—Drew Co. | | | | | | | | |
| Mack Wilson Hospital■ | Gen | Indep | 25 | 6 | .. | Yes | 21 | 323 |
| Morrilton, 4,043—Conway Co. | | | | | | | | |
| St. Anthony's Hospital■.. | Gen | Church | 14 | 7 | 2 | No | 6 | 372 |
| Newport, 4,547—Jackson Co. | | | | | | | | |
| Newport Sanitarium | Surg | Part | 16 | 4 | 2 | Yes | ... | ..... |
| North Little Rock, 19,418—Pulaski Co. | | | | | | | | |
| Veterans Admin. Hospital. | N&M | VetAd | 750 | 750 | .. | No | ... | 168 |
| Paragould, 5,966—Greene Co. | | | | | | | | |
| Dickson Memorial Sanit. | Gen | Indep | 30 | 20 | 3 | No | 13 | 400 |
| Paris, 3,234—Logan Co. | | | | | | | | |
| Dr. Jewell's Infirmary | Gen | Indiv | 20 | 10 | .. | Yes | ... | 120 |
| Pine Bluff, 20,760—Jefferson Co. | | | | | | | | |
| Davis Baptist Hospital | Gen | Church | 50 | 16 | 5 | No | 77 | 710 |
| United Links Hosp. (col.). | Gen | Indep | 25 | 10 | 3 | ... | ... | ..... |
| Prescott, 3,033—Nevada Co. | | | | | | | | |
| Cora Donnell Hospital■ | Gen | Part | 45 | 22 | 2 | No | 53 | 786 |
| Russellville, 5,628—Pope Co. | | | | | | | | |
| Haney Eye, Ear, Nose and Throat Hospital■ | Gen | Indiv | 10 | 3 | .. | No | ... | 205 |
| St. Mary's Hospital◊■ | Gen | Indep | 55 | 30 | 5 | No | 15 | 1,105 |
| Searcy, 3,387—White Co. | | | | | | | | |
| Wakenight Sanitarium | Gen | Indiv | 23 | 9 | 1 | No | 8 | 456 |
| Siloam Springs, 2,378—Benton Co. | | | | | | | | |
| Siloam Springs City Hosp. | Gen | City | 10 | 7 | 2 | No | 11 | 216 |
| State Sanatorium,—Logan Co. | | | | | | | | |
| Arkansas Tuber. Sanat. | TB | State | 500 | 500 | .. | No | ... | 1,115 |
| Taylor, 263—Columbia Co. | | | | | | | | |
| Bertie Lee Horn Sanat. | Gen | Indiv | 15 | 6 | .. | No | 15 | 503 |
| Texarkana, 10,764—Miller Co. | | | | | | | | |
| Michael Meagher Memorial Hospital◊■ | Gen | Church | 50 | 30 | 6 | No | ... | 1,240 |
| St. Louis Southwestern Hospital■ | Indus | Indus | 150 | 41 | .. | Yes | ... | 1,864 |

Key to symbols and abbreviations is on page 2078

## ARKANSAS—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Cummins (Varner P.O.),—Lincoln Co. | | | | | | | | |
| Arkansas State Penal Hosp. | Inst | State | 12 | 6 | .. | No | ... | ..... |
| De Queen, 2,938—Sevier Co. | | | | | | | | |
| De Queen Hospital | Gen | Indiv | 10 | 8 | .. | No | ... | 210 |
| Ft. Smith, 31,429—Sebastian Co. | | | | | | | | |
| Sebastian County Hospital | Inst | County | 125 | 80 | .. | No | ... | ..... |
| Little Rock, 81,679—Pulaski Co. | | | | | | | | |
| Arkansas Confederate Home | Inst | State | 75 | 65 | .. | No | ... | 105 |
| Arkansas School for the Blind | Inst | State | 16 | 2 | .. | ... | ... | 50 |
| Florence Crittenton Home | Mater | Indep | 48 | 2 | 4 | No | 32 | 40 |
| Granite Mountain Hosp.■ | Gen | Indiv | 20 | 4 | 1 | Yes | 33 | 1,620 |
| Malvern, 5,115—Hot Spring Co. | | | | | | | | |
| Hot Spring County General Hospital | Gen | County | 10 | 3 | 2 | ... | ... | ..... |
| McGehee, 3,488—Desha Co. | | | | | | | | |
| Grayson Hospital | Gen | Indiv | 6 | 5 | 1 | No | 12 | 180 |
| Newport, 4,547—Jackson Co. | | | | | | | | |
| Dr. Gray's Sanitarium | Gen | Indiv | 7 | 3 | 2 | No | 4 | 120 |
| Pine Bluff, 20,760—Jefferson Co. | | | | | | | | |
| Great Southern Fraternal Hospital (col.) | Gen | Frat | 30 | 6 | 1 | Yes | ... | ..... |
| Rogers, 3,554—Benton Co. | | | | | | | | |
| Home Hospital | Gen | Indiv | 8 | 4 | 2 | No | 9 | 82 |
| Rogers Sanitarium | Gen | Indiv | 10 | 4 | 2 | No | ... | ..... |
| Texarkana, 10,764—Miller Co. | | | | | | | | |
| Jamison Sanitarium (col.). | Gen | Indiv | 10 | 7 | 2 | No | 5 | 150 |
| Tucker, 219—Jefferson Co. | | | | | | | | |
| Arkansas State Penitentiary Hospital | Inst | State | 20 | 12 | .. | No | ... | 720 |

Summary for Arkansas:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 59 | 7,395 | 5,939 | 45,876 |
| Related institutions | 15 | 413 | 207 | 3,277 |
| Totals | 74 | 7,808 | 6,146 | 49,153 |
| Refused registration | 7 | 172 | | |

## CALIFORNIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Agnew, 316—Santa Clara Co. | | | | | | | | |
| Agnew State Hospital+ | N&M | State | 1,569 | 2,092 | .. | Yes | ... | 550 |
| Ahwahnee, 25—Madera Co. | | | | | | | | |
| Ahwahnee Tri-County Tuberculosis Sanatorium | TB | County | 106 | 94 | .. | No | ... | 92 |
| Alameda, 35,033—Alameda Co. | | | | | | | | |
| Alameda Sanatorium on the South Shore | Gen | Indep | 85 | 46 | 20 | No | 208 | 1,651 |
| Albany, 8,569—Alameda Co. | | | | | | | | |
| Humboldt Hosp'tal■ | Gen | Indep | 27 | 12 | 10 | No | 102 | 450 |
| Alcatraz, 171—San Francisco Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 30 | 17 | .. | Yes | ... | 461 |
| Alhambra, 29,472—Los Angeles Co. | | | | | | | | |
| Alhambra Hospital■ | Gen | Indep | 40 | 19 | 10 | No | 170 | 1,198 |
| Anaheim, 10,995—Orange Co. | | | | | | | | |
| Anaheim Sanitarium■ | Gen | Indep | 28 | 10 | 6 | No | 68 | 500 |
| Angel Island, 406—Marin Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 98 | 38 | .. | Yes | ... | 1,282 |
| Antioch, 3,563—Contra Costa Co. | | | | | | | | |
| Antioch Hospital | Gen | Indiv | 20 | New | 8 | No | ... | ..... |
| Arcata, 1,709—Humboldt Co. | | | | | | | | |
| Trinity Hospital | Gen | Church | 22 | 10 | 4 | No | 26 | 500 |
| Arlington, 1,550—Riverside Co. | | | | | | | | |
| Riverside County Hosp.▲.. | Gen | County | 275 | 215 | 12 | No | 113 | 1,821 |
| Artesia, 3,891—Los Angeles Co. | | | | | | | | |
| Artesia Hospital■ | Gen | Indiv | 20 | 9 | 4 | No | 68 | ..... |
| Atascadero, 2,038—San Luis Obispo Co. | | | | | | | | |
| Atascadero General Hosp.■ | Gen | County | 15 | 9 | 3 | No | 40 | 350 |
| Auberry, 183—Fresno Co. | | | | | | | | |
| Wish-I-ah Sanatorium | TB | County | 50 | 50 | .. | Yes | ... | 60 |
| Auburn, 2,661—Placer Co. | | | | | | | | |
| Highlands Sanitarium■ | Gen | Part | 20 | 11 | 3 | No | 38 | 452 |
| Bakersfield, 26,015—Kern Co. | | | | | | | | |
| Bakersfield Emergency Hospital■ | Gen | Indiv | 35 | 6 | 5 | No | ... | ..... |
| Kern General Hospital■ | Gen | County | 205 | 249 | 10 | Yes | 265 | 2,712 |
| Mercy Hospital◊■ | Gen | Church | 72 | 38 | 12 | No | 158 | 1,848 |
| San Joaquin Hospital | Gen | Indep | 40 | 21 | 6 | No | ... | 1,071 |
| Banning, 2,752—Riverside Co. | | | | | | | | |
| Banning Hosp. and Sanat. | Gen | Indiv | 35 | 10 | 2 | No | 5 | 104 |
| Mary Henderson Sanit. | TB | Indiv | 20 | 10 | .. | No | ... | 18 |
| Southern Sierras Sanat.■. | TB | Indiv | 36 | 24 | .. | No | ... | 44 |
| Belmont, 984—San Mateo Co. | | | | | | | | |
| California Sanatorium | TB | Indep | 120 | 99 | .. | Yes | ... | 184 |
| Twin Pines Sanitarium | N&M | Indep | 20 | 15 | .. | No | ... | 19 |
| Berkeley, 82,109—Alameda Co. | | | | | | | | |
| Alta Bates Hospital◊■ | Gen | Indep | 100 | 60 | 33 | Yes | 492 | 2,052 |
| Berkeley General Hospital■ | Gen | Indiv | 90 | 37 | 12 | No | 188 | 1,912 |
| E. C. Cowell Memorial Hospital | Gen | State | 100 | 20 | .. | Yes | ... | ..... |
| Brawley, 10,439—Imperial Co. | | | | | | | | |
| Brawley Community Hosp.■ | Gen | Indiv | 14 | 9 | 3 | No | 20 | 116 |
| Burbank, 16,662—Los Angeles Co. | | | | | | | | |
| Burbank Hospital■ | Gen | Indiv | 36 | 22 | 12 | No | 100 | 695 |
| Carmel, 2,260—Monterey Co. | | | | | | | | |
| Carmel Hospital | Gen | Indiv | 13 | 6 | 6 | No | 21 | 215 |
| Grace Deere Velie Metabolic Clinic | Chron | Indep | 25 | 4 | .. | Yes | ... | 184 |

## CALIFORNIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Chico, 7,961—Butte Co. | | | | | | | | |
| Enloe Hospital............ | Gen | Indiv | 32 | 23 | 6 | No | 75 | 719 |
| Clovis, 1,316—Fresno Co. | | | | | | | | |
| McMurtry Sanitarium...... | Gen | Indiv | 11 | 8 | 2 | No | 17 | ..... |
| Colfax, 912—Placer Co. | | | | | | | | |
| Bushnell Sanatorium....... | TB | Indep | 20 | 16 | .. | No | ... | ..... |
| Colfax Hospital▣.......... | TB | Indiv | 38 | 30 | .. | No | ... | 70 |
| Colfax School for the Tuberculous■ ............ | TB | Indiv | 117 | 76 | .. | No | ... | 177 |
| Colusa, 2,116—Colusa Co. | | | | | | | | |
| Colusa County Mem. Hosp.■ | Gen | County | 24 | New | 8 | No | ... | 98 |
| Compton, 12,516—Los Angeles Co. | | | | | | | | |
| Compton Sanitarium+...... | N&M | Indep | 130 | 69 | .. | No | ... | 184 |
| Las Campanas Hospital▣. | Gen | Indep | 30 | 22 | 10 | No | 155 | 737 |
| Coronado, 5,425—San Diego Co. | | | | | | | | |
| Station Hospital........... | Gen | Army | 16 | 5 | .. | Yes | ... | 198 |
| Covina, 2,774—Los Angeles Co. | | | | | | | | |
| Covina Hospital■.......... | Gen | Part | 50 | 25 | 12 | No | 102 | 838 |
| Culver City, 5,669—Los Angeles Co. | | | | | | | | |
| University Hospital........ | Gen | Indep | 50 | 12 | 17 | Yes | 90 | 412 |
| Dorris, 762—Siskiyou Co. | | | | | | | | |
| Dorris Hospital............ | Gen | Indiv | 15 | 3 | 2 | Yes | 6 | 156 |
| Duarte, 620—Los Angeles Co. | | | | | | | | |
| Sanatorium of the Jewish Consumptive Relief Ass'n. | TB | Indep | 210 | 208 | .. | No | ... | 162 |
| Dunsmuir, 2,610, Siskiyou Co. | | | | | | | | |
| Dunsmuir Hosp. & Sanit.■ | Gen | Indep | 20 | 6 | 4 | No | 16 | 235 |
| El Cajon, 1,050—San Diego Co. | | | | | | | | |
| El Cajon District Hospital | Gen | Part | 18 | New | 5 | Yes | ... | ..... |
| El Centro, 8,434—Imperial Co. | | | | | | | | |
| El Centro Hospital■...... | Gen | Indiv | 36 | 18 | 0 | No | 86 | 1,008 |
| El Monte, 3,479—Los Angeles Co. | | | | | | | | |
| Ruth Protective Home■.... | Mater | Indep | 28 | 20 | 12 | No | ... | 46 |
| Eureka, 15,752—Humboldt Co. | | | | | | | | |
| General Hospital■......... | Gen | Indep | 42 | 26 | 8 | No | 77 | 678 |
| Humboldt County Hosp.■ | Gen | County | 96 | 71 | 9 | Yes | 140 | 931 |
| Humboldt County School for the Tuberculous■..... | Iso,TB | County | 83 | 63 | .. | No | ... | 181 |
| St. Joseph's Hospital...... | Gen | Church | 63 | 36 | 12 | Yes | 158 | 1,270 |
| Ft. Bragg, 3,022—Mendocino Co. | | | | | | | | |
| Redwood Coast Hospital.. | Gen | Indep | 25 | 7 | 5 | No | 58 | 277 |
| French Camp, 248—San Joaquin Co. | | | | | | | | |
| San Joaquin Gen. Hosp.◊■ | Gen | County | 430 | 443 | 20 | Yes | 386 | 5,595 |
| | Gen | Indep | 100 | 70 | 20 | Yes | 234 | 2,465 |
| County★+◊▣▲ ............ | Gen | County | 375 | 363 | 15 | Yes | 377 | 4,417 |
| St. Agnes Hospital■....... | Gen | Church | 70 | 43 | 13 | No | 310 | 1,535 |
| Sample Sanitarium......... | Gen | Indiv | 23 | 14 | 6 | No | 69 | 370 |
| Fullerton, 10,860—Orange Co. | | | | | | | | |
| Fullerton Hospital | Gen | Church | 25 | 14 | 6 | No | ... | ..... |
| ■ | Gen | Indep | 23 | 8 | 6 | No | ... | 497 |
| Glendale, 62,736—Los Angeles Co. | | | | | | | | |
| Glendale Sanit. & Hosp.★◊ | Gen | Church | 250 | 160 | 24 | Yes | 256 | 2,812 |
| Physicians and Surgeons Hospital ................ | Gen | Indep | 70 | 35 | 16 | No | 346 | 1,508 |
| Grass Valley, 3,817—Nevada Co. | | | | | | | | |
| W. C. Jones Mem. Hospital | Gen | Indiv | 20 | 9 | 4 | Yes | 23 | 386 |
| Hanford, 7,028—Kings Co. | | | | | | | | |
| Hanford Sanitarium■...... | Gen | Indep | 30 | 10 | 8 | No | 63 | 3,480 |
| Kings County Hospital■... | Gen | County | 64 | 50 | 3 | No | 64 | 633 |
| Sacred Heart Hospital■... | Gen | Church | 20 | 15 | 5 | No | ... | ..... |
| Hayward, 5,530—Alameda Co. | | | | | | | | |
| | | Indiv | 15 | 7 | 5 | No | ... | ..... |
| | | Indep | 14 | 6 | 4 | No | 31 | 300 |
| Co. | | | | | | | | |
| ■ | | Indep | 17 | 10 | 7 | No | ... | 363 |
| Hobart Mills, 516—Nevada Co. | | | | | | | | |
| Hobart Estate Co. Hosp.■ | Gen | Indus | 14 | 5 | 3 | Yes | 6 | 92 |
| Hollister, 3,757—San Benito Co. | | | | | | | | |
| Hazel Hawkins Mem. Hosp.■ | Gen | County | 15 | 5 | 3 | No | 12 | 369 |
| Hollywood,—Los Angeles Co. | | | | | | | | |
| Benedict Hospital.......... | Gen | Indiv | 24 | 13 | 20 | No | 195 | ..... |
| Hoopa, 20—Humboldt Co. | | | | | | | | |
| Hoopa Valley Indian Hosp. | Gen | Indian | 33 | 18 | 5 | Yes | 8 | 351 |
| Imola,—Napa Co. | | | | | | | | |
| Napa State Hospital....... | N&M | State | 2,973 | 2,884 | .. | No | ... | ..... |
| Indio, 1,875—Riverside Co. | | | | | | | | |
| Coachella Valley Community Hospital■ .......... | Gen | Indiv | 15 | 10 | 5 | No | 102 | 3,319 |
| s Co. | | | | | | | | |
| | Gen | Indiv | 20 | 10 | 6 | No | 152 | 953 |
| Stony Brook Retreat⊙■.... | TB | County | 75 | 71 | .. | Yes | ... | 87 |
| La Crescenta, 1,510—Los Angeles Co. | | | | | | | | |
| Hillcrest Sanatorium....... | TB | Indiv | 35 | 20 | .. | No | ... | 40 |
| | TB | Indep | 50 | 50 | .. | No | ... | 88 |
| Maternity Home■......... | Gen | Indiv | 10 | 4 | 4 | No | 20 | 177 |
| Livermore, 3,119—Alameda Co. | | | | | | | | |
| Arroyo Sanatorium+⊙■.... | TB | County | 180 | 174 | .. | No | ... | 182 |
| Hetch Hetchy Hospital.... | Gen | Cy&Co | 40 | 30 | 4 | Yes | ... | ..... |
| Livermore Sanitarium+..... | N&M | Indep | 100 | 71 | .. | No | ... | 114 |
| St. Paul's Hospital........ | Gen | Indiv | 12 | 6 | 3 | No | ... | ..... |
| Veterans Admin. Hospital. | TB | VetAd | 318 | 277 | .. | No | ... | 466 |
| Lodi, 6,788—San Joaquin Co. | | | | | | | | |
| Dr. Buchanan's Sanitarium | Gen | Indiv | 15 | 4 | 4 | No | 36 | 120 |
| Mason Hospital■........... | Gen | Part | 15 | 10 | 5 | No | 30 | 350 |
| Loma Linda, 2,500—San Bernardino Co. | | | | | | | | |
| ■ ..... | Gen | Church | 139 | 87 | 12 | Yes | 150 | 2,398 |

## CALIFORNIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Long Beach, 142,032—Los Angeles Co. | | | | | | | | |
| Harriman Jones Clinic and Hospital ................ | Gen | Indiv | 26 | ... | .. | Yes | ... | ..... |
| Long Beach Community Hospital ................ | Gen | Indep | 100 | 74 | 20 | Yes | 451 | 3,810 |
| St. Mary's Long Beach Hospital ................ | Gen | Church | 50 | 41 | 10 | No | 162 | 1,089 |
| Seaside Hospital★+◊▣...... | Gen | Indep | 255 | 154 | 45 | Yes | 910 | 6,151 |
| Los Angeles, 1,238,048—Los Angeles Co. | | | | | | | | |
| Banksia Sanitarium........ | N&M | Indiv | 15 | 6 | .. | No | ... | 14 |
| Barlow Sanatorium+⊙...... | TB | Indep | 100 | 90 | .. | Yes | ... | 122 |
| California Hospital★◊▣.... | Gen | Church | 297 | 238 | 28 | Yes | 904 | 7,320 |
| Cedars of Lebanon Hospital★+▣ ................ | Gen | Indep | 240 | 140 | 40 | Yes | 863 | 4,587 |
| Children's Hospital+⊙▣..... | Chil | Indep | 140 | 125 | .. | Yes | ... | 3,247 |
| Dunbar Hospital (col.)..... | Gen | Indep | 18 | 4 | 4 | No | ... | ..... |
| Eye and Ear Hospital▣.... | EENT | Indep | 21 | 10 | .. | Yes | ... | 1,809 |
| French Hospital■.......... | Gen | Indep | 80 | 29 | 20 | No | 252 | 1,200 |
| Golden State Hospital+■▲. | Gen | Indiv | 69 | 31 | 2 | Yes | ... | ..... |
| Hollywood Clara Barton Memorial Hospital★...... | Gen | Indep | 226 | 180 | 80 | No | 1,139 | 7,605 |
| Hospital of the Good Samaritan+◊■ ............. | Gen | Church | 380 | 230 | 35 | No | 573 | 6,303 |
| Lincoln Hospital........... | Gen | Indep | 27 | 28 | 9 | No | 254 | 1,009 |
| Los Angeles County General Hospital (Units Nos. 1 & 3)★+◊■▲ ................ | Gen | County | 1,462 | 1,438 | 40 | Yes | 1,805 | 30,884 |
| Los Angeles Lying-In Hosp. | Mater | Indiv | 21 | 11 | 21 | No | ... | ..... |
| Los Angeles Mater. Cottage | Mater | Indep | 28 | 16 | 30 | No | 486 | 475 |
| Los Angeles Sanitarium... | Gen | Indiv | 20 | 12 | .. | No | ... | 141 |
| *Methodist Hospital of* Southern California★◊■.. | Gen | Church | 210 | 107 | 40 | No | 599 | 4,387 |
| Orthopaedic Hosp.-School+ | Ortho | Indep | 85 | 71 | .. | Yes | ... | 1,340 |
| Pahl Hospital............. | Gen | Indiv | 15 | 8 | 3 | No | 37 | 372 |
| Queen of Angels Hosp.◊▣ | Gen | Church | 133 | 100 | 20 | No | 535 | 3,107 |
| St. Vincent's Hospital★◊▣. | Gen | Church | 200 | 150 | 40 | No | 625 | 4,491 |
| Santa Fe Coast Lines Hospital★ .................... | Gen | Indus | 150 | 121 | .. | Yes | ... | 2,530 |
| Southern California Japanese Hospital............ | Gen | Indep | 25 | 12 | 3 | No | 15 | 620 |
| Southern California Sanit. | Chron | Indiv | 60 | 24 | .. | No | ... | 290 |
| Southwest General Hosp... | Gen | Indiv | 25 | 15 | 8 | Yes | 115 | 388 |
| Terry Sanitarium-Hospital. | Gen | Indep | 14 | 10 | 6 | No | ... | ..... |
| *White Memorial Hosp.*★+◊▣ | *Gen* | Church | 112 | 97 | 24 | Yes | 426 | 3,489 |
| Los Banos, 1,875—Merced Co. | | | | | | | | |
| Los Banos Hospital■...... | Gen | Indiv | 15 | 6 | 4 | No | 40 | 190 |
| *Los Gatos, 3,168—Santa Clara Co.* | | | | | | | | |
| Oak's Sanitarium.......... | TB | Indiv | 70 | 42 | .. | No | ... | 94 |
| Madera, 4,665—Madera Co. | | | | | | | | |
| Madera County Hospital■. | Gen | County | 51 | 30 | 5 | No | 76 | 599 |
| Madera Sanitarium■....... | Gen | Indiv | 19 | 9 | 6 | No | 26 | 338 |
| Manor,—Marin Co. | | | | | | | | |
| Arequipa Sanatorium...... | TB | Indep | 42 | 42 | .. | No | ... | 84 |
| *Mare Island, 410*—Solano Co. | | | | | | | | |
| U. S. Naval Hospital★■... | Gen | Navy | 844 | 500 | .. | Yes | ... | 3,654 |
| *Martinez, 6,569*—Contra Costa Co. | | | | | | | | |
| Contra Costa County Hospital■ .................... | Gen | County | 180 | 132 | 5 | Yes | 55 | 1,231 |
| Martinez Community Hosp. | Gen | Indep | 30 | New | 6 | No | ... | ..... |
| *Marysville, 5,763*—Yuba Co. | | | | | | | | |
| Rideout Memorial Hosp.■. | Gen | Indiv | 30 | 18 | 9 | No | 80 | 672 |
| McCloud, 175—Siskiyou Co. | | | | | | | | |
| McCloud Hospital■........ | Gen | Indus | 42 | 14 | 6 | Yes | 37 | 168 |
| Merced, 7,066—Merced Co. | | | | | | | | |
| Mercy Hospital■........... | Gen | Part | 30 | 20 | 7 | No | 130 | 975 |
| Merced Falls, 63—Merced Co. | | | | | | | | |
| Yosemite Hospital■........ | Gen | Indus | 14 | 4 | 2 | No | ... | 64 |
| Modesto, 13,842—Stanislaus Co. | | | | | | | | |
| McPheeter's Hospital■..... | Gen | Indiv | 30 | 16 | 7 | No | 83 | 867 |
| Robertson Hospital■....... | Gen | Indiv | 36 | 22 | 8 | No | 109 | 1,094 |
| St. Mary's Hospital....... | Gen | Church | 21 | 12 | 12 | No | 125 | 420 |
| Stanislaus County Hosp.■ | Gen | County | 200 | 163 | 16 | Yes | 185 | 1,670 |
| Monrovia, 10,890—Los Angeles Co. | | | | | | | | |
| Pottenger Sanat. and Clinic for Diseases of the Lungs and Throat+............. | TB | Indep | 134 | 106 | .. | No | ... | 175 |
| Monterey, 9,141—Monterey Co. | | | | | | | | |
| El Adobe Hospital......... | Gen | Indiv | 17 | 6 | 4 | No | ... | ..... |
| Monterey Hospital■........ | Gen | Indep | 31 | 19 | 6 | Yes | 41 | 688 |
| Station Hospital■.......... | Gen | Army | 54 | 24 | .. | No | 10 | 650 |
| Monterey Park, 6,406—Los Angeles Co. | | | | | | | | |
| Garfield Hospital.......... | Gen | Indep | 35 | 20 | 7 | No | 152 | 925 |
| Murphy, 563—Calaveras Co. | | | | | | | | |
| Bret Harte Sanatorium■... | TB | County | 170 | 136 | .. | Yes | ... | 212 |
| Napa, 6,437—Napa Co. | | | | | | | | |
| ■ | Gen | Indep | 26 | 12 | 6 | Yes | 58 | 601 |
| Co. | | | | | | | | |
| ■ | Gen | Part | 12 | 5 | .. | No | ... | 265 |
| ■ | Gen | Church | 110 | 66 | 7 | Yes | 82 | 1,221 |
| | Gen | Indiv | 12 | 4 | 4 | No | 43 | 176 |
| | N&M | State | 1,718 | 2,013 | .. | Yes | ... | 646 |
| ■............... | Chil | Indep | 80 | 29 | .. | Yes | ... | 1,852 |
| | Gen | Indep | 110 | 91 | 30 | Yes | 623 | 3,496 |
| ■ | Gen | County | 452 | 288 | 22 | No | 671 | 8,383 |
| ■ | Gen | Indep | 129 | 66 | 30 | No | 510 | 2,803 |
| ■ | Gen | Church | 195 | 83 | 29 | Yes | 337 | 3,140 |
| ■ | Gen | Indiv | 55 | 33 | 15 | No | 72 | 1,122 |
| ■ | Gen | Indep | 150 | 104 | 18 | No | 281 | 3,783 |
| Olive View,—Los Angeles Co. | | | | | | | | |
| Olive View Sanatorium■... | TB | County | 940 | 830 | .. | No | ... | 677 |

Key to symbols and abbreviations is on page 2078

## CALIFORNIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Orange, 8,066—Orange Co. | | | | | | | | |
| Orange County Hosp.★◊◘▲ | Gen | County | 255 | 193 | 14 | Yes | 118 | 2,527 |
| St. Joseph Hospital◊ | Gen | Church | 100 | 41 | 25 | No | 150 | 1,500 |
| Oxnard, 6,285—Ventura Co. | | | | | | | | |
| St. John's Hospital■ | Gen | Church | 50 | 22 | 12 | No | 160 | 656 |
| Pacoima, 1,012—Los Angeles Co. | | | | | | | | |
| Indep. Order of Foresters Calif. Tubercular Sanit. | TB | Frat | 50 | 30 | .. | No | ... | ..... |
| Palo Alto, 13,652—Santa Clara Co. | | | | | | | | |
| Palo Alto Hospital | Gen | City | 79 | 27 | 15 | No | 149 | 1,641 |
| Veterans Admin. Hospital | N&M | VetAd | 1,010 | 901 | .. | No | ... | 512 |
| Pasadena, 76,086—Los Angeles Co. | | | | | | | | |
| Las Encinas+▲ | Gen | Indep | 80 | 60 | .. | Yes | ... | ..... |
| Pasadena Hospital★◊◘ | Gen | Indep | 189 | 123 | 24 | Yes | 470 | 4,597 |
| Woman's Hospital■ | Mater | Indep | 14 | 7 | 14 | No | 269 | 273 |
| Patton, 215—San Bernardino Co. | | | | | | | | |
| Patton State Hospital+ | N&M | State | 2,550 | 3,254 | .. | Yes | ... | 787 |
| Petaluma, 8,245—Sonoma Co. | | | | | | | | |
| Petaluma General Hospital■ | Gen | Indiv | 25 | 8 | 6 | No | 87 | 392 |
| Placerville, 2,322—El Dorado Co. | | | | | | | | |
| Placerville Sanatorium◘ | Gen | Indiv | 21 | 8 | 6 | No | 30 | 240 |
| Pomona, 20,804—Los Angeles Co. | | | | | | | | |
| Pomona Valley Community Hospital■ | Gen | Indep | 79 | 27 | 21 | No | 190 | 1,272 |
| Portola, 1,012—Plumas Co. | | | | | | | | |
| Western Pacific Railway Hospital■ | Gen | Indus | 30 | 14 | 5 | Yes | 36 | 485 |
| Red Bluff, 3,517—Tehama Co. | | | | | | | | |
| St. Elizabeth's Mercy Hosp. | Gen | Church | 30 | 15 | 5 | No | ... | ..... |
| Tehama County Hospital■ | Gen | County | 65 | 46 | .. | No | ... | ..... |
| Redding, 4,188—Shasta Co. | | | | | | | | |
| Dozier Sanitarium■ | Gen | Indiv | 20 | 10 | 3 | No | 6 | 202 |
| St. Caroline Sanitarium◘ | Gen | Indep | 19 | 9 | 6 | No | 44 | 290 |
| Redwood City, 8,962—San Mateo Co. | | | | | | | | |
| Canyon Sanatorium | TB | Indiv | 75 | 55 | .. | No | ... | 88 |
| Hassler Health Farm | TB | Cy&Co | 44 | 42 | .. | No | ... | 40 |
| Richmond, 20,093—Contra Costa Co. | | | | | | | | |
| Cottage Hospital■ | Gen | Indiv | 20 | 15 | 7 | No | 116 | 1,250 |
| Hospital Richmond■ | Gen | Indep | 50 | 13 | 14 | No | 114 | 637 |
| Riverside, 29,696—Riverside Co. | | | | | | | | |
| Riverside Community Hospital◊■ | Gen | Indep | 60 | 37 | 18 | No | 223 | 1,595 |
| Sherman Institute Hosp. | Gen | Indian | 60 | 30 | .. | Yes | ... | 1,035 |
| Rosemead, 2,717—Los Angeles Co | | | | | | | | |
| Alhambra Sanatorium | N&M | Indep | 12 | 6 | .. | No | ... | 31 |
| Ross, 1,355—Marin Co. | | | | | | | | |
| Ross General Hospital | Gen | Indep | 72 | 30 | 8 | No | 103 | 819 |
| Sacramento, 93,750—Sacramento Co. | | | | | | | | |
| Mater Misericordiae Hospital◊■ | Gen | Church | 124 | 66 | 26 | No | 300 | 3,333 |
| Sacramento Hospital★◊■ | Gen | County | 450 | 394 | 25 | Yes | 657 | 8,194 |
| Sutter Hospital■ | Gen | Indep | 175 | 119 | 30 | No | 555 | 4,782 |
| Salinas, 10,263—Monterey Co. | | | | | | | | |
| Murphy Hospital■ | Gen | Indiv | 18 | 9 | 5 | No | 87 | 454 |
| Salinas Valley Hospital■ | Gen | Indiv | 23 | 10 | 9 | No | 150 | 4,320 |
| San Andreas, 775—Calaveras Co. | | | | | | | | |
| San Andreas Hospital | Gen | Indiv | 12 | 2 | 2 | No | 12 | ..... |
| San Bernardino, 37,481—San Bernardino Co. | | | | | | | | |
| St. Bernardine's Hospital◘ | Gen | Church | 125 | 20 | 12 | No | 32 | 188 |
| San Bernardino General Hospital★◊■▲ | Gen | County | 299 | 259 | 16 | Yes | 322 | 3,460 |
| San Clemente, 667—Orange Co. | | | | | | | | |
| San Clemente Community Hospital■ | Gen | Indiv | 38 | 15 | 20 | Yes | ... | ..... |
| San Diego, 147,995—San Diego Co. | | | | | | | | |
| McCulloch Hospital | Gen | Indiv | 35 | 19 | 10 | No | 172 | 728 |
| Mercy Hospital◊■ | Gen | Church | 285 | 151 | 40 | No | 848 | 6,001 |
| San Diego County General Hospital★◊■▲ | Gen | County | 653 | 489 | 20 | Yes | 559 | 6,647 |
| Scripps Memorial Hosp.⊙■ | Gen | Indep | 50 | 20 | 6 | No | 50 | 682 |
| Scripps Metabolic Clinic | Metab | Indiv | 30 | 25 | .. | No | ... | 706 |
| U. S. Naval Hospital★◊◘▲ | Gen | Navy | 940 | 644 | .. | Yes | ... | 3,331 |
| San Fernando, 7,567—Los Angeles Co. | | | | | | | | |
| San Fernando Hospital | Gen | Part | 12 | 7 | 5 | No | 55 | 287 |
| Veterans Admin. Hospital | TB | VetAd | 230 | 225 | .. | No | ... | 231 |
| San Francisco, 634,394—San Francisco Co. | | | | | | | | |
| Chinese Hospital■ | Gen | Indep | 54 | 27 | 8 | Yes | 64 | 706 |
| Dante Sanatorium | Gen | Indep | 135 | 65 | 10 | No | 68 | 2,153 |
| Franklin Hospital◊■ | Gen | Frat | 225 | 150 | 20 | Yes | 363 | 4,345 |
| French Hospital★◊■ | Gen | Frat | 220 | 170 | 14 | Yes | 142 | 3,527 |
| Green's Eye Hospital■ | Eye | Part | 30 | 15 | .. | Yes | ... | 881 |
| Hospital for Children★+◊■ | Gen | Indep | 256 | 193 | 44 | Yes | 931 | 5,407 |
| Letterman General Hosp.★■▲ | Gen | Army | 1,032 | 727 | 10 | Yes | 87 | 7,301 |
| Mary's Help Hospital★+◊■ | Gen | Church | 130 | 90 | 30 | Yes | 455 | 3,334 |
| Mt. Zion Hospital★◊◘ | Gen | Indep | 175 | 117 | 28 | Yes | 418 | 3,880 |
| Park Sanitarium | N&M | Indep | 32 | 22 | .. | No | ... | ..... |
| St. Elizabeth's Infant Hosp. | Mater | Church | 60 | 12 | 20 | No | 37 | 52 |
| St. Francis Hospital◊ | Gen | Indep | 300 | 219 | 65 | No | 843 | 7,993 |
| St. Joseph's Hospital★◊ | Gen | Church | 215 | 118 | 24 | No | 461 | 4,308 |
| St. Luke's Hospital★+◊■ | Gen | Church | 200 | 147 | 26 | Yes | 504 | 4,665 |
| St. Mary's Hospital★+◊■ | Gen | Church | 325 | 209 | 40 | Yes | 650 | 7,097 |
| San Francisco Hosp.★+◊■▲ | Gen | Cy&Co | 1,308 | 1,002 | 28 | Yes | 422 | 12,824 |
| Shriners' Hospital for Crippled Children+⊙■ | Ortho | Frat | 60 | 60 | .. | Yes | ... | 350 |
| Southern Pacific General Hospital★ | Indus | Indus | 350 | 285 | .. | Yes | ... | 4,481 |
| Stanford University Hospitals (Including Lane Hospital)★+◊■▲ | Gen | Indep | 316 | 204 | 27 | Yes | 569 | 8,883 |
| Sutter Hospital | Gen | Part | 60 | 42 | 10 | Yes | 50 | 2,553 |
| U. S. Marine Hospital★■▲ | Gen | USPHS | 470 | 282 | .. | Yes | ... | 3,098 |
| Univ. of Calif. Hosp.★+◊■ | Gen | State | 255 | 171 | 32 | Yes | 527 | 5,380 |
| Sanitarium, 415—Napa Co. | | | | | | | | |
| St. Helena Sanit. & Hosp.◊■ | Gen | Church | 140 | 70 | 6 | No | 81 | 1,569 |
| San Jacinto, 1,346—Riverside Co. | | | | | | | | |
| Soboba Indian Hospital | Gen | Indian | 30 | 23 | 6 | Yes | 20 | 147 |

Key to symbols and abbreviations is on page 2078

## CALIFORNIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| San Jose, 57,651—Santa Clara Co. | | | | | | | | |
| Alum Rock Sanatorium | TB | Indep | 29 | 23 | .. | No | ... | 35 |
| O'Connor Sanitarium◊ | Gen | Church | 100 | 68 | 20 | No | 316 | 3,288 |
| San Jose Hospital◊■ | Gen | Indep | 111 | 74 | 20 | No | 446 | 3,263 |
| Santa Clara County Hospital★+◊■ | Gen | County | 467 | 368 | 21 | Yes | 444 | 4,370 |
| Santa Clara Sanatorium⊙■ | TB | County | 95 | 79 | .. | Yes | ... | 100 |
| San Luis Obispo, 8,276—San Luis Obispo Co. | | | | | | | | |
| Mountain View Hospital | Gen | Indiv | 25 | 6 | 4 | No | 20 | 300 |
| San Luis Obispo Gen. Hosp.■ | Gen | County | 60 | 33 | 8 | No | 59 | 1,130 |
| San Luis Sanitarium■ | Gen | Part | 30 | 13 | 5 | No | 50 | 679 |
| San Mateo, 13,444—San Mateo Co. | | | | | | | | |
| Community Hospital of San Mateo County■ | Gen | County | 114 | 90 | 6 | Yes | 80 | 1,105 |
| Mills Memorial Hospital■ | Gen | Church | 125 | 50 | 26 | No | 338 | 2,213 |
| San Pedro,—Los Angeles Co. | | | | | | | | |
| San Pedro Hospital■ | Gen | Indep | 88 | 57 | 22 | Yes | 460 | 2,034 |
| Station Hospital■ | Gen | Army | 25 | 9 | 1 | Yes | 1 | 345 |
| U. S. Ship Relief Hosp.■ | Gen | Navy | 367 | 121 | .. | No | ... | 2,623 |
| San Rafael, 8,022—Marin Co. | | | | | | | | |
| San Rafael Cottage Hosp.■ | Gen | Indiv | 36 | 18 | 11 | No | 118 | 650 |
| Santa Ana, 30,322—Orange Co. | | | | | | | | |
| Santa Ana Valley Hosp. | Gen | Indep | 50 | 30 | 12 | No | ... | ..... |
| Santa Barbara, 33,613—Santa Barbara Co. | | | | | | | | |
| St. Francis' Hospital★◊■ | Gen | Church | 85 | 70 | 15 | Yes | 188 | 3,261 |
| Santa Barbara Cottage Hospital★◊◘ | Gen | Indep | 249 | 144 | 27 | Yes | 227 | 3,740 |
| Santa Barbara General Hospital★◘▲ | Gen | County | 200 | 146 | 10 | No | 58 | 1,235 |
| Santa Cruz, 14,395—Santa Cruz Co. | | | | | | | | |
| Hanly Hospital | Gen | Indiv | 31 | 12 | 10 | No | 49 | 613 |
| Santa Monica, 37,146—Los Angeles Co. | | | | | | | | |
| St. Catherine's Hospital■ | Gen | Part | 35 | 6 | 6 | No | 8 | 150 |
| Santa Monica Hospital■ | Gen | Indep | 94 | 63 | 12 | No | 346 | 2,929 |
| Wilshire Hospital■ | Gen | Indep | 31 | 16 | 10 | No | 95 | 440 |
| Santa Rosa, 10,636—Sonoma Co. | | | | | | | | |
| General Hospital■ | Gen | Indiv | 40 | 15 | 8 | No | 105 | 876 |
| Mary Jesse Hospital | Gen | Indiv | 19 | 6 | 3 | No | 20 | 323 |
| Scotia, 2,024—Hu[illegible] | | | | | | | | |
| Sco[illegible] | Gen | Indus | 52 | 16 | 4 | No | 38 | 457 |
| Selm[illegible] Co. | | | | | | | | |
| Sel[illegible] Sanitarium | Gen | Indep | 16 | 10 | 3 | ... | 79 | 530 |
| Sonora, 2,278—Tuolumne Co. | | | | | | | | |
| Sierra Hospital■ | Gen | Indiv | 26 | 12 | 4 | No | 27 | 308 |
| Sonora Hospital■ | Gen | Indiv | 18 | 9 | 2 | No | 38 | 302 |
| South Gate, 19,632—Los Angeles Co. | | | | | | | | |
| Suburban Hospital | Gen | Indep | 40 | 10 | 16 | No | 245 | 797 |
| South San Francisco, 6,193—San Mateo Co. | | | | | | | | |
| South San Francisco Hosp.■ | Gen | Indep | 32 | 5 | 6 | No | 55 | 310 |
| Spadra, 39—Los Angeles Co. | | | | | | | | |
| State Narcotic Hospital | Drug | State | 122 | 85 | .. | No | ... | 149 |
| Springville,—Tulare Co. | | | | | | | | |
| Tulare-Kings County Joint Tubercular Hospital◘ | TB | County | 95 | 85 | .. | Yes | ... | 142 |
| Standard, 813—Tuolumne Co. | | | | | | | | |
| Pickering Hospital■ | Indus | Indus | 25 | 9 | .. | No | ... | 190 |
| Stockton, 47,963—San Joaquin Co. | | | | | | | | |
| Dameron Hospital◊ | Gen | Indep | 87 | 52 | 12 | No | 223 | 2,089 |
| St. Joseph's Home and Hospital◊ | Gen | Church | 125 | 69 | 15 | Yes | 314 | 2,589 |
| Stockton State Hospital⊙ | N&M | State | 3,366 | 3,200 | .. | No | ... | ..... |
| Sunland,—Los Angeles Co. | | | | | | | | |
| Sunland Sanatorium | TB | Indiv | 42 | New | .. | No | ... | 72 |
| Susanville, 1,358—Lassen Co. | | | | | | | | |
| Riverside Hospital | Gen | Indiv | 50 | 8 | 6 | Yes | 72 | 555 |
| Talmage, 29—Mendocino Co. | | | | | | | | |
| Mendocino State Hospital | N&M | State | 1,916 | 1,700 | .. | No | ... | 440 |
| Torrance, 7,271—Los Angeles Co. | | | | | | | | |
| Jared Sidney Torrance Memorial Hospital | Gen | Indep | 40 | 20 | 12 | No | 220 | 951 |
| Tulare, 6,207—Tulare Co. | | | | | | | | |
| Bellevue Sanitarium■ | Gen | Indiv | 15 | 4 | 2 | No | 24 | 200 |
| Tulare County Gen. Hosp.◘ | Gen | County | 66 | 43 | 9 | Yes | 130 | 945 |
| Tulare Hospital■ | Gen | Indiv | 16 | 4 | 4 | No | 22 | ..... |
| Turlock, 4,276—Stanislaus Co. | | | | | | | | |
| Emanuel Hospital◊■ | Gen | Church | 50 | 20 | 8 | No | 128 | 801 |
| Lillian Collins Hospital | Gen | Indiv | 15 | 3 | 5 | No | 17 | 152 |
| Ventura, 11,432—Ventura Co. | | | | | | | | |
| Hosp. de Buena Ventura | Gen | Indep | 60 | 22 | 12 | No | 125 | 1,2 |
| Ventura County Hosp.■▲ | Gen | County | 180 | 117 | 10 | Yes | 97 | 1,8 |
| Vineburg, 164—Sonoma Co. | | | | | | | | |
| Burndale Hospital | Gen | Indiv | 15 | 6 | 2 | No | 25 | 21 |
| Visalia, 7,263—Tulare Co. | | | | | | | | |
| Kaweah Hospital■ | Gen | Indep | 30 | 15 | 4 | No | 68 | 365 |
| Watsonville, 8,344—Santa Cruz Co. | | | | | | | | |
| Watsonville Hospital | Gen | Indiv | 25 | 18 | 5 | No | 152 | 6,423 |
| Weed, 4,227—Siskiyou Co. | | | | | | | | |
| Weed Hospital■ | Gen | Indus | 20 | 6 | 3 | Yes | 24 | 290 |
| Weimar, 32—Placer Co. | | | | | | | | |
| Weimar Joint Sanatorium■ | TB | County | 381 | 375 | .. | No | ... | 392 |
| Westwood, 4,062—Lassen Co. | | | | | | | | |
| Westwood Hospital | Gen | Indus | 100 | 20 | 11 | Yes | 97 | 558 |
| Willits, 1,424—Mendocino Co. | | | | | | | | |
| Frank R. Howard Memorial Hospital■ | Gen | Indep | 10 | 8 | 4 | No | 21 | 261 |
| Woodland, 5,542—Yolo Co. | | | | | | | | |
| Woodland Clinic Hospital■ | Gen | Indep | 91 | 52 | 9 | Yes | 164 | 2,315 |
| Yosemite National Park, 200—Mariposa Co. | | | | | | | | |
| W. B. Lewis Hospital | Gen | Fed | 13 | 5 | 2 | No | 14 | 229 |
| Yreka, 2,126—Siskiyou Co. | | | | | | | | |
| Siskiyou County General Hospital■ | Gen | County | 62 | 23 | 7 | Yes | 85 | 800 |
| Yuba City, 3,605—Sutter Co. | | | | | | | | |
| Yuba City Gen. Hospital■ | Gen | Part | 15 | 7 | 8 | ... | 35 | ..... |

## CALIFORNIA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alturas, 2,338—Modoc Co. | | | | | | | | |
| Modoc County Hospital | Inst | County | 15 | 8 | 1 | No | 7 | 96 |
| Arrowhead Springs, 217—San Bernardino Co. | | | | | | | | |
| Arrowhead Springs | Metab | Indep | 150 | 51 | .. | No | ... | ..... |
| Artesia, 3,891—Los Angeles Co. | | | | | | | | |
| Resthaven Sanitarium | N&M | Indiv | 25 | 19 | .. | No | ... | 31 |
| Auburn, 2661—Placer Co. | | | | | | | | |
| Placer County Hospital■ | Inst | County | 98 | 91 | 2 | No | 18 | 487 |
| Azusa, 4,808—Los Angeles Co. | | | | | | | | |
| Children's Open Air Health Camp | TB | Indep | 90 | 82 | .. | No | ... | 116 |
| Physiotherapy Institute and Rural Rest Home | Conv | Indep | 33 | 30 | .. | ... | ... | 120 |
| Bakersfield, 26,015—Kern Co. | | | | | | | | |
| R. B. Rees Hospital | Surg | Indiv | 16 | 4 | .. | No | ... | 96 |
| Trinity Hospital | Gen | Indiv | 20 | 5 | 5 | No | 33 | 144 |
| Belmont, 984—San Mateo Co. | | | | | | | | |
| Chas. S. Howard Foundation■ | TB | Indep | 20 | 14 | .. | ... | ... | 195 |
| Nerve Rest Sanitarium | N&M | Indiv | 25 | 16 | .. | No | ... | 14 |
| Berkeley, 82,109—Alameda Co. | | | | | | | | |
| California State Schools for the Deaf and Blind□ | Inst | State | 22 | 12 | .. | Yes | ... | 315 |
| Blythe, 1,020—Riverside Co. | | | | | | | | |
| Frank Luke Mem. Hosp.□ | Gen | County | 8 | 2 | 4 | No | ... | 71 |
| Calexico, 6,299—Imperial Co. | | | | | | | | |
| Gregg Brothers Clinic and Hospital | Gen | Part | 6 | 4 | 1 | No | 12 | 150 |
| Calistoga, 1,000—Napa Co. | | | | | | | | |
| Calistoga Convalescent Home | TB | Indiv | 12 | 8 | .. | ... | ... | ..... |
| Chula Vista, 3,869—San Diego Co. | | | | | | | | |
| McNabb Hosp. and Sanit. | Gen | Indep | 20 | .. | .. | No | ... | ..... |
| Claremont, 2,719—Los Angeles Co. | | | | | | | | |
| Claremont Colleges Infirmary | Inst | Indep | 24 | 4 | .. | Yes | ... | 279 |
| Coalinga, 2,851—Fresno Co. | | | | | | | | |
| San Joaquin Hospital□ | Gen | Indiv | 15 | 6 | 2 | No | 8 | 312 |
| [illegible] | | | | | | | | |
| [illegible] | TB | Indiv | 18 | 10 | .. | ... | ... | 25 |
| [illegible] | TB | Part | 20 | 12 | .. | No | ... | 28 |
| [illegible] ventorium | TB | Indep | 40 | 36 | .. | No | ... | 92 |
| Colusa, 2,116—Colusa Co. | | | | | | | | |
| Colusa County Hospital■ | Inst | County | 58 | 43 | .. | No | 16 | 264 |
| Corona, 7,018—Riverside Co. | | | | | | | | |
| Corona Hospital■ | Gen | Indiv | 8 | 4 | 4 | No | 22 | ..... |
| Coronado, 5,425—San Diego Co. | | | | | | | | |
| Coronado Hospital■ | Gen | Indiv | 10 | 7 | 3 | No | 40 | 242 |
| Crescent City, 1,720—Del Norte Co. | | | | | | | | |
| Del Norte County Hospital | Gen | County | 24 | 10 | .. | No | ... | 77 |
| Culver City, 5,669—Los Angeles Co. | | | | | | | | |
| St. Erne Sanitarium | N&M | Indiv | 40 | 38 | .. | No | ... | 72 |
| Decoto, 519—Alameda Co. | | | | | | | | |
| Masonic Home Hospital | Inst | Frat | 50 | 45 | .. | No | ... | ..... |
| Delano, 2,632—Kern Co. | | | | | | | | |
| Delano Emergency Hosp.■ | Gen | Indiv | 9 | 8 | 2 | No | 19 | 294 |
| Dinuba, 2,968—Tulare Co. | | | | | | | | |
| Dinuba Hospital■ | Gen | Indiv | 12 | 7 | 5 | No | 49 | 213 |
| Duarte, 620—Los Angeles Co. | | | | | | | | |
| Elliott Rest Ranch | TB | Indiv | 28 | 20 | .. | ... | ... | 20 |
| [illegible] | [illegible] | Part | 35 | 30 | .. | No | ... | 4 |
| [illegible] | | | | | | | | |
| [illegible] | [illegible] | State | 2,086 | 2,391 | .. | No | ... | 317 |
| [illegible] | | | | | | | | |
| [illegible] | [illegible] | Indiv | 5 | 2 | 3 | No | 26 | 96 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indiv | 5 | 3 | 3 | No | 18 | 118 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 10 | 3 | 5 | No | 29 | 126 |
| [illegible] | Indus | Indus | 6 | 1 | 1 | No | ... | 70 |
| [illegible] | | | | | | | | |
| [illegible]■ | Inst | County | 50 | 18 | .. | No | ... | 115 |
| [illegible]■ | Inst | State | 44 | 17 | .. | Yes | ... | 1,400 |
| Keene, 164—Kern Co. | | | | | | | | |
| Kern County Preventorium | TB | County | 44 | 39 | .. | Yes | ... | 70 |
| Kingsburg, 1,322—Fresno Co. | | | | | | | | |
| Kingsburg Sanitarium | Gen | Indiv | 8 | 6 | 2 | No | 21 | 201 |
| La Crescenta, 1,510—Los Angeles Co. | | | | | | | | |
| Kimball Sanitarium | N&M | Indiv | 28 | 18 | .. | No | ... | 74 |
| Laguna Beach, 1,981—Orange Co. | | | | | | | | |
| Laguna Beach Hospital | Gen | Indiv | 4 | 1 | 2 | Yes | 5 | 28 |
| La Mesa, 2,513—San Diego Co. | | | | | | | | |
| [illegible] | TB | Indiv | 14 | 8 | .. | No | ... | 75 |
| [illegible] | | | | | | | | |
| [illegible] | N&M | Indiv | 15 | 9 | .. | No | ... | 10 |
| [illegible] | | | | | | | | |
| [illegible]■ | TB | County | 88 | 81 | .. | No | ... | 195 |
| Lompoc, 2,845—Santa Barbara Co. | | | | | | | | |
| Celite Hospital | Indus | Indus | 8 | 2 | .. | No | ... | 700 |
| Lone Pine, 360—Inyo Co. | | | | | | | | |
| Lone Pine Hospital | Gen | Indiv | 7 | 2 | 3 | No | 28 | 86 |
| Long Beach, 142,032—Los Angeles Co. | | | | | | | | |
| Rock Haven Preventorium | TB | Indep | 20 | 15 | .. | No | ... | ..... |
| Los Angeles, 1,238,048—Los Angeles Co. | | | | | | | | |
| Belvedere Sanitarium■ | TB | Indiv | 25 | 11 | .. | No | ... | 61 |
| Brentwood Sanitarium | Surg | Indiv | 15 | 5 | .. | No | ... | 156 |
| Casa Del Mar Sanitarium | N&M | Indiv | 95 | 67 | .. | ... | ... | ..... |
| Century Sanitarium | Conv | Indiv | 38 | 30 | .. | No | ... | ..... |
| Chase Diet Sanitarium | Conv | Indiv | 22 | 16 | .. | No | ... | 211 |
| Fernwold Rest Home | Conv | Indiv | 12 | 9 | .. | No | ... | ..... |
| Junior League Convalescent Home for Children■ | Conv | Indep | 20 | 18 | .. | No | ... | 85 |
| Los Angeles County Juvenile Hall Hospital■ | Inst | County | 116 | 84 | .. | No | ... | 4,331 |
| [illegible] | Emerg | City | 28 | .. | .. | No | ... | ..... |
| [illegible] | Iso | City | 90 | .. | 8 | No | ... | ..... |
| [illegible]■ | Vener | City | 30 | 30 | .. | No | ... | 371 |
| Marshall Manor Sanitarium | N&M | Part | 20 | 15 | .. | ... | ... | ..... |
| Martha Lee Maternity Hospital | Mater | Indiv | 10 | 2 | 10 | No | ... | ..... |
| Private Home Hospital | Mater | Indiv | 9 | 1 | 8 | No | 31 | 34 |
| Resthaven | N&M | Indep | 40 | 30 | .. | No | ... | 121 |
| St. Barnabas House | Conv | Church | 18 | 3 | .. | ... | ... | ..... |
| St. Vincent's Mater. Home | Mater | Indep | 10 | 10 | 10 | No | ... | ..... |
| Salvation Army Truelove Home■ | Mater | Church | 60 | 47 | 35 | No | 137 | 185 |
| Santa Marta Maternity Cottage□ | Mater | Church | 17 | 12 | 17 | Yes | 234 | 416 |
| Southwest Mater. Hospital | Mater | Indiv | 9 | 3 | 9 | No | 161 | 161 |
| Tapley Sanitarium | N&M | Indiv | 15 | 10 | .. | No | ... | ..... |
| Veterans Admin. Home□▲ | Inst | VetAd | 857 | 806 | .. | Yes | ... | 3,634 |
| Wilshire Rest Home and Sanitarium | Conv | Part | 25 | 20 | .. | No | ... | ..... |
| Loyalton, 837—Sierra Co. | | | | | | | | |
| Sierra Valley Hospital■ | Gen | Indiv | 8 | 2 | 2 | No | ... | 89 |
| Manor,—Marin Co. | | | | | | | | |
| Bothin Convalescent Home for Women and Children | Conv | Indep | 75 | 45 | .. | No | ... | ..... |
| Manteca, 1,614—San Joaquin Co. | | | | | | | | |
| Manteca Hospital | Gen | Indiv | 8 | 3 | 4 | No | 23 | 201 |
| Marysville, 5,763—Yuba Co. | | | | | | | | |
| Yuba County Hospital■ | Inst | County | 80 | 60 | .. | No | 33 | 343 |
| Merced, 7,066—Merced Co. | | | | | | | | |
| Merced County Hospital□ | Gen | County | 200 | 211 | 11 | Yes | 149 | 1,568 |
| Monrovia, 10,890—Los Angeles Co. | | | | | | | | |
| Dore Sanatorium | TB | Indiv | 19 | 19 | .. | No | ... | 53 |
| Monrovia Sanitarium | TB | Church | 22 | 19 | .. | No | ... | 44 |
| Norumbega Heights Sanat. | TB | Indiv | 15 | 14 | .. | No | ... | 70 |
| Montrose, 1,040—Los Angeles Co. | | | | | | | | |
| Dr. Utley's Hospital-Sanit. | GenTB | Indiv | 25 | 8 | .. | No | ... | ..... |
| Mountain View, 3,308—Santa Clara Co. | | | | | | | | |
| Mountain View Hospital and Sanitarium■ | Gen | Indiv | 10 | 1 | 4 | No | ... | 150 |
| Nevada City, 1,701—Nevada Co. | | | | | | | | |
| Nevada City Sanitarium■ | Gen | Indiv | 8 | 4 | 6 | Yes | 20 | 354 |
| Nevada County Hospital■ | Gen | County | 64 | 54 | .. | No | ... | 93 |
| Newport Beach, 2,203—Orange Co. | | | | | | | | |
| Newport Beach Hospital | Gen | Indiv | 5 | 3 | 2 | No | ... | 70 |
| Oakland, 284,063—Alameda Co. | | | | | | | | |
| Fred Finch Orphanage | Inst | Church | 12 | 3 | .. | No | ... | ..... |
| Inez Sanitarium | Mater | Indiv | 10 | 3 | 12 | No | 79 | 78 |
| King's Daughters of Calif. Home for Incurables | Incur | Church | 120 | 90 | .. | No | ... | 120 |
| Oakland Maternity Hosp. | Mater | Indep | 12 | 6 | 12 | No | 194 | 194 |
| Salvation Army Women's Home and Maternity Hospital■ | Mater | Church | 80 | 42 | 35 | No | 97 | 137 |
| Pacific Grove, 5,558—Monterey Co. | | | | | | | | |
| Bayview Hospital■ | Gen | Indiv | 12 | 6 | 4 | No | ... | 210 |
| Palm Springs, 417—Riverside Co. | | | | | | | | |
| Dr. Henry Reid Clinic and Hospital | Gen | Indiv | 25 | 7 | 4 | No | 15 | 212 |
| Palo Alto, 13,652—Santa Clara Co. | | | | | | | | |
| [illegible] | Iso | Indep | 35 | 2 | .. | No | ... | 21 |
| [illegible] | | | | | | | | |
| [illegible] | Indus | Indus | 6 | 1 | .. | No | ... | 14 |
| [illegible] | | | | | | | | |
| El Dorado County Hosp.■ | Inst | County | 58 | 40 | .. | No | ... | ..... |
| Porterville, 5,303—Tulare Co. | | | | | | | | |
| Mt. Whitney Hospital■ | Gen | Indiv | 8 | 2 | 2 | No | ... | 120 |
| Porterville Hospital | Gen | Indiv | 16 | 8 | 2 | No | 26 | 284 |
| Quincy, 1,930—Plumas Co. | | | | | | | | |
| Plumas Industrial Hospital | Indus | Indiv | 5 | 2 | .. | No | ... | 59 |
| Randsburg, 443—Kern Co. | | | | | | | | |
| Rand District Hospital | Gen | Indiv | 8 | 2 | 1 | Yes | ... | ..... |
| Redding, 4,188—Shasta Co. | | | | | | | | |
| Shasta County Hospital■ | Gen | County | 81 | 45 | 3 | No | 30 | 301 |
| Represa, 30—Sacramento Co. | | | | | | | | |
| California State Prison Hospital■▲ | Inst | State | 78 | 47 | .. | Yes | ... | ..... |
| Rosemead, 2,717—Los Angeles Co. | | | | | | | | |
| Rosemead Lodge Sanit. | Conv | Part | 40 | 34 | .. | No | ... | 97 |
| [illegible] ramento Co. | | | | | | | | |
| [illegible] and [illegible] | Emerg | City | 7 | ... | .. | No | ... | ..... |
| Salinas, 10,263—Monterey Co. | | | | | | | | |
| Monterey County Hospital and Farm■ | Inst | County | 58 | 37 | 6 | No | 61 | 643 |
| San Diego, 147,995—San Diego Co. | | | | | | | | |
| Fraser Convalescent Home | Conv | Indiv | 18 | 10 | .. | No | ... | 8 |
| Gracewood Hospital | Mater | Indiv | 35 | ... | .. | ... | ... | ..... |
| Lane Sanitarium | Conv | Indiv | 9 | 3 | .. | No | ... | 26 |
| San Francisco, 634,394—San Francisco Co. | | | | | | | | |
| Laguna Honda Home Infirmary■▲ | Inst | Cy&Co | 510 | 510 | .. | No | ... | ..... |
| San Francisco Emergency Hospital Service▲ | Emerg | Cy&Co | 92 | 55 | .. | ... | ... | ..... |
| San Francisco Home for Incurables, Aged and Sick | Inst | Indep | 61 | 55 | .. | No | ... | ..... |
| San Francisco Polyclinic■ | Gen | Indep | 12 | 7 | .. | Yes | ... | 523 |
| San Gabriel, 7,224—Los Angeles Co. | | | | | | | | |
| Baldy View Sanitarium | N&M | Part | 50 | 45 | .. | ... | ... | 24 |
| San Jose, 57,651—Santa Clara Co. | | | | | | | | |
| Sunnyholme Preventorium■ | TB | County | 45 | 19 | .. | Yes | ... | 82 |

Key to symbols and abbreviations is on page 2078

## CALIFORNIA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| San Leandro, 11,455—Alameda Co. | | | | | | | | |
| Fairmont Hospital of Alameda County⊙■ | Inst | County | 496 | 475 | .. | No | ... | ..... |
| San Mateo, 13,444—San Mateo Co. | | | | | | | | |
| San Mateo Preventorium | TB | Indep | 28 | 19 | .. | No | ... | 41 |
| San Quentin, 328—Marin Co. | | | | | | | | |
| San Quentin Prison Hosp.■▲ | Inst | State | 150 | 110 | .. | No | ... | 1,450 |
| anta Cruz, 14,395—Santa Cruz Co. | | | | | | | | |
| Santa Cruz County Hosp. | Inst | County | 32 | 12 | 6 | Yes | 59 | 788 |
| anta Monica, 37,146—Los Angeles Co. | | | | | | | | |
| Santa Monica Diet Home.. | Conv | Indiv | 10 | 7 | .. | No | ... | 85 |
| nta Rosa, 10,636—Sonoma Co. | | | | | | | | |
| Sonoma County Hospital■ | Inst | County | 124 | 110 | 6 | No | 72 | 1,249 |
| ratoga, 2,523—Santa Clara Co. | | | | | | | | |
| Odd Fellows' Home........ | Inst | Frat | 41 | 37 | .. | No | ... | 449 |
| Sonora, 2,278—Tuolumne Co. | | | | | | | | |
| Tuolumne County Hosp.■. | Inst | County | 30 | 26 | 2 | No | 20 | 280 |
| Spadra, 39—Los Angeles Co. | | | | | | | | |
| Pacific Colony.............. | MenDef | State | 480 | 390 | .. | No | ... | 176 |
| Stanford University, 720—Santa Clara Co. | | | | | | | | |
| Stanford Conv. Home.... | Conv | Indep | 45 | 44 | .. | No | ... | 162 |
| Stockton, 47,963—San Joaquin Co. | | | | | | | | |
| Hewlett Emergency Hosp.■ | Emerg | City | 9 | ... | .. | No | ... | ..... |
| Sugar Pine, 73—Madera Co. | | | | | | | | |
| Sugar Pine Hospital....... | Gen | Indus | 18 | 3 | 2 | No | 1 | 126 |
| Suisun City, 905—Solano Co. | | | | | | | | |
| Solano County Hospital■. | Inst | County | 96 | 70 | 4 | No | 34 | 360 |
| Ventura, 11,432—Ventura Co. | | | | | | | | |
| Ventura School for Girls. | Inst | State | 20 | 4 | .. | No | ... | ..... |
| Veterans Home,—Napa Co. | | | | | | | | |
| Veterans Home Hospital■▲ | Inst | State | 249 | 200 | .. | Yes | ... | 649 |
| Victorville, 2,164—San Bernardino Co. | | | | | | | | |
| Victorville Hospital and Desert Air Sanitarium... | Gen | Indep | 14 | 9 | 3 | No | ... | 131 |
| Walkermine, 600—Plumas Co. | | | | | | | | |
| Walker Mining Co. Hosp.. | Gen | Indus | 7 | 3 | 3 | Yes | 5 | 83 |
| Weaverville, 509—Trinity Co. | | | | | | | | |
| Trinity County Hospital■ | Inst | County | 32 | 18 | .. | No | ... | 33 |
| Willows, 2,024—Glenn Co. | | | | | | | | |
| Glenn County Hospital■... | Inst | County | 28 | 24 | .. | No | ... | 65 |
| Yuba City, 3,605—Sutter Co. | | | | | | | | |
| Sutter County Hospital■.. | Inst | County | 50 | 37 | 6 | No | 28 | 232 |

Summary for California:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 276 | 46,772 | 36,912 | 433,019 |
| Related institutions......... | 131 | 9,209 | 7,548 | 29,458 |
| Totals....................... | 407 | 55,981 | 44,460 | 462,477 |
| Refused registration.......... | 67 | 2,320 | | |

## COLORADO

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alamosa, 5,107—Alamosa Co. | | | | | | | | |
| Lutheran Hospital■........ | Gen | Church | 20 | 13 | 5 | No | 53 | 784 |
| Aspen, 705—Pitkin Co. | | | | | | | | |
| Citizens' Hospital■......... | Gen | Indep | 20 | 6 | 2 | No | 3 | 38 |
| Boulder, 11,223—Boulder Co. | | | | | | | | |
| Boulder-Colorado Sanitarium and Hospital★◊■ | Gen | Church | 101 | 54 | 8 | Yes | 47 | 1,421 |
| Community Hospital■..... | Gen | Indep | 60 | 16 | 9 | No | 72 | 689 |
| Mesa Vista Sanatorium... | TB | Part | 36 | 17 | .. | No | ... | 35 |
| Canon City, 5,938—Fremont Co. | | | | | | | | |
| Graves' Hospital■.......... | Gen | Indiv | 35 | 7 | 6 | No | 55 | 374 |
| Holmes Hospital■.......... | Gen | Indiv | 22 | 11 | 4 | No | 42 | 516 |
| Colorado Springs, 33,237—El Paso Co. | | | | | | | | |
| Beth-El General Hosp.★◊■▲ | Gen | Church | 92 | 71 | 12 | Yes | 282 | 1,970 |
| Colorado Springs Psychopathic Hospital.......... | N&M | Part | 150 | 85 | .. | Yes | ... | 122 |
| Cragmor Sanat. & Hosp.. | TB | Indep | 150 | 24 | .. | No | ... | 50 |
| Crestone Heights Sanitarium and Hospital■... | Gen | Indiv | 22 | 8 | 5 | Yes | 44 | 313 |
| Glockner Sanat. & Hosp.★◊■ | Gen | Church | 225 | 176 | 13 | Yes | 118 | 1,528 |
| National M. E. Sanat. for Tuberculosis ............ | TB | Church | 70 | 68 | .. | No | ... | 158 |
| St. Francis Hospital and Sanatorium★◊ .......... | Gen | Church | 138 | 75 | 12 | No | 96 | 1,119 |
| Sunnyrest Sanatorium..... | TB | Indep | 54 | 40 | .. | No | ... | 20 |
| Union Printers' Home and Tuberculosis Sanatorium+ | GenTB | Indep | 185 | 175 | .. | No | ... | 109 |
| Cortez, 921—Montezuma Co. | | | | | | | | |
| Johnson Hospital.......... | Gen | Indiv | 12 | 7 | 1 | No | 26 | 373 |
| Cripple Creek, 1,427—Teller Co. | | | | | | | | |
| Cripple Creek Hospital■... | Gen | Indep | 40 | 25 | 6 | No | 16 | 143 |
| Del Norte, 1,410—Rio Grande Co. | | | | | | | | |
| St. Joseph's Sanitarium■.. | Gen | Church | 25 | 8 | 3 | No | 48 | 257 |
| Delta, 2,938—Delta Co. | | | | | | | | |
| Western Slope Hospital... | Gen | Indep | 11 | 6 | 3 | No | 20 | 226 |
| Denver, 287,861—Denver Co. | | | | | | | | |
| Agnes Memorial Sanat..... | TB | Indep | 158 | 79 | .. | No | ... | 123 |
| Bethesda Sanatorium...... | TB | Church | 68 | 48 | .. | No | ... | 48 |
| Beth Israel Hospital■..... | Gen | Church | 67 | 54 | 12 | No | 27 | 591 |
| Children's Hospital+⊙■..... | Chil | Indep | 147 | 107 | 28 | No | ... | 3,342 |
| Colorado Gen. Hosp.★+◊■▲ | Gen | State | 158 | 124 | 18 | Yes | 368 | 2,808 |
| Colorado Psychopathic Hospital+⊙ .................. | N&M | State | 78 | 74 | .. | Yes | ... | 722 |
| Denver General Hosp.★◊■. | Gen | Cy&Co | 469 | 381 | 46 | No | 630 | 9,924 |
| Fitzsimons Gen. Hosp.★■▲ | Gen | Army | 1,832 | 1,126 | 8 | Yes | 48 | 4,540 |

## COLORADO—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Mary H. Donaldson Woman's Hospital....... | Mater | Indep | 25 | 12 | 15 | No | 273 | 497 |
| Mercy Hospital★◊■.......... | Gen | Church | 165 | 116 | 25 | No | 462 | 3,768 |
| Mt. Airy Sanitarium...... | N&M | Indep | 40 | 30 | .. | No | ... | 129 |
| National Jewish Hospital+ | TB | Indep | 270 | 280 | .. | Yes | ... | 269 |
| Physicians and Surgeons Hospital .................. | Gen | Indiv | 58 | 26 | 25 | ... | ... | ..... |
| Porter Sanit. and Hospital | Gen | Church | 50 | 20 | 15 | No | 86 | 666 |
| Presbyterian Hospital★◊■.. | Gen | Church | 150 | 99 | 25 | No | 572 | 3,777 |
| St. Anthony's Hospital★◊■ | Gen | Church | 177 | 95 | 15 | No | 302 | 2,649 |
| St. Joseph's Hospital★◊■.. | Gen | Church | 200 | 125 | 25 | No | 284 | 3,357 |
| St. Luke's Hospital★◊■... | Gen | Church | 210 | 141 | 30 | No | 610 | 4,887 |
| Sands House............... | TB | Indep | 40 | 30 | .. | No | ... | 56 |
| Durango, 5,400—La Plata Co. | | | | | | | | |
| Mercy Hospital⊙........... | Gen | Church | 42 | 13 | 6 | No | 57 | 866 |
| Englewood, 7,980—Arapahoe Co. | | | | | | | | |
| Swedish National Sanat. for Tuberculosis.......... | TB | Indep | 100 | 58 | .. | No | ... | 76 |
| Fairplay, 221—Park Co. | | | | | | | | |
| Fairplay Hospital.......... | Gen | Indiv | 20 | 14 | 2 | No | ... | 126 |
| Ft. Logan, 1,525—Arapahoe Co. | | | | | | | | |
| Station Hospital........... | Gen | Army | 25 | 8 | .. | Yes | ... | 463 |
| Ft. Lyon, 26—Bent Co. | | | | | | | | |
| Veterans Admin. Hospital▲ | Gen | VetAd | 590 | 448 | .. | No | ... | 1,383 |
| Ft. Morgan, 4,423—Morgan Co. | | | | | | | | |
| Ft. Morgan Hospital■..... | Gen | Indiv | 25 | 12 | 6 | No | 71 | 507 |
| Glenwood Springs, 1,825—Garfield Co. | | | | | | | | |
| Glenwood Springs Sanit... | Gen | Indep | 25 | 9 | 6 | No | 20 | 265 |
| Grand Junction, 10,247—Mesa Co. | | | | | | | | |
| St. Mary's Hospital◊...... | Gen | Church | 75 | 45 | 12 | No | ... | 875 |
| Greeley, 12,203—Weld Co. | | | | | | | | |
| Greeley Hospital■.......... | Gen | County | 61 | 35 | 11 | No | 211 | 1,532 |
| Weld County Hospital■.... | Gen | County | 70 | 51 | 3 | Yes | 20 | 488 |
| Hayden, 554—Routt Co. | | | | | | | | |
| Solandt Memorial Hosp.■. | Gen | Indep | 16 | 3 | 4 | No | 22 | 124 |
| Holyoke, 1,226—Phillips Co. | | | | | | | | |
| Holyoke Hospital■......... | Gen | Indiv | 10 | 5 | 2 | Yes | 13 | 250 |
| La Junta, 7,193—Otero Co. | | | | | | | | |
| A.T.& S.F. Railroad Hosp.■ | Indus | Indus | 36 | 22 | .. | Yes | ... | 400 |
| Mennonite Hosp. & Sanit.◊ | Gen | Church | 70 | 48 | 10 | No | ... | 955 |
| Lamar, 4,233—Prowers Co. | | | | | | | | |
| Charles Maxwell Hosp.■.. | Gen | Indiv | 50 | 33 | 6 | No | 84 | 625 |
| Las Animas, 2,517—Bent Co. | | | | | | | | |
| Blackwill Hospital......... | Gen | Indiv | 12 | 12 | 4 | ... | ... | 186 |
| Leadville, 3,771—Lake Co. | | | | | | | | |
| St. Vincent's Hospital..... | Gen | Church | 26 | 6 | 3 | No | 20 | 191 |
| Longmont, 6,029—Boulder Co. | | | | | | | | |
| Longmont Hospital■....... | Gen | Indiv | 33 | 17 | 7 | Yes | 81 | 640 |
| Monte Vista, 2,610—Rio Grande Co. | | | | | | | | |
| Monte Vista Hospital...... | Gen | Part | 12 | 4 | 5 | No | 40 | 262 |
| Montrose, 3,566—Montrose Co. | | | | | | | | |
| Montrose Hospital......... | Gen | Indiv | 20 | 8 | 5 | No | 30 | 389 |
| St. Luke's Hospital........ | Gen | Indiv | 12 | 4 | 2 | No | 14 | 144 |
| Oak Creek, 1,211—Routt Co. | | | | | | | | |
| Oak Creek Hospital■..... | Gen | Indiv | 10 | 4 | 2 | No | 15 | 168 |
| Red Cross Hospital....... | Gen | Part | 12 | 8 | 2 | No | 10 | 240 |
| Ouray, 707—Ouray Co. | | | | | | | | |
| Bates Hospital ........... | Gen | Indiv | 25 | 5 | 3 | No | 34 | 341 |
| Pueblo, 50,096—Pueblo Co. | | | | | | | | |
| Colorado State Hospital.. | N&M | State | 2,250 | 2,610 | .. | No | ... | 445 |
| Corwin Hospital◊■........ | Gen | Indus | 219 | 101 | 16 | Yes | 333 | 2,644 |
| Parkview Hospital◊■....... | Gen | Indep | 104 | 49 | 9 | No | 104 | 1,233 |
| St. Mary Hospital◊■....... | Gen | Church | 150 | 90 | 12 | No | 222 | 2,582 |
| Woodcroft Hospital....... | N&M | Indep | 130 | 75 | .. | Yes | ... | 175 |
| Rocky Ford, 3,426—Otero Co. | | | | | | | | |
| Physicians' Hospital...... | Gen | Part | 15 | 10 | 2 | No | 48 | 245 |
| Salida, 5,065—Chaffee Co. | | | | | | | | |
| D. & R. G. W. Railroad Hospital■ .............. | Gen | Indus | 81 | 41 | 4 | No | 82 | 1,086 |
| Red Cross Hospital■...... | Gen | Indiv | 42 | 24 | 2 | Yes | 15 | 638 |
| Silverton, 1,301—San Juan Co. | | | | | | | | |
| Silverton Miners' Union Hospital ................ | Indus | Indus | 20 | 4 | .. | No | 3 | 101 |
| Spivak, 500—Jefferson Co. | | | | | | | | |
| Sanat. of the Jewish Consumptives' Relief Society+ | TB | Indep | 300 | 262 | .. | Yes | ... | 186 |
| Steamboat Springs, 1,198—Routt Co. | | | | | | | | |
| Steamboat Springs Hosp.■ | Gen | Indiv | 10 | 4 | 3 | No | ... | ..... |
| Sterling, 7,195—Logan Co. | | | | | | | | |
| St. Benedict Hospital...... | Gen | Church | 30 | 6 | 6 | No | 57 | 876 |
| Towaoc, 60—Montezuma Co. | | | | | | | | |
| Ute Mountain Indian Hosp. | Gen | Indian | 24 | 4 | 2 | Yes | 1 | 54 |
| Trinidad, 11,732—Las Animas Co. | | | | | | | | |
| Mt. San Rafael Hospital◊■ | Gen | Church | 65 | 40 | 10 | Yes | 111 | 1,176 |
| Walsenburg, 5,503—Huerfano Co. | | | | | | | | |
| Lamme Brothers Hospital■ | Gen | Part | 20 | 9 | 3 | No | 28 | 393 |
| Wheat Ridge, 1,030—Jefferson Co. | | | | | | | | |
| Evangelical Lutheran Sanit. | TB | Church | 100 | 74 | .. | No | ... | 49 |
| Windsor, 1,852—Weld Co. | | | | | | | | |
| Bartz Memorial Hospital.. | Gen | Indiv | 11 | 3 | 2 | No | 12 | 6 |
| Woodmen,—El Paso Co. | | | | | | | | |
| Modern Woodmen of America Sanatorium .......... | TB | Frat | 250 | 165 | .. | No | ... | 30 |
| Yuma, 1,300—Yuma Co. | | | | | | | | |
| Lutheran Deaconess Hosp. | Gen | Church | 10 | 2 | 3 | No | 21 | 148 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Boulder, 11,223—Boulder Co. | | | | | | | | |
| Boulder County Hospital■ | Gen | County | 30 | 20 | 4 | No | 8 | 75 |
| Breckenridge, 436—Summit Co. | | | | | | | | |
| Summit County Hospital. | Gen | County | 11 | 10 | .. | No | ... | ..... |
| Brush, 2,312—Morgan Co. | | | | | | | | |
| Eben-Ezer Hospital■....... | Gen | Church | 24 | 12 | 8 | No | 65 | 480 |
| Canon City, 5,938—Fremont Co. | | | | | | | | |
| Colorado State Penitentiary Hospital■▲ ............... | Inst | State | 22 | 15 | .. | Yes | ... | 330 |

Key to symbols and abbreviations is on page 2078

## COLORADO—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Collbran, 341—Mesa Co. | | | | | | | | |
| Plateau Valley Congregation Hospital | Gen | Church | 8 | 2 | 4 | No | 17 | 134 |
| Colorado Springs, 33,237—El Paso Co. | | | | | | | | |
| Myron Stratton Home | Inst | Indep | 15 | 13 | .. | Yes | ... | 59 |
| Denver, 287,861—Denver Co. | | | | | | | | |
| Children's Conv. Home | Chil | Church | 24 | 30 | 6 | No | ... | 100 |
| Church Home for Convalescents | Conv | Church | 22 | 14 | 3 | No | ... | 260 |
| Denver Orphans' Home | Inst | Indep | 30 | 5 | .. | No | ... | ..... |
| Ex-Patient Tuber. Home | TB | Indep | 81 | 73 | .. | No | ... | 62 |
| National Home for Jewish Children | Inst | Indep | 30 | 2 | .. | No | ... | 403 |
| Oakes Home | TB | Church | 150 | 60 | .. | No | ... | ..... |
| St. Clara Orphanage | Inst | Church | 30 | 3 | .. | No | ... | ..... |
| Steele Memorial Hospital | Iso | City | 80 | 24 | .. | No | ... | 340 |
| Englewood, 7,980—Arapahoe Co. | | | | | | | | |
| Molkery Sanitarium | N&M | Indiv | 14 | 14 | .. | No | ... | 13 |
| Temple Sanatorium | TB | Indiv | 28 | 27 | .. | No | ... | 309 |
| Estes Park, 417—Larimer Co. | | | | | | | | |
| Dr. Henry Reid Clinic and Hospital | Gen | Indiv | 10 | 7 | .. | No | ... | ..... |
| Fruita, 1,053—Mesa Co. | | | | | | | | |
| Fruita Community Hosp. | Gen | Indep | 8 | 2 | 1 | No | 5 | 54 |
| Golden, 2,426—Jefferson Co. | | | | | | | | |
| State Industrial School for Boys Hospital■ | Inst | State | 22 | 7 | .. | No | ... | ..... |
| Grand Junction, 10,247—Mesa Co. | | | | | | | | |
| State Home and Training School for Mental Defectives | MenDef | State | 270 | 270 | .. | No | ... | 50 |
| Homelake,—Rio Grande Co. | | | | | | | | |
| Colorado State Soldiers' and Sailors' Home■ | Inst | State | 36 | 18 | .. | No | ... | 42 |
| La Veta, 782—Huerfano Co. | | | | | | | | |
| La Veta Hospital | Gen | Indiv | 8 | 1 | 3 | No | 15 | 50 |
| Longmont, 6,029—Boulder Co. | | | | | | | | |
| St. Vrain Hospital | Gen | Indiv | 8 | 3 | 5 | No | ... | 159 |
| Loveland, 5,506—Larimer Co. | | | | | | | | |
| Loveland Hosp. & Clinic | Gen | Part | 10 | 5 | 4 | No | 30 | 254 |
| Namaqua Hospital | Gen | Indep | 14 | 6 | 4 | No | 24 | 220 |
| Pueblo, 50,096—Pueblo Co. | | | | | | | | |
| City Contagious Hospital | Iso | City | 14 | ... | .. | No | ... | 28 |
| Ridge,—Jefferson Co. | | | | | | | | |
| State Home and Training School for Mental Defectives | MenDef | State | 190 | 158 | .. | No | ... | 66 |
| Seibert, 273—Kit Carson Co. | | | | | | | | |
| Seibert Hospital | Gen | Indiv | 6 | 3 | 2 | No | 7 | 80 |

| Summary for Colorado: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 82 | 11,468 | 8,307 | 76,451 |
| Related institutions | 28 | 1,195 | 803 | 8,835 |
| Totals | 110 | 12,663 | 9,110 | 85,286 |
| Refused registration | 15 | 552 | | |

## CONNECTICUT

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bridgeport, 146,716—Fairfield Co. | | | | | | | | |
| Bridgeport Hospital★◊ | Gen | Indep | 298 | 237 | 62 | No | 1,415 | 7,728 |
| Park City Hospital■ | Gen | Indep | 33 | 21 | 10 | Yes | 84 | 818 |
| St. Vincent's Hospital★◊■ | Gen | Church | 216 | 182 | 35 | Yes | 705 | 4,995 |
| Bristol, 28,451—Hartford Co. | | | | | | | | |
| Bristol Hospital◊■ | Gen | Indep | 84 | 48 | 16 | Yes | 278 | 1,417 |
| Canaan, 565—Litchfield Co. | | | | | | | | |
| Robert C. Geer Mem. Hosp.■ | Gen | Indep | 18 | New | 6 | Yes | 15 | 148 |
| Danbury, 22,261—Fairfield Co. | | | | | | | | |
| Danbury Hospital★◊■ | Gen | Indep | 111 | 74 | 23 | No | 360 | 2,529 |
| Derby, 10,788—New Haven Co. | | | | | | | | |
| Griffin Hospital◊■ | Gen | Indep | 82 | 58 | 19 | No | 385 | 1,768 |
| Greens Farms, 275—Fairfield Co. | | | | | | | | |
| Hall-Brooke Sanitarium | N&M | Indiv | 100 | 63 | .. | No | ... | 135 |
| Greenwich, 5,981—Fairfield Co. | | | | | | | | |
| "Blythewood" | N&M | Part | 60 | 50 | .. | No | ... | 95 |
| Greenwich Hospital◊■ | Gen | Indep | 105 | 69 | 20 | Yes | 321 | 2,213 |
| Hartford, 164,072—Hartford Co. | | | | | | | | |
| Cedarcrest+■ | TB | State | 191 | 189 | .. | No | ... | 105 |
| Charter Oak Private Hosp. | Gen | Indep | 14 | 10 | .. | No | 10 | 336 |
| Hartford Hospital★◊■ | Gen | Indep | 702 | 467 | 78 | No | 1,726 | 12,123 |
| Hartford Retreat | N&M | Indep | 200 | 175 | .. | No | ... | 420 |
| Mt. Sinai Hospital◊■ | Gen | Indep | 65 | 42 | 15 | Yes | 241 | 1,409 |
| Municipal Hospital★■ | Gen | City | 182 | 189 | 12 | No | 145 | 2,272 |
| Niles Street Private Hosp. | Gen | Indiv | 20 | 3 | 20 | No | 80 | 148 |
| St. Francis' Hospital★◊■ | Gen | Church | 480 | 316 | 100 | Yes | 1,525 | 9,139 |
| Wildwood Sanatorium | TB | Indep | 50 | 43 | .. | No | ... | ..... |
| Meriden, 38,481—New Haven Co. | | | | | | | | |
| Meriden Hospital★◊■ | Gen | Indep | 112 | 62 | 24 | No | 373 | 1,919 |
| Meriden State Tuber. Sanatorium+■ | TB | State | 252 | 196 | .. | Yes | ... | 197 |
| Middletown, 24,554—Middlesex Co. | | | | | | | | |
| Connecticut State Hosp.+◊ | N&M | State | 2,337 | 2,970 | .. | Yes | ... | 497 |
| Middlesex Hospital★◊■ | Gen | Indep | 135 | 99 | 25 | No | 423 | 2,479 |
| Milford, 12,660—New Haven Co. | | | | | | | | |
| Milford Hospital■ | Gen | Indep | 25 | 18 | 6 | No | 99 | 647 |
| New Britain, 68,128—Hartford Co. | | | | | | | | |
| New Britain General Hospital★◊■ | Gen | Indep | 204 | 136 | 36 | No | 642 | 3,716 |

Key to symbols and abbreviations is on page 2078

## CONNECTICUT—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| New Haven, 162,655—New Haven Co. | | | | | | | | |
| Grace Hospital★◊■ | Gen | Indep | 243 | 171 | 44 | Yes | 810 | 5,963 |
| Hospital of St. Raphael★◊■ | Gen | Church | 212 | 208 | 28 | No | 668 | 5,057 |
| New Haven Hospital★+◊■▲ | Gen | Indep | 459 | 276 | 35 | Yes | 642 | 6,137 |
| Newington, 4,572—Hartford Co. | | | | | | | | |
| Newington Home for Crippled Children■ | Ortho | Indep | 200 | 194 | .. | Yes | ... | 134 |
| Veterans Admin. Hospital■ | Gen | VetAd | 249 | 161 | .. | Yes | ... | ..... |
| New London, 29,640—New London Co. | | | | | | | | |
| Home Memorial Hospital■ | Gen | Indep | 48 | 15 | 12 | Yes | 128 | 419 |
| Lawrence and Memorial Associated Hospitals★◊■ | Gen | Indep | 192 | 109 | 38 | No | 521 | 2,642 |
| Dr. Lena's Private Hosp. | Surg | Indiv | 24 | 23 | .. | Yes | ... | 865 |
| New Milford, 4,700—Litchfield Co. | | | | | | | | |
| New Milford Hospital■ | Gen | Indep | 25 | 10 | 10 | No | 74 | 365 |
| Niantic, 1,697—New London Co. | | | | | | | | |
| The Seaside■ | TB | State | 59 | 59 | .. | No | ... | 17 |
| Norwalk, 36,019—Fairfield Co. | | | | | | | | |
| Norwalk General Hosp.◊■ | Gen | Indep | 143 | 95 | 23 | No | 476 | 3,607 |
| Norwich, 23,021—New London Co. | | | | | | | | |
| Norwich State Hospital | N&M | State | 2,345 | 2,421 | .. | Yes | ... | 693 |
| Norwich State Tuberculosis Sanatorium | TB | State | 222 | 215 | .. | No | ... | 145 |
| William W. Backus Hospital★◊■ | Gen | Indep | 129 | 86 | 26 | Yes | 347 | 2,379 |
| Putnam, 7,318—Windham Co. | | | | | | | | |
| Day Kimball Hospital■ | Gen | Indep | 71 | 46 | 9 | Yes | 121 | 1,146 |
| Rockville, 7,445—Tolland Co. | | | | | | | | |
| Rockville City Hospital■ | Gen | Indep | 33 | 17 | 10 | No | 99 | 566 |
| Sharon, 1,710—Litchfield Co. | | | | | | | | |
| Sharon Hospital■ | Gen | Indep | 40 | 15 | 12 | Yes | 130 | 545 |
| Shelton, 10,113—Fairfield Co. | | | | | | | | |
| Laurel Heights State Tuberculosis Sanatorium■ | TB | State | 260 | 220 | .. | No | ... | 236 |
| South Manchester, 10,025—Hartford Co. | | | | | | | | |
| Manchester Mem. Hosp.■ | Gen | Indep | 55 | 38 | 11 | Yes | 235 | 1,200 |
| South Norwalk, 8,968—Fairfield Co. | | | | | | | | |
| Dr. Wadsworth's Sanit. | N&M | Indiv | 25 | 18 | .. | No | ... | 10 |
| Stafford Springs, 3,492—Tolland Co. | | | | | | | | |
| Cyril and Julia C. Johnson Memorial Hospital■ | Gen | Indep | 35 | 21 | 10 | Yes | 141 | 465 |
| Stamford, 46,346—Fairfield Co. | | | | | | | | |
| Dr. Barnes Sanitarium | N&M | Indiv | 75 | 53 | .. | No | ... | 100 |
| The Orchards | N&M | Indiv | 25 | 18 | .. | No | ... | ..... |
| Stamford Hall | N&M | Indep | 250 | 200 | .. | No | ... | ..... |
| Stamford Hospital★◊■ | Gen | Indep | 231 | 142 | 36 | Yes | 645 | 5,410 |
| Thompsonville, 8,525—Hartford Co. | | | | | | | | |
| Elmcroft—Dr. Vail's Sanat. | N&M | Indep | 20 | 15 | .. | No | ... | ..... |
| Torrington, 26,040—Litchfield Co. | | | | | | | | |
| Charlotte Hungerford Hospital■ | Gen | Indep | 129 | 51 | 21 | Yes | 303 | 1,626 |
| Wallingford, 11,170—New Haven Co. | | | | | | | | |
| Gaylord Farm Sanatorium | TB | Indep | 140 | 137 | .. | Yes | ... | 250 |
| Waterbury, 99,902—New Haven Co. | | | | | | | | |
| St. Mary's Hospital★◊■ | Gen | Church | 206 | 156 | 44 | Yes | 859 | 6,276 |
| Waterbury Hospital★◊■ | Gen | Indep | 321 | 157 | 36 | Yes | 516 | 4,513 |
| West Haven, 25,808—New Haven Co. | | | | | | | | |
| West Haven Surgical and Maternity Hospital | Gen | Part | 18 | 8 | 8 | ... | 95 | 215 |
| William Wirt Winchester Hospital■ | TB | Indep | 60 | 59 | .. | Yes | ... | 142 |
| Westport, 6,073—Fairfield Co. | | | | | | | | |
| Westport Sanitarium | N&M | Indep | 112 | 99 | .. | No | ... | 106 |
| Willimantic, 12,102—Windham Co. | | | | | | | | |
| St. Joseph's Hospital◊ | Gen | Church | 42 | 32 | 8 | No | 103 | 1,145 |
| Winsted, 7,883—Litchfield Co. | | | | | | | | |
| Litchfield County Hosp.■ | Gen | Indep | 64 | 39 | 11 | No | 151 | 926 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bridgeport, 146,716—Fairfield Co. | | | | | | | | |
| Englewood Hospital■ | Iso | City | 150 | 42 | .. | No | ... | 492 |
| Hillside Home and Hosp.▲ | Inst | City | 350 | 180 | .. | No | ... | 425 |
| Cheshire, 3,263—New Haven Co. | | | | | | | | |
| Connecticut Reformatory■ | Inst | State | 30 | 5 | .. | No | ... | ..... |
| Cromwell, 2,814—Middlesex Co. | | | | | | | | |
| Cromwell Hall | Conv | Indiv | 35 | 37 | .. | No | ... | 75 |
| Essex, 2,777—Middlesex Co. | | | | | | | | |
| Pettipaug Lodge | Conv | Indiv | 15 | 12 | .. | No | ... | 17 |
| Greenwich, 5,981—Fairfield Co. | | | | | | | | |
| Bowman's Sanatorium | N&M | Indiv | 10 | 6 | .. | No | ... | ..... |
| Crest View Sanatorium | N&M | Indiv | 22 | 20 | .. | No | ... | 29 |
| Municipal Hospital■ | Iso | City | 35 | 5 | .. | No | ... | 68 |
| Guilford, 1,880—New Haven Co. | | | | | | | | |
| Guilford Sanatorium■ | Gen | Indep | 17 | 9 | 4 | No | 30 | 84 |
| Hartford, 164,072—Hartford Co. | | | | | | | | |
| Hartford Isolation Hosp. | Iso | City | 65 | 33 | .. | Yes | ... | 848 |
| Mansfield Depot, 306—Tolland Co. | | | | | | | | |
| Mansfield State Training School and Hospital | MenDef | State | 1,100 | 896 | .. | No | ... | 98 |
| Meriden, 38,481—New Haven Co. | | | | | | | | |
| Connecticut School for Boys■ | Inst | State | 9 | 4 | .. | No | ... | 225 |
| Middletown, 24,554—Middlesex Co. | | | | | | | | |
| Long Lane Farm | Inst | State | 9 | 6 | .. | Yes | ... | 227 |
| New Haven, 162,655—New Haven Co. | | | | | | | | |
| Children's Community Center of the New Haven Orphan Asylum | Inst | Indep | 34 | 10 | .. | No | ... | ..... |
| Jewish Home for the Aged | Inst | Indep | 33 | 33 | .. | No | ... | 11 |
| Springside Home■▲ | Inst | City | 63 | 55 | .. | No | ... | 164 |
| Yale Infirmary | Inst | Indep | 34 | 3 | .. | No | ... | 757 |
| New London, 29,640—New London Co. | | | | | | | | |
| Connecticut College Infirm. | Inst | Indep | 11 | 7 | .. | No | ... | 128 |
| Niantic, 1,697—New London Co. | | | | | | | | |
| Connecticut State Farm for Women■ | Inst | State | 60 | 60 | 12 | No | 35 | 262 |

## CONNECTICUT—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Noroton Heights, 700—Fairfield Co. | | | | | | | | |
| Soldiers Hospital■ | Inst | State | 126 | 100 | .. | No | ... | ..... |
| Springdale, 663—Fairfield Co. | | | | | | | | |
| Nestledown Home | Conv | Indiv | 12 | 8 | .. | No | ... | 15 |
| Stratford, 19,212—Fairfield Co. | | | | | | | | |
| Sunnyside Sanitarium | Conv | Indep | 15 | 12 | .. | No | ... | 92 |
| Watertown, 8,192—Litchfield Co. | | | | | | | | |
| Taft School Infirmary | Inst | Indep | 32 | 6 | .. | No | ... | ..... |
| West Hartford, 24,941—Hartford Co. | | | | | | | | |
| St. Agnes' Home■ | Mater | Church | 10 | 3 | 12 | No | 64 | 141 |
| West Haven, 25,808—New Haven Co. | | | | | | | | |
| Leonard Convalescent Home | Conv | Indiv | 6 | 6 | .. | No | ... | 10 |
| Wethersfield, 7,512—Hartford Co. | | | | | | | | |
| Connecticut State Prison Hospital■▲ | Inst | State | 80 | 72 | .. | No | ... | 360 |
| Woodmont, 531—New Haven Co. | | | | | | | | |
| Woodmont Hall | Conv | Indep | 16 | 8 | .. | No | ... | ..... |

Summary for Connecticut:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 60 | 13,478 | 11,303 | 111,015 |
| Related institutions | 27 | 2,379 | 1,638 | 4,523 |
| Totals | 87 | 15,857 | 12,941 | 115,538 |
| Refused registration | 0 | | | |

## DELAWARE

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Dover, 4,800—Kent Co. | | | | | | | | |
| Kent General Hospital■ | Gen | Indep | 39 | 20 | 8 | No | 84 | 723 |
| Farnhurst, 332—New Castle Co. | | | | | | | | |
| Delaware State Hospital◊ | N&M | State | 600 | 719 | .. | Yes | ... | 182 |
| Ft. Dupont, (Delaware City P.O.)—New Castle Co. | | | | | | | | |
| Station Hospital | Gen | Army | 28 | 5 | .. | Yes | ... | 207 |
| Lewes, 1,923—Sussex Co. | | | | | | | | |
| Beebe Hospital⊙■ | Gen | Indep | 60 | 22 | 8 | Yes | 38 | 615 |
| Marshallton, 630—New Castle Co. | | | | | | | | |
| Brandywine Sanatorium | TB | State | 84 | 74 | .. | No | ... | 117 |
| Edgewood Sanit. (col.) | TB | State | 40 | 17 | .. | No | ... | 33 |
| Milford, 3,719—Sussex Co. | | | | | | | | |
| Marshall Hospital■ | Gen | Part | 22 | 12 | 8 | Yes | ... | ..... |
| Milford Emergency Hosp.⊙ | Gen | Indep | 35 | 17 | 6 | Yes | 42 | 538 |
| Wilmington, 106,597—New Castle Co. | | | | | | | | |
| Delaware Hospital★◊■ | Gen | Indep | 176 | 136 | 24 | Yes | 311 | 4,281 |
| Homeopathic Hospital◊■ | Gen | Indep | 162 | 81 | 28 | Yes | 435 | 2,555 |
| St. Francis Hospital◊■ | Gen | Church | 70 | 48 | 10 | Yes | ... | 1,623 |
| Wilmington Gen. Hosp.◊■ | Gen | Indep | 129 | 74 | 14 | Yes | 349 | 2,286 |
| **Related Institutions** | | | | | | | | |
| Marshallton, 630—New Castle Co. | | | | | | | | |
| Sunnybrook Cottage | Conv | Indep | 24 | 23 | .. | No | ... | 66 |
| Stockley, 138—Sussex Co. | | | | | | | | |
| Delaware Colony for Mental Defectives | MenDef | State | 220 | 168 | .. | No | ... | 21 |

Summary for Delaware:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 12 | 1,570 | 1,225 | 13,160 |
| Related institutions | 2 | 244 | 191 | 87 |
| Totals | 14 | 1,814 | 1,416 | 13,247 |
| Refused registration | 0 | | | |

## DISTRICT OF COLUMBIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Washington, 486,869 | | | | | | | | |
| Carson's Private Hospital (col.) | Gen | Indiv | 15 | 13 | 4 | No | 36 | 315 |
| Central Dispensary and Emergency Hospital★◊■ | Gen | Indep | 260 | 187 | .. | Yes | ... | 6,227 |
| Chevy Chase Sanatorium | N&M | Indiv | 23 | 20 | .. | No | ... | ..... |
| Children's Hospital+◊■ | Chil | Indep | 171 | 108 | 11 | Yes | ... | 3,833 |
| Columbia Hosp. for Women and Lying-In Asylum+■ | Mater | Indep | 120 | 83 | 79 | Yes | 1,463 | 2,699 |
| Curtis Private Surgical Sanitarium (col.) | Gen | Part | 16 | 7 | 4 | No | 18 | 161 |
| Eastern Dispensary and Casualty Hospital■ | Gen | Indep | 100 | 30 | 25 | Yes | ... | 1,202 |
| Episcopal Eye, Ear and Throat Hospital+■ | EENT | Church | 100 | 60 | .. | Yes | ... | 5,402 |
| Freedmen's Hosp. (col.)★◊ | Gen | Fed | 268 | 218 | 24 | Yes | 407 | 4,341 |
| Gallinger Municipal Hospital★+◊■▲ | Gen | City | 600 | 429 | 50 | No | 948 | 8,934 |
| Garfield Memorial Hosp.★◊■ | Gen | Indep | 278 | 154 | 43 | Yes | 670 | 5,650 |
| Georgetown Univ. Hosp.★◊■ | Gen | Indep | 223 | 175 | 51 | Yes | 650 | 4,087 |
| George Washington University Hospital★ | Gen | Indep | 91 | 68 | 16 | Yes | 381 | 2,447 |
| National Homeopathic Hospital◊ | Gen | Indep | 60 | 40 | 20 | Yes | 283 | 1,705 |
| Providence Hospital★◊■ | Gen | Church | 249 | 149 | 30 | Yes | 398 | 4,450 |
| St. Elizabeths Hospital★◊■ | Gen | Fed | 320 | 220 | 5 | Yes | 4 | 1,330 |

Key to symbols and abbreviations is on page 2078

## DISTRICT OF COLUMBIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Elizabeths Hospital+◊■ | N&M | Fed | 4,721 | 4,381 | .. | No | ... | 851 |
| Sibley Memorial Hospital★◊ | Gen | Church | 235 | 160 | 75 | Yes | 1,648 | 5,811 |
| Tuberculosis Hosp. of D.C.■ | TB | State | 200 | 159 | .. | No | ... | 308 |
| U. S. Naval Hospital★■▲ | Gen | Navy | 437 | 384 | .. | No | ... | 3,031 |
| Veterans Admin. Hospital▲ | Gen | VetAd | 194 | 144 | .. | No | ... | 1,692 |
| Walter Reed Gen. Hosp.★■▲ | Gen | Fed | 1,132 | 847 | 22 | No | 268 | 7,791 |
| Washington Sanitarium and Hospital★◊▲ | Gen | Indep | 165 | 124 | 12 | Yes | 169 | 1,813 |
| **Related Institutions** | | | | | | | | |
| Washington, 486,869 | | | | | | | | |
| Children's Summer Health Camp | TB | Indep | 50 | 50 | .. | No | ... | ..... |
| District Training School (Laurel, Md.) | MenDef | Fed | 400 | 358 | .. | ... | ... | ..... |
| Florence Crittenton Home | Mater | Indep | 50 | ... | 50 | No | 41 | 120 |
| Harriet Lane Hospital | Gen | Indiv | 16 | 9 | .. | ... | ... | ..... |
| Home for Aged & Infirm.■ | Inst | State | 62 | 59 | .. | No | ... | 125 |
| Kendall House Sanitarium | Conv | Indiv | 22 | 12 | .. | No | ... | 100 |
| National Training School for Boys Hospital | Inst | Fed | 60 | 15 | .. | No | ... | ..... |
| St. John's Orphanage | Inst | Church | 14 | 3 | .. | No | ... | 45 |
| Smallpox Hospital | Iso | City | 41 | ... | 2 | No | ... | ..... |
| U. S. Soldiers' Home Hospital■▲ | Inst | Army | 500 | 354 | .. | Yes | ... | 1,695 |
| Washington Eye, Ear and Throat Hospital■ | EENT | Indep | 10 | 5 | .. | Yes | ... | ..... |
| Washington Home for Incurables | Incur | Indep | 122 | 114 | .. | No | ... | 37 |
| Dr. Wm. Gerry Morgan Nursing Home | Conv | Indiv | 11 | 9 | .. | No | ... | 51 |

Summary for District of Columbia:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 23 | 9,978 | 8,160 | 77,136 |
| Related institutions | 13 | 1,277 | 981 | 2,173 |
| Totals | 36 | 11,255 | 9,141 | 79,309 |
| Refused registration | 0 | | | |

## FLORIDA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Arcadia, 4,082—De Soto Co. | | | | | | | | |
| Arcadia General Hospital■ | Gen | Indep | 30 | 15 | 3 | No | 25 | 787 |
| Bartow, 5,269—Polk Co. | | | | | | | | |
| Bartow General Hospital■ | Gen | City | 18 | 5 | 5 | No | 35 | 351 |
| Polk County Hospital■ | Gen | County | 57 | 48 | 5 | No | 75 | 831 |
| Century, 1,525—Escambia Co. | | | | | | | | |
| Turberville Hospital■ | Gen | Indiv | 35 | 12 | 4 | No | 5 | 500 |
| Chattahoochee, 450—Gadsden Co. | | | | | | | | |
| Florida State Hospital◊ | N&M | State | 2,700 | 3,545 | .. | No | ... | 1,419 |
| Clearwater, 7,607—Pinellas Co. | | | | | | | | |
| Morton F. Plant Endowed Hospital■ | Gen | Indep | 36 | 11 | 5 | No | 64 | 428 |
| Coral Gables, 5,697—Dade Co. | | | | | | | | |
| University Hospital | Gen | Indep | 50 | New | 12 | No | ... | ..... |
| Dade City, 1,811—Pasco Co. | | | | | | | | |
| Dr. T. F. Jackson's Hosp.■ | Gen | Indiv | 12 | 4 | 2 | Yes | 18 | 196 |
| Daytona Beach, 16,598—Volusia Co. | | | | | | | | |
| Daytona Beach Sanitarium | Gen | Indiv | 12 | 4 | 2 | No | 20 | 300 |
| Halifax District Hospital. | Gen | Indep | 125 | 25 | 20 | Yes | 109 | 1,073 |
| Halifax District Hospital (col.) | Gen | Indep | 18 | 9 | 1 | Yes | 5 | 151 |
| De Land, 5,246—Volusia Co. | | | | | | | | |
| De Land Memorial Hosp.■ | Gen | Indep | 26 | 4 | 11 | No | 52 | 455 |
| Ft. Barrancas, 30—Escambia Co. | | | | | | | | |
| Station Hospital | Gen | Army | 25 | 4 | .. | Yes | ... | ..... |
| Ft. Lauderdale, 8,666—Broward Co. | | | | | | | | |
| General Hospital | Gen | Indep | 20 | 5 | 4 | No | 25 | 332 |
| Ft. Myers, 9,082—Lee Co. | | | | | | | | |
| Jones-Walker Hosp. (col.) | Gen | Indep | 20 | 3 | .. | ... | ... | ..... |
| Lee Memorial Hospital | Gen | Indep | 24 | 10 | 4 | No | 46 | 336 |
| Ft. Pierce, 4,803—St. Lucie Co. | | | | | | | | |
| Oakland Park Hospital | Gen | City | 16 | 5 | 4 | No | 36 | ..... |
| Sunrise Hospital | Gen | Indep | 10 | 10 | 3 | No | 15 | ..... |
| Gainesville, 10,465—Alachua Co. | | | | | | | | |
| Alachua County Hospital■ | Gen | County | 55 | 26 | 5 | No | 112 | 885 |
| Homestead, 2,319—Dade Co. | | | | | | | | |
| Post Graduate Hospital | Gen | Part | 15 | 2 | 5 | No | 10 | 50 |
| Jacksonville, 129,549—Duval Co. | | | | | | | | |
| Brewster Hospital (col.)◊ | Gen | Church | 75 | 16 | 9 | Yes | 29 | 365 |
| Duval County Hospital★■ | Gen | County | 170 | 140 | 15 | Yes | 210 | 2,533 |
| Riverside Hospital◊ | Gen | Indep | 35 | 21 | 6 | Yes | 69 | 949 |
| St. Luke's Hospital★◊ | Gen | Indep | 153 | 76 | 22 | Yes | 356 | 2,801 |
| St. Vincent's Hospital★◊ | Gen | Church | 200 | 71 | 40 | No | 446 | 2,745 |
| Key West, 12,831—Monroe Co. | | | | | | | | |
| U. S. Marine Hospital■ | Gen | USPHS | 75 | 88 | .. | Yes | ... | 529 |
| Lake City, 4,416—Columbia Co. | | | | | | | | |
| Lake Shore Hospital■ | Gen | Indep | 15 | 8 | 5 | No | 24 | 383 |
| Veterans Admin. Hospital▲ | Gen | VetAd | 307 | 283 | .. | No | ... | 2,356 |
| Lakeland, 18,544—Polk Co. | | | | | | | | |
| Morrell Memorial Hosp.◊■ | Gen | City | 77 | 25 | 16 | No | 132 | 1,167 |
| Manatee, 3,219—Manatee Co. | | | | | | | | |
| Riverside Hospital | Gen | Indiv | 20 | 7 | 5 | No | 30 | 500 |
| Marianna, 3,372—Jackson Co. | | | | | | | | |
| Baltzell Hospital | Gen | Indiv | 14 | 4 | 2 | No | 3 | 221 |
| Melbourne, 2,677—Brevard Co. | | | | | | | | |
| Brevard Hospital■ | Gen | Indep | 27 | 5 | 3 | No | ... | 199 |

## FLORIDA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Miami, 110,637—Dade Co. | | | | | | | | |
| Biltmore Hospital | Gen | Indiv | 30 | 10 | 8 | No | 72 | 379 |
| Dade County Hospital■ | Gen | County | 96 | 41 | 8 | Yes | 49 | 852 |
| James M. Jackson Memorial Hospital★◊■ | Gen | City | 290 | 184 | 35 | Yes | 408 | 5,407 |
| Miami Retreat | N&M | Indiv | 65 | 12 | .. | No | ... | 115 |
| Reese Boulevard Hospital | Gen | Indiv | 16 | 12 | 5 | No | 68 | 432 |
| Victoria Hospital | Gen | Indiv | 62 | 34 | 10 | No | 254 | 1,624 |
| Miami Beach, 6,494—Dade Co. | | | | | | | | |
| St. Francis Hospital | Gen | Church | 80 | 26 | 6 | Yes | 43 | 981 |
| Ocala, 7,281—Marion Co. | | | | | | | | |
| Munroe Memorial Hosp.◊■ | Gen | Cy&Co | 75 | 35 | 10 | No | 69 | 838 |
| Orlando, 27,330—Orange Co. | | | | | | | | |
| Florida Sanit. & Hosp.+◊▲ | Gen | Church | 105 | 55 | 14 | Yes | 59 | 962 |
| Orange General Hospital◊■ | Gen | Indep | 130 | 67 | 20 | No | 248 | 2,631 |
| Palatka, 6,500—Putnam Co. | | | | | | | | |
| Glendale Terrace Hospital | Gen | Part | 12 | 5 | 4 | No | ... | ..... |
| Mary Lawson Sanat. (col.) | Gen | Indiv | 25 | 6 | 6 | Yes | 15 | 96 |
| Parkview Hospital | Gen | Indiv | 26 | 5 | 4 | Yes | 14 | 192 |
| Panama City, 5,402—Bay Co. | | | | | | | | |
| Panama City Hospital■ | Gen | Part | 13 | 4 | 2 | No | 17 | 302 |
| Drs. Whitfield and Fraser Hospital■ | Gen | Part | 17 | 8 | 2 | Yes | 21 | 240 |
| Pensacola, 31,579—Escambia Co. | | | | | | | | |
| Pensacola Hospital◊■ | Gen | Church | 100 | 42 | 15 | No | 184 | 1,799 |
| U. S. Naval Hospital■ | Gen | Navy | 190 | 138 | .. | Yes | ... | 1,087 |
| Quincy, 3,788—Gadsden Co. | | | | | | | | |
| Gadsden County Hospital | Gen | Indep | 22 | 5 | 4 | No | 8 | 286 |
| St. Augustine, 12,111—St. John Co. | | | | | | | | |
| East Coast Hospital◊ | Gen | Indus | 70 | 46 | 6 | Yes | 34 | 1,033 |
| Flagler Hospital◊■ | Gen | Indep | 79 | 41 | 6 | Yes | 72 | 729 |
| St. Petersburg, 40,425—Pinellas Co. | | | | | | | | |
| City Hospital (Mercy Hospital—Colored) | Gen | City | 20 | 7 | .. | No | 5 | 189 |
| City Hospital (Mound Park Hospital)◊ | Gen | City | 68 | 46 | 14 | No | 255 | 2,108 |
| St. Anthony's Hospital | Gen | Church | 50 | 10 | 12 | Yes | 7 | 100 |
| Sanford, 10,100—Seminole Co. | | | | | | | | |
| Fernald-Laughton Memorial Hospital■ | Gen | Indep | 20 | 11 | 6 | No | 54 | 545 |
| Sarasota, 8,398—Sarasota Co. | | | | | | | | |
| Joseph Halton Hospital■ | Gen | Indiv | 10 | 4 | 5 | No | 25 | 118 |
| Sarasota Hospital | Gen | City | 60 | 12 | 10 | No | ... | ..... |
| Sebring, 2,912—Highlands Co. | | | | | | | | |
| Sebring General Hospital | Gen | Indiv | 10 | 3 | 2 | No | ... | 83 |
| Dr. Weems' Hospital■ | Gen | Indiv | 13 | 4 | 2 | No | 10 | 235 |
| Tallahassee, 10,700—Leon Co. | | | | | | | | |
| Johnston's Sanitarium | Gen | Indiv | 25 | 8 | 4 | No | ... | ..... |
| Tampa, 101,161—Hillsborough Co. | | | | | | | | |
| Centro Asturiano Hospital | Gen | Frat | 75 | 48 | 6 | Yes | 85 | 1,085 |
| Children's Hospital | Chil | Indep | 26 | 8 | .. | Yes | ... | 5.0 |
| Dr. H. M. Cook's Sanat. | Gen | Indiv | 32 | 27 | 12 | No | 93 | 985 |
| Hillsboro County Tuberculosis Sanatorium■ | TB | County | 60 | 50 | .. | No | ... | 78 |
| Tampa Municipal Hosp.★◊ | Gen | City | 167 | 89 | 25 | Yes | 336 | 3,274 |
| Tampa Negro Hospital | Gen | City | 33 | 21 | 1 | No | 54 | 741 |
| West Palm Beach, 26,610—Palm Beach Co. | | | | | | | | |
| Good Samaritan Hospital◊ | Gen | Indep | 125 | 50 | 14 | No | ... | 1,825 |
| Pine Ridge Hosp. (col.) | Gen | Indep | 35 | 18 | 10 | No | 20 | ..... |
| **Related Institutions** | | | | | | | | |
| Brooksville, 1,405—Hernando Co. | | | | | | | | |
| Hernando General Hospital | Gen | Indep | 12 | 4 | 2 | Yes | ... | ..... |
| Gainesville, 10,465—Alachua Co. | | | | | | | | |
| Florida Farm Colony for Epileptic & Feebleminded | MenDef | State | 500 | 454 | .. | No | ... | 93 |
| Jacksonville, 129,549—Duval Co. | | | | | | | | |
| Dr. Randolph's Sanitarium | N&M | Indiv | 9 | 5 | .. | No | ... | 11 |
| Rollins' Hosp. for Women | Mater | Indiv | 8 | 5 | 6 | No | ... | ..... |
| Miami, 110,637—Dade Co. | | | | | | | | |
| Miami Solarium | Conv | Indep | 50 | 35 | .. | Yes | ... | ..... |
| Ocala, 7,281—Marion Co. | | | | | | | | |
| Florida Industrial School for Girls | Inst | State | 18 | 4 | .. | No | ... | ..... |
| Orange Park, 661—Clay Co. | | | | | | | | |
| Moosehaven Hospital | Inst | Frat | 37 | 32 | .. | No | ... | ..... |
| Raiford, 460—Union Co. | | | | | | | | |
| Florida State Farm Hosp.■ | Inst | State | 45 | 17 | .. | Yes | ... | 649 |
| St. Petersburg, 40,425—Pinellas Co. | | | | | | | | |
| American Legion Hospital for Crippled Children■ | Conv | Indep | 30 | 12 | .. | Yes | ... | 79 |
| Stuart, 1,924—Martin Co. | | | | | | | | |
| St. Lucie Sanitarium | Gen | Indep | 12 | 3 | 3 | No | 12 | 70 |
| Tallahassee, 10,700—Leon Co. | | | | | | | | |
| College Infirmary, Florida State College for Women | Inst | State | 52 | 35 | .. | No | ... | 1,500 |
| Florida Agricultural and Mechanical College Hosp.■ | Inst | State | 43 | 6 | 1 | Yes | 4 | 354 |
| Tampa, 101,161—Hillsborough Co. | | | | | | | | |
| Centro Espanol Sanat. | Gen | Frat | 52 | 12 | .. | Yes | 3 | 300 |
| Children's Home | Inst | Indep | 14 | 7 | .. | No | ... | ..... |
| Mills Hospital | N&M | Indiv | 12 | 5 | .. | No | ... | 32 |
| Roselawn Sanitarium | N&M | Indiv | 15 | 7 | .. | No | ... | ..... |
| Tampa Sanitarium | Gen | Indiv | 10 | 2 | .. | Yes | ... | 18 |
| Venezuela Small Hospital (col.) | Gen | Indiv | 15 | 4 | 2 | No | ... | ..... |
| Winter Haven, 7,130—Polk Co. | | | | | | | | |
| Winter Haven General Hospital | Gen | Indep | 15 | 4 | 5 | No | 29 | 211 |

Summary for Florida:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 68 | 7,603 | 5,642 | 53,230 |
| Related institutions | 20 | 999 | 691 | 3,274 |
| Totals | 88 | 8,602 | 6,333 | 56,504 |
| Refused registration | 16 | 280 | | |

## GEORGIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albany, 14,507—Dougherty Co. | | | | | | | | |
| Phoebe Putney Memorial Hospital⊙■ | Gen | Indep | 44 | 15 | 5 | No | 60 | 704 |
| Alto, 219—Habersham Co. | | | | | | | | |
| State Tuberculosis Sanat.■ | TB | State | 325 | 237 | .. | Yes | ... | 441 |
| Americus, 8,760—Sumter Co. | | | | | | | | |
| Americus and Sumter County Hospital⊙ | Gen | Cy&Co | 30 | 11 | 3 | No | 23 | 345 |
| Americus Colored Hospital | Gen | Indiv | 50 | 25 | 4 | No | ... | ..... |
| Athens, 18,192—Clarke Co. | | | | | | | | |
| Athens General Hospital■ | Gen | County | 53 | 29 | 10 | Yes | ... | ..... |
| Fairhaven Tuber. Sanit. | TB | Indep | 36 | 24 | .. | No | ... | 65 |
| St. Mary's Hospital⊙■ | Gen | Indiv | 55 | 10 | 3 | No | 23 | 352 |
| Atlanta, 360,691—Fulton Co. | | | | | | | | |
| Atlanta Hospital⊙ | Gen | Indiv | 30 | 8 | 5 | No | 25 | 675 |
| Battle Hill Sanatorium■ | TB | Cy&Co | 224 | 210 | .. | Yes | ... | 226 |
| Blackman Health Resort | Gen | Indep | 60 | 28 | .. | No | ... | ..... |
| Crawford W. Long Memorial Hospital and Clinic◊ | Gen | Indep | 146 | 80 | 14 | No | 248 | 2,589 |
| Georgia Baptist Hosp.★◊ | Gen | Church | 130 | 94 | 20 | No | 495 | 4,175 |
| Georgia Sanitarium | Gen | Indiv | 10 | 3 | 2 | Yes | 5 | 38 |
| Grady Hospital (White Unit)★◊ | Gen | City | 250 | 215 | 33 | Yes | 1,293 | 6,759 |
| Grady Hosp., Emory Division (Colored Unit)★+ | Gen | City | 230 | 215 | 33 | Yes | 1,403 | 5,357 |
| Grady Hosp., Albert Steiner Clinic for Cancer and Allied Disease Unit+⊙■ | Cancer | City | 30 | 22 | .. | Yes | ... | 2,632 |
| Henrietta Egleston Hospital for Children+ | Chil | Indep | 50 | 26 | 3 | No | ... | 919 |
| Piedmont Hospital★◊ | Gen | Indep | 120 | 75 | 15 | No | 223 | 2,875 |
| St. Joseph Infirmary◊ | Gen | Church | 120 | 57 | 15 | No | 217 | 2,126 |
| St. Mary's Hospital | Mater | Indiv | 16 | 16 | 18 | No | 16 | 19 |
| Veterans Admin. Hospital | Gen | VetAd | 200 | 190 | .. | No | ... | 1,788 |
| William A. Harris Memorial Hospital (col.) | Gen | Indiv | 15 | 8 | 2 | No | 10 | 300 |
| Augusta, 60,342—Richmond Co. | | | | | | | | |
| University Hospital★+◊■ | Gen | City | 257 | 160 | 20 | Yes | 361 | 5,421 |
| Veterans Admin. Hospital+ | N&M | VetAd | 617 | 613 | .. | Yes | ... | 141 |
| Wilhenford Hospital for Women and Children⊙ | Gen | Indep | 50 | 22 | 4 | No | 50 | 911 |
| Bainbridge, 6,141—Decatur Co. | | | | | | | | |
| Bainbridge Hospital | Surg | Indiv | 32 | 18 | 2 | No | ... | 732 |
| Riverside Hospital■ | Gen | Part | 30 | 16 | 4 | Yes | 24 | ..... |
| Brunswick, 14,022—Glynn Co. | | | | | | | | |
| Brunswick City Hospital■ | Gen | City | 64 | 18 | 9 | No | 64 | 650 |
| Cairo, 3,169—Grady Co. | | | | | | | | |
| Walker Hospital■ | Gen | Indiv | 15 | 7 | 1 | No | 6 | 68 |
| Canton, 2,802—Cherokee Co. | | | | | | | | |
| Coker's Hospital | Gen | Indep | 25 | 13 | 2 | No | ... | ..... |
| Cedartown, 8,124—Polk Co. | | | | | | | | |
| Cedartown Hospital | Gen | Indiv | 12 | 3 | 2 | Yes | 4 | 115 |
| Hall-Chaudron Hospital■ | Gen | Indiv | 10 | 4 | 2 | No | 11 | 110 |
| Whitely Hospital | Gen | Indiv | 10 | 2 | 2 | No | 10 | ..... |
| Columbus, 43,131—Muscogee Co. | | | | | | | | |
| Columbus City Hospital◊■ | Gen | Cy&Co | 200 | 83 | 12 | No | 156 | 2,511 |
| Cordele, 6,880—Crisp Co. | | | | | | | | |
| Cordele Sanatorium | Gen | Indep | 12 | 3 | 1 | No | 12 | 175 |
| Cuthbert, 3,235—Randolph Co. | | | | | | | | |
| Patterson Hospital■ | Gen | Indiv | 25 | 11 | 3 | No | 18 | 445 |
| Dalton, 8,160—Whitfield Co. | | | | | | | | |
| Hamilton Memorial Hosp.⊙ | Gen | Indep | 36 | 13 | 3 | No | 34 | 507 |
| Decatur, 13,276—De Kalb Co. | | | | | | | | |
| Scottish Rite Hospital for Crippled Children | Ortho | Frat | 64 | 59 | .. | Yes | ... | 375 |
| Donalsonville, 1,183—Seminole Co. | | | | | | | | |
| Chason's Hospital■ | Gen | Part | 20 | 9 | 4 | No | 16 | 318 |
| Dublin, 6,681—Laurens Co. | | | | | | | | |
| Claxton Sanitarium | Gen | Indiv | 26 | 15 | 2 | No | 9 | 596 |
| Dublin Clinic | Gen | Indiv | 28 | 10 | 3 | Yes | 20 | 430 |
| Eastman, 3,022—Dodge Co. | | | | | | | | |
| Coleman Sanitarium■ | Gen | Indiv | 20 | 6 | 2 | No | 12 | 316 |
| Elberton, 4,650—Elbert Co. | | | | | | | | |
| Elbert County Hospital■ | Gen | Cy&Co | 16 | 4 | 4 | No | 17 | 241 |
| Emory University,—De Kalb Co. | | | | | | | | |
| Wesley Memorial Hosp.★+◊ | Gen | Church | 178 | 112 | 22 | Yes | 384 | 3,927 |
| Fitzgerald, 6,412—Ben Hill Co. | | | | | | | | |
| Fitzgerald Hospital■ | Gen | Indep | 35 | 8 | 2 | No | 24 | 405 |
| Ft. Benning,—Chattahooche Co. | | | | | | | | |
| Station Hospital■▲ | Gen | Army | 259 | 138 | 8 | Yes | 77 | 4,348 |
| Ft. McPherson, 150—Fulton Co. | | | | | | | | |
| Station Hospital | Gen | Army | 74 | 33 | 4 | Yes | 38 | 534 |
| Ft. Oglethorpe, 1,186—Catoosa Co. | | | | | | | | |
| Station Hospital | Gen | Army | 100 | 32 | .. | Yes | ... | 278 |
| Ft. Screven, 17—Chatham Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 30 | 10 | .. | Yes | ... | ..... |
| Gainesville, 8,624—Hall Co. | | | | | | | | |
| Downey Hospital◊■ | Gen | Indep | 52 | 19 | 6 | No | 45 | 778 |
| Griffin, 10,321—Spalding Co. | | | | | | | | |
| R. F. Strickland & Son Memorial Hospital | Gen | Indiv | 46 | 14 | 5 | No | 37 | 591 |
| Hoschton, 427—Jackson Co. | | | | | | | | |
| Allen Clinic and Hospital | Gen | Part | 10 | 2 | 2 | Yes | 8 | 131 |
| Jesup, 2,303—Wayne Co. | | | | | | | | |
| Drs. Colvin-Ritch Sanit.■ | Gen | Part | 16 | 9 | 2 | No | 21 | 298 |
| LaFayette, 2,809—Walker Co. | | | | | | | | |
| LaFayette Sanitarium | Gen | Indiv | 15 | 6 | 2 | No | 15 | 298 |
| LaGrange, 20,131—Troup Co. | | | | | | | | |
| Dunson Hospital■ | Gen | City | 60 | 11 | 8 | No | 50 | 533 |
| Macon, 64,045—Bibb Co. | | | | | | | | |
| Hopewell Sanatorium■ | TB | County | 24 | 20 | .. | No | ... | 50 |
| Macon Hospital★+◊■ | Gen | Cy&Co | 150 | 109 | 20 | Yes | ... | ..... |
| Middle Georgia Sanat.⊙ | Gen | Indep | 50 | 26 | 8 | No | 141 | 1,440 |
| Oglethorpe Private Infirm.⊙ | Gen | Indep | 35 | 15 | 6 | No | 17 | 865 |
| Pumpelly-Massenburg Sanat. | Gen | Indep | 26 | 12 | 6 | No | 50 | 819 |
| St. Luke Hospital (col.) | Gen | Indiv | 12 | 3 | .. | No | 10 | 75 |

**Key to symbols and abbreviations is on page 2078**

## GEORGIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Marietta, 7,638—Cobb Co. | | | | | | | | |
| Marietta Hospital | Gen | Indep | 35 | 9 | 2 | ... | ... | ..... |
| Metter, 1,424—Candler Co. | | | | | | | | |
| Metter Sanitarium | Gen | Indiv | 10 | 6 | 5 | No | ... | ..... |
| Milledgeville, 5,534—Baldwin Co. | | | | | | | | |
| Allen's Invalid Home | N&M | Indiv | 150 | 126 | .. | No | ... | ..... |
| Milledgeville City Hospital | Gen | Indep | 40 | 30 | 10 | No | ... | ..... |
| Milledgeville State Hosp.⊙ | N&M | State | 4,650 | 5,503 | .. | No | ... | 501 |
| Millen, 2,527—Jenkins Co. | | | | | | | | |
| Millen Hospital■ | Gen | Indiv | 22 | 6 | 4 | No | 9 | 238 |
| Mulkey Hospital■ | Gen | Indiv | 20 | 8 | 4 | No | 20 | 196 |
| Monroe, 3,706—Walton Co. | | | | | | | | |
| Walton County Hospital | Gen | Indep | 16 | 5 | 1 | No | ... | 188 |
| Moultrie, 8,027—Colquitt Co. | | | | | | | | |
| Edmondson-Brannen Hospital⊙■ | Gen | Part | 18 | 10 | 2 | No | 12 | 222 |
| Newnan, 6,386—Coweta Co. | | | | | | | | |
| Newnan Hospital | Gen | Indep | 25 | 4 | 2 | No | ... | ..... |
| Plains, 609—Sumter Co. | | | | | | | | |
| Wise Sanitarium■ | Gen | Indep | 60 | 13 | 2 | No | 8 | 470 |
| Rome, 21,843—Floyd Co. | | | | | | | | |
| Harbin Hospital◊■ | Gen | Part | 75 | 24 | 10 | No | 30 | 1,306 |
| McCall Hospital⊙ | Gen | Indep | 50 | 20 | 10 | Yes | 69 | 1,314 |
| Sandersville, 3,011—Washington Co. | | | | | | | | |
| Rawling's Sanitarium⊙■ | Gen | Indep | 50 | 15 | 7 | Yes | 21 | 774 |
| Savannah, 85,024—Chatham Co. | | | | | | | | |
| Central of Georgia Railway Hospital■ | Indus | Indus | 62 | 37 | .. | Yes | ... | 1,371 |
| Charity Hospital (col.) | Gen | Indep | 40 | 30 | 12 | No | 68 | ..... |
| Georgia Infirmary (col.)◊ | Gen | Indep | 75 | 64 | 7 | Yes | 202 | 1,801 |
| Oglethorpe Sanatorium⊙ | Gen | Indiv | 43 | 28 | 8 | No | 97 | 1,042 |
| St. Joseph's Hospital◊ | Gen | Church | 90 | 55 | 10 | No | 125 | 1,520 |
| Telfair Hospital⊙ | Gen | Indep | 74 | 42 | 16 | No | 286 | 1,549 |
| U. S. Marine Hospital■ | Gen | USPHS | 165 | 162 | .. | Yes | ... | 1,644 |
| Warren A. Candler Hosp.◊ | Gen | Church | 70 | 50 | 6 | Yes | 125 | 2,170 |
| Smyrna, 1,178—Cobb Co. | | | | | | | | |
| Dr. Brawner's Sanitarium | N&M | Part | 40 | 24 | .. | No | ... | ..... |
| Statesboro, 3,996—Bulloch Co. | | | | | | | | |
| Statesboro Hospital | Gen | Part | 20 | 5 | 2 | No | 16 | 182 |
| Van Buren's Sanit. (col.) | Gen | Indiv | 25 | 8 | .. | No | 1 | 102 |
| Stone Mountain, 1,335—De Kalb Co. | | | | | | | | |
| Stone Mountain Sanit. | N&M | Indiv | 35 | 24 | .. | No | ... | 16 |
| Summerville, 933—Chattooga Co. | | | | | | | | |
| Summerville-Trion Hosp.■ | Gen | Indep | 20 | 5 | 4 | Yes | 12 | 238 |
| Swainsboro, 2,442—Emanuel Co. | | | | | | | | |
| Franklin-Coleman Hosp.■ | Gen | Indiv | 28 | 6 | 1 | Yes | 12 | 202 |
| Thomasville, 11,733—Thomas Co. | | | | | | | | |
| John D. Archbold Memorial Hospital◊■ | Gen | Indep | 103 | 53 | 12 | Yes | 92 | 1,725 |
| Tifton, 3,390—Tift Co. | | | | | | | | |
| Coastal Plain Hospital | Gen | Part | 25 | 6 | 2 | ... | 2 | 236 |
| Valdosta, 13,482—Lowndes Co. | | | | | | | | |
| Frank Bird Hospital | Gen | Indiv | 22 | 8 | 4 | No | ... | 471 |
| Little-Griffin Private Hospital⊙■ | Gen | Indep | 43 | 18 | 3 | Yes | 50 | 930 |
| Washington, 3,158—Wilkes Co. | | | | | | | | |
| Washington General Hosp. | Gen | Indep | 18 | 5 | 2 | No | 12 | 224 |
| Waycross, 15,510—Ware Co. | | | | | | | | |
| Atlantic Coast Lines Hospital■ | Indus | Indus | 75 | 40 | .. | Yes | ... | 1,185 |
| King's Daughters Hospital | Gen | Church | 40 | 10 | 8 | No | 14 | 509 |
| **Related Institutions** | | | | | | | | |
| Adel, 1,796—Cook Co. | | | | | | | | |
| Adel Hospital | Gen | Part | 7 | 1 | .. | No | ... | ..... |
| Atlanta, 360,691—Fulton Co. | | | | | | | | |
| Brook Haven Manor Sanat. | N&M | Indiv | 12 | 4 | .. | No | ... | ..... |
| Confederate Soldiers Home | Inst | State | 25 | 8 | .. | ... | ... | ..... |
| Contagious Disease Hosp■ | Iso | City | 50 | ... | .. | No | ... | 431 |
| Florence Crittenton Home | Mater | Indep | 26 | 12 | 16 | No | 40 | 71 |
| Mercy Hospital (col.) | Gen | Part | 25 | ... | 2 | No | ... | ..... |
| Southeastern Sanitarium | N&M | Indiv | 10 | 4 | .. | No | ... | ..... |
| U. S. Penitentiary Hosp.■ | Inst | Fed | 145 | 113 | .. | Yes | ... | 1,826 |
| Venereal Hosp. & Clinic■ | Vener | City | 64 | 43 | .. | Yes | ... | 268 |
| Cartersville, 5,250—Bartow Co. | | | | | | | | |
| Dr. Lowry's Emerg. Hosp. | Gen | Indiv | 8 | 2 | .. | No | ... | ..... |
| Cave Spring, 723—Floyd Co. | | | | | | | | |
| Georgia School for Deaf | Inst | State | 25 | 5 | .. | No | ... | ..... |
| Cordele, 6,880—Crisp Co. | | | | | | | | |
| Gillespie Hospital (col.) | Gen | Church | 10 | 6 | 2 | Yes | 3 | 152 |
| Milledgeville, 5,534—Baldwin Co. | | | | | | | | |
| Georgia State Penitentiary General Hospital■ | Inst | State | 40 | 30 | .. | No | ... | ..... |
| Georgia State Penitentiary Tubercular Hospital | Inst | State | 70 | 70 | .. | No | ... | ..... |
| Parks Memorial Hospital | Inst | State | 30 | 8 | .. | No | ... | ..... |
| Moultrie, 8,027—Colquitt Co. | | | | | | | | |
| Daniel Emerg. Sanitarium■ | Gen | Indiv | 10 | 6 | 1 | No | 8 | 100 |
| Savannah, 85,024—Chatham Co. | | | | | | | | |
| Kiwanis Sunshine Unit of Chatham-Savannah Tuberculosis Association | TB | Indep | 12 | 12 | .. | Yes | ... | ..... |
| Warm Springs, 400—Meriwether Co. | | | | | | | | |
| Georgia Warm Springs Foundation | Ortho | Indep | 86 | ... | .. | No | ... | 251 |

Summary for Georgia:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 96 | 12,138 | 9,736 | 90,489 |
| Related institutions | 18 | 655 | 338 | 8,159 |
| Totals | 114 | 12,793 | 10,074 | 98,648 |
| Refused registration | 2 | 35 | | |

## IDAHO

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| American Falls, 1,280—Power Co. | | | | | | | | |
| Bethany Hospital■ | Gen | County | 16 | 8 | 20 | No | 70 | 244 |
| Blackfoot, 3,199—Bingham Co. | | | | | | | | |
| Blackfoot General Hospital | Gen | Indiv | 15 | 10 | .. | No | ... | ..... |
| Boise, 21,544—Ada Co. | | | | | | | | |
| St. Alphonsus Hospital◊■ | Gen | Church | 125 | 70 | 10 | No | ... | 2,570 |
| St. Luke's Hospital◊■ | Gen | Church | 100 | 75 | 14 | No | 290 | 2,739 |
| Veterans Admin. Hospital | Gen | VetAd | 235 | 180 | .. | No | ... | 1,277 |
| Bonners Ferry, 1,418—Boundary Co. | | | | | | | | |
| Bonners Ferry Hospital | Gen | Indep | 25 | 9 | 4 | No | 54 | 340 |
| Burley, 3,826—Cassia Co. | | | | | | | | |
| Fremstad Hospital | Surg | Indiv | 10 | 2 | .. | No | ... | ..... |
| Coeur d'Alene, 8,297—Kootenai Co. | | | | | | | | |
| Lakeside Hospital | Gen | Indiv | 15 | 8 | 4 | No | 12 | ..... |
| Cottonwood, 519—Idaho Co. | | | | | | | | |
| Our Lady of Consolation Hospital | Gen | Church | 16 | 5 | 4 | No | 3 | ..... |
| Ft. Hall, 190—Bingham Co. | | | | | | | | |
| Ft. Hall Indian Agency Hospital | Gen | Indian | 14 | 3 | 6 | Yes | 21 | 150 |
| Gooding, 1,592—Gooding Co. | | | | | | | | |
| Gooding Hospital | Gen | Cy&Co | 14 | 5 | 5 | No | 38 | 290 |
| Hailey, 973—Blaine Co. | | | | | | | | |
| Hailey Clinical Hospital | Gen | Indiv | 15 | 5 | 4 | No | 15 | ..... |
| Idaho Falls, 9,429—Bonneville Co. | | | | | | | | |
| Idaho Falls Latter-Day Saints' Hospital◊■ | Gen | Church | 87 | 57 | 13 | No | 358 | 2,066 |
| Spencer Hospital◊■ | Gen | Indep | 35 | 19 | 6 | No | 60 | 704 |
| Kellogg, 4,124—Shoshone Co. | | | | | | | | |
| Wardner Hospital■ | Gen | Indiv | 18 | 5 | 6 | Yes | 20 | 282 |
| Lapwai, 416—Nez Perce Co. | | | | | | | | |
| Ft. Lapwai Tuberculosis Sanatorium School | TB | Indian | 132 | 132 | .. | Yes | ... | 190 |
| Lava Hot Springs, 544—Bannock Co. | | | | | | | | |
| Lava Hot Springs Municipal Sanitarium | Gen | City | 22 | 5 | 2 | No | ... | ..... |
| Lewiston, 9,403—Nez Perce Co. | | | | | | | | |
| St. Joseph's Hospital◊ | Gen | Church | 77 | 46 | 14 | No | 196 | 1,100 |
| White Hospital◊■ | Gen | Indep | 34 | 23 | 4 | Yes | 57 | 45 |
| Montpelier, 2,436—Bear Lake Co. | | | | | | | | |
| Montpelier Hospital | Gen | Indiv | 35 | 10 | .. | No | ... | ..... |
| Moscow, 4,476—Latah Co. | | | | | | | | |
| Gritman Private Hospital■ | Gen | Indiv | 25 | 7 | 5 | No | 33 | 205 |
| Inland Empire Hospital | Gen | Indiv | 15 | 5 | 3 | No | 12 | 200 |
| Nampa, 8,206—Canyon Co. | | | | | | | | |
| Mercy Hospital◊ | Gen | Church | 40 | 20 | 6 | No | 65 | 546 |
| Samaritan Hospital◊■ | Gen | Church | 37 | 20 | 6 | Yes | 24 | 776 |
| Orofino, 1,078—Clearwater Co. | | | | | | | | |
| Orofino Hospital■ | Gen | Part | 30 | 9 | 4 | No | ... | 339 |
| Pocatello, 16,471—Bannock Co. | | | | | | | | |
| Pocatello General Hosp.◊■ | Gen | Cy&Co | 60 | 28 | 14 | No | 184 | 1,307 |
| St. Anthony's Mercy Hospital◊■ | Gen | Church | 43 | 23 | 7 | No | 136 | 705 |
| Potlatch, 1,505—Latah Co. | | | | | | | | |
| Potlatch Hospital | Gen | Indep | 20 | 12 | 3 | No | 20 | 400 |
| Preston, 3,381—Franklin Co. | | | | | | | | |
| General Memorial Hospital | Gen | Indep | 15 | 6 | 4 | No | 32 | 403 |
| Priest River, 949—Bonner Co. | | | | | | | | |
| Priest River Hospital■ | Gen | Part | 20 | 1 | 2 | Yes | 2 | 56 |
| Rexburg, 3,048—Madison Co. | | | | | | | | |
| Emergency Hospital■ | Gen | Indiv | 12 | 5 | 2 | No | 16 | 86 |
| Rexburg General Hospital | Gen | Indiv | 12 | 5 | 3 | No | 20 | 328 |
| Rupert, 2,250—Minidoka Co. | | | | | | | | |
| Rupert General Hospital | Gen | Indiv | 13 | 8 | 3 | No | 25 | 186 |
| St. Maries, 1,996—Benewah Co. | | | | | | | | |
| St. Maries Hospital■ | Gen | Indiv | 30 | 11 | 5 | Yes | 11 | 366 |
| Sandpoint, 3,290—Bonner Co. | | | | | | | | |
| Page Hospital | Gen | Indiv | 30 | 8 | 4 | Yes | 29 | 260 |
| Parnell Hospital | Gen | Indiv | 20 | 8 | 4 | No | 18 | 110 |
| Shoshone, 1,211—Lincoln Co. | | | | | | | | |
| Shoshone Benevolent Hosp. | Gen | Indiv | 30 | 6 | .. | No | ... | ..... |
| Soda Springs, 831—Caribou Co. | | | | | | | | |
| Caribou County Hospital■ | Gen | County | 18 | 1 | 2 | No | 2 | 402 |
| Spirit Lake, 1,241—Kootenai Co. | | | | | | | | |
| Spirit Lake Hospital | Gen | Part | 10 | 2 | 2 | No | 12 | 47 |
| Twin Falls, 8,787—Twin Falls Co. | | | | | | | | |
| Twin Falls County General Hospital■ | Gen | County | 50 | 45 | 10 | No | 178 | 1,397 |
| Wallace, 3,634—Shoshone Co. | | | | | | | | |
| Providence Hospital | Gen | Church | 65 | 27 | 8 | No | 96 | 1,996 |
| Wallace Hospital | Gen | Indiv | 50 | 20 | 5 | No | 34 | 688 |
| Wendell, 725—Gooding Co. | | | | | | | | |
| St. Valentine's Hospital | Gen | Church | 25 | 10 | 5 | No | ... | ..... |
| **Related Institutions** | | | | | | | | |
| Blackfoot, 3,199—Bingham Co. | | | | | | | | |
| Dr. W. W. Beck Hospital | Gen | Indiv | 7 | 4 | 2 | No | 16 | 165 |
| State Hospital South | N&M | State | 800 | 400 | .. | No | ... | 107 |
| Boise, 21,544—Ada Co. | | | | | | | | |
| Boise City Detention Hosp. | Iso | City | 10 | 4 | .. | No | ... | 4 |
| Idaho State Soldiers Home Hospital | Inst | State | 25 | 8 | .. | No | ... | ..... |
| Salvation Army Women's Home and Hospital■ | Mater | Church | 8 | 2 | 12 | No | 71 | 71 |
| Ft. Hall, 190—Bingham Co. | | | | | | | | |
| Ft. Hall Indian School Hospital | Gen | Indian | 16 | 10 | .. | No | ... | ..... |
| Malad City, 2,535—Oneida Co. | | | | | | | | |
| Community Hospital | Gen | Indep | 10 | 4 | 2 | No | ... | ..... |
| Moscow, 4,476—Latah Co. | | | | | | | | |
| University of Idaho Infirm. | Inst | State | 16 | 6 | .. | Yes | ... | 413 |
| Nampa, 8,206—Canyon Co. | | | | | | | | |
| Idaho State School and Colony | MenDef | State | 431 | 363 | .. | No | ... | 103 |
| Orofino, 1,078—Clearwater Co. | | | | | | | | |
| State Hospital North | N&M | State | 850 | 327 | .. | No | ... | 64 |

## IDAHO—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Anthony, 2,778—Fremont Co. | | | | | | | | |
| Idaho Industrial Training School | Inst | State | 20 | 5 | .. | No | ... | ..... |
| St. Maries, 1,996—Benewah Co. | | | | | | | | |
| Dr. Platt's Hospital | Gen | Indiv | 8 | 2 | 2 | No | 6 | ..... |
| Salmon, 1,371—Lemhi Co. | | | | | | | | |
| Salmon General Hospital | Gen | Part | 9 | 1 | 3 | No | 19 | 85 |

Summary for Idaho:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 43 | 1,695 | 966 | 23,200 |
| Related institutions | 13 | 1,330 | 1,132 | 1,012 |
| Totals | 56 | 3,025 | 2,098 | 24,212 |
| Refused registration | 3 | 94 | | |

## ILLINOIS

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alton, 30,151—Madison Co. | | | | | | | | |
| Alton State Hospital◊ | N&M | State | 1,316 | 1,417 | .. | No | ... | ..... |
| St. Anthony's Infirmary & Sanitarium | Gen | Church | 98 | 50 | .. | No | ... | 385 |
| St. Joseph's Hospital◊■ | Gen | Church | 75 | 41 | 10 | No | 195 | 2,417 |
| Amboy, 1,972—Lee Co. | | | | | | | | |
| Amboy Public Hospital■ | Gen | Indep | 13 | 3 | 2 | No | 39 | 149 |
| Anna, 3,436—Union Co. | | | | | | | | |
| Anna State Hospital◊ | N&M | State | 1,957 | 1,925 | .. | No | ... | 420 |
| Hale-Willard Mem. Hosp.□ | Gen | City | 20 | 8 | 4 | No | 8 | 250 |
| Annawan, 489—Henry Co. | | | | | | | | |
| J. M. Young Hospital■ | Gen | Indiv | 18 | 10 | 2 | No | 7 | 1,515 |
| Aurora, 46,589—Kane Co. | | | | | | | | |
| Copley Hospital◊■ | Gen | Indep | 67 | 47 | 18 | No | 407 | 2,104 |
| Kane County Spring Brook Sanitarium□ | TB | County | 87 | 78 | .. | Yes | ... | 119 |
| Mercyville Sanitarium | N&M | Church | 200 | 145 | .. | No | ... | 234 |
| St. Charles Hospital◊■ | Gen | Church | 80 | 47 | 20 | No | 325 | 2,719 |
| St. Joseph's Mercy Hospital◊■ | Gen | Church | 100 | 35 | 20 | No | 223 | 1,145 |
| Batavia, 5,045—Kane Co. | | | | | | | | |
| Bellevue Place Sanitarium | N&M | Indep | 38 | 33 | .. | No | ... | 8 |
| Fox River Sanitarium | TB | Indep | 47 | 46 | .. | No | ... | 53 |
| Belleville, 28,425—St. Clair Co. | | | | | | | | |
| St. Elizabeth's Hospital■ | Gen | Church | 110 | 58 | 15 | No | 212 | 2,050 |
| Station Hospital | Gen | Army | 25 | 10 | .. | No | ... | 138 |
| Belvidere, 8,123—Boone Co. | | | | | | | | |
| Highland Hospital■ | Gen | Indep | 25 | 14 | 10 | No | 83 | 493 |
| St. Joseph's Hospital | Gen | Church | 25 | 9 | 10 | No | 94 | 322 |
| Benton, 8,219—Franklin Co. | | | | | | | | |
| Moore Hospital■ | Gen | Indiv | 30 | 13 | 1 | No | 6 | 329 |
| Berwyn, 47,027—Cook Co. | | | | | | | | |
| Berwyn Hospital | Gen | Indep | 75 | 25 | 18 | No | ... | ..... |
| Bloomington, 30,930—McLean Co. | | | | | | | | |
| Mennonite Hospital◊ | Gen | Church | 35 | 32 | 6 | No | 97 | 934 |
| St. Joseph's Hospital◊■ | Gen | Church | 200 | 105 | 25 | No | 305 | 3,124 |
| Blue Island, 16,534—Cook Co. | | | | | | | | |
| St. Francis' Hospital | Gen | Church | 85 | 43 | 15 | No | 261 | 1,931 |
| Breese, 1,957—Clinton Co. | | | | | | | | |
| St. Joseph's Hospital■ | Gen | Church | 25 | 12 | 2 | No | 21 | 395 |
| Bushnell, 2,850—McDonough Co. | | | | | | | | |
| Elmgrove Sanitarium | TB | County | 36 | 25 | .. | No | ... | 52 |
| Cairo, 13,532—Alexander Co. | | | | | | | | |
| St. Mary's Hospital◊■ | Gen | Church | 100 | 40 | 8 | No | 165 | 1,236 |
| Canton, 11,718—Fulton Co. | | | | | | | | |
| Graham Hospital◊■ | Gen | City | 43 | 30 | 13 | No | 123 | 1,408 |
| Carbondale, 7,528—Jackson Co. | | | | | | | | |
| Holden Memorial Hosp.◊■ | Gen | Church | 50 | 20 | 6 | No | 63 | 575 |
| Carlinville, 4,144—Macoupin Co. | | | | | | | | |
| Macoupin Hospital■ | Gen | Indiv | 20 | 15 | 6 | No | 43 | 612 |
| Carmi, 2,932—White Co. | | | | | | | | |
| Carmi Hospital | Gen | Part | 10 | 5 | 1 | No | 4 | 201 |
| Centralia, 12,583—Marion Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 75 | 22 | 6 | No | 48 | 1,101 |
| Champaign, 20,348—Champaign Co. | | | | | | | | |
| Burnham City Hospital◊■ | Gen | City | 70 | 59 | 16 | No | 251 | 2,178 |
| Charleston, 8,012—Coles Co. | | | | | | | | |
| M. A. Montgomery Memorial Sanatorium | Gen | Indep | 28 | 11 | 4 | No | 24 | 360 |
| Oakwood Hospital■ | Gen | Part | 23 | 12 | 4 | No | 24 | 424 |
| Chatsworth, 981—Livingston Co. | | | | | | | | |
| Chatsworth Hospital | Gen | Indiv | 10 | 4 | 2 | No | ... | ..... |
| Chicago, 3,376,438—Cook Co. | | | | | | | | |
| Albert Merritt Billings Hospital (Medical & Surgical Department of University of Chicago Clinics) | | | | | | | | |
| Alexian Brothers Hosp.★◊□ | Gen | Church | 287 | 204 | .. | No | ... | 3,699 |
| American Hospital★◊ | Gen | Indep | 134 | 70 | 16 | No | 185 | 1,764 |
| Augustana Hospital★+◊■ | Gen | Church | 350 | 224 | 25 | Yes | 614 | 6,311 |
| Belmont Hospital | Gen | Indep | 100 | 83 | 36 | Yes | 754 | 3,304 |
| Bethany Hospital■ | Gen | Indep | 49 | 14 | 16 | No | 165 | 498 |
| Bobs Roberts Memorial Hospital for Children (Pediatric Department of University of Chicago Clinics) | | | | | | | | |
| Burnside Hospital◊ | Gen | Indep | 65 | 35 | 16 | No | ... | ..... |
| Burrows Hospital | Gen | Indiv | 40 | 15 | 6 | No | 29 | 1,331 |
| Chicago Eye, Ear, Nose and Throat Hospital□ | EENT | Indep | 75 | 14 | .. | Yes | ... | 1,684 |
| Chicago Fresh-Air Hospital | TB | Indep | 104 | 88 | .. | No | ... | 227 |
| Chicago Lying-In Hosp.+⊙ | Mater | Indep | 157 | 108 | 140 | Yes | 2,849 | 3,938 |
| Chicago Memorial Hosp.★◊■ | Gen | Indep | 68 | 61 | 20 | Yes | 201 | 2,292 |
| Chicago Municipal Tuberculosis Sanitarium+⊙■ | TB | City | 1,222 | 1,125 | 3 | No | 1 | 1,763 |
| Chicago Sanitarium | N&M | Indep | 110 | 36 | .. | No | ... | 1,931 |
| Chicago State Hospital+⊙ | N&M | State | 3,866 | 3,805 | .. | Yes | ... | 1,248 |
| Children's Memorial Hospital+⊙□ | Chil | Indep | 272 | 171 | .. | Yes | ... | 3,373 |
| Columbus Hospital★◊ | Gen | Church | 136 | 85 | 23 | Yes | 213 | 3,881 |
| Cook County Hosp.★+◊■ | Gen | County | 3,300 | 2,339 | 115 | No | 3,536 | 55,181 |
| Cook County Psy. Hosp.+ | N&M | County | 175 | 116 | .. | No | ... | 5,170 |
| Dailey Hosp. & Sanit. (col.) | Gen | Indep | 28 | 20 | 6 | Yes | ... | ..... |
| Durand Hospital+⊙■ | Iso | Indep | 60 | 46 | .. | No | ... | 704 |
| Edgewater Hospital★ | Gen | Indep | 120 | 72 | 20 | No | 360 | 2,880 |
| Englewood Hospital★◊ | Gen | Indep | 103 | 83 | 30 | No | 576 | 3,051 |
| Evangelical Deaconess Hospital◊■ | Gen | Church | 66 | 34 | 18 | No | 217 | 1,205 |
| Evangelical Hospital★◊ | Gen | Church | 200 | 138 | 60 | No | 1,417 | 6,312 |
| Frances E. Willard Hosp.★◊■ | Gen | Indep | 159 | 72 | 26 | Yes | 594 | 3,245 |
| Franklin Boulevard Hosp.◊ | Gen | Indep | 60 | 46 | 20 | No | 292 | 2,271 |
| Garfield Park Hospital★◊ | Gen | Indep | 196 | 102 | 35 | Yes | 741 | 4,136 |
| Grant Hospital★◊ | Gen | Indep | 250 | 155 | 50 | Yes | 1,193 | 5,810 |
| Henrotin Hospital◊ | Gen | Indep | 75 | 54 | 8 | Yes | 112 | 2,037 |
| Holy Cross Hospital★ | Gen | Church | 100 | 58 | 20 | No | 484 | 3,366 |
| Hospital of St. Anthony de Padua★◊■ | Gen | Church | 220 | 185 | 45 | No | 1,226 | 6,742 |
| Illinois Central Hosp.★■ | Gen | Indus | 250 | 149 | 21 | Yes | 333 | 4,196 |
| Illinois Eye & Ear Infirm.+ | EENT | State | 183 | 155 | .. | Yes | ... | 3,958 |
| Illinois Masonic Hosp.★◊ | Gen | Frat | 142 | 79 | 25 | Yes | 400 | 2,711 |
| Illinois Steel Co. Hospital■ | Indus | Indus | 30 | 19 | .. | Yes | ... | 137 |
| Jackson Park Hospital◊ | Gen | Indep | 250 | 127 | 42 | Yes | ... | ..... |
| John B. Murphy Hosp.◊ | Gen | Church | 100 | 55 | 29 | No | 542 | 2,260 |
| Lake View Hospital★◊ | Gen | Indep | 112 | 52 | 32 | No | 323 | 2,248 |
| Lewis Memorial Maternity Hospital | Mater | Church | 264 | 43 | 250 | Yes | 1,332 | ..... |
| Lutheran Deaconess Home and Hospital★◊■ | Gen | Church | 175 | 138 | 42 | No | 809 | 4,746 |
| Lutheran Mem. Hosp.★◊■ | Gen | Church | 157 | 89 | 34 | No | 583 | 3,258 |
| Martha Washington Hosp. | Gen | Indep | 91 | 49 | 14 | No | 93 | 1,491 |
| Mercy Hospital★◊ | Gen | Church | 365 | 220 | 35 | No | 593 | 6,770 |
| Michael Reese Hospital★+◊ | Gen | Indep | 583 | 388 | 71 | Yes | 1,720 | 12,144 |
| Misericordia Hospital and Infants' Home⊙■ | Mater | Church | 20 | 9 | 26 | Yes | 283 | 319 |
| Mother Cabrini Memorial Hospital★◊ | Gen | Church | 150 | 83 | 20 | No | 336 | 3,308 |
| Mt. Sinai Hospital★◊ | Gen | Indep | 160 | 118 | 40 | Yes | 969 | 4,770 |
| Municipal Contagious Disease Hospital+⊙■ | Iso | City | 428 | 281 | .. | No | ... | 4,779 |
| Nancy Adele McElwee Memorial and Gertrude Dunn Hicks Memorial Hospital (Orthopedic Department of University of Chicago Clinics) | | | | | | | | |
| Nelson Morris Hospital (Included in Michael Reese Hospital) | | | | | | | | |
| North Avenue Hospital■ | Gen | Indiv | 14 | 9 | 2 | Yes | 3 | ..... |
| North Chicago Hospital | Gen | Indep | 300 | 40 | 35 | Yes | 73 | 547 |
| Norwegian-American Hospital★◊□ | Gen | Indep | 185 | 98 | 50 | No | 1,078 | 4,403 |
| Parkway Sanitarium | N&M | Indep | 28 | ... | .. | No | ... | 132 |
| Passavant Mem. Hosp.★◊ | Gen | Indep | 164 | 84 | 35 | No | 345 | 2,970 |
| Peoples Hospital■ | Gen | Indiv | 60 | 19 | 5 | Yes | 24 | 892 |
| Pinel Sanitarium | N&M | Indep | 50 | 18 | .. | No | ... | 227 |
| Post Graduate Hospital & Medical School■ | Gen | Indep | 85 | 24 | 2 | Yes | ... | 1,300 |
| Presbyterian Hospital★+◊□ | Gen | Church | 413 | 350 | 37 | No | 746 | 11,183 |
| Provident Hospital (col.)★◊ | Gen | Indep | 59 | 40 | 6 | Yes | 114 | 764 |
| Ravenswood Hospital★◊ | Gen | Indep | 153 | 113 | 40 | No | 1,077 | 4,344 |
| Research and Educational Hospital★+■▲ | Gen | State | 362 | 155 | 25 | Yes | 405 | 3,820 |
| Roseland Community Hospital★◊ | Gen | Indep | 101 | 76 | 27 | Yes | 491 | 2,778 |
| St. Anne's Hospital★◊ | Gen | Church | 250 | 193 | 60 | Yes | 1,428 | 5,267 |
| St. Bernard's Hospital★◊ | Gen | Church | 200 | 112 | 30 | No | 731 | 5,890 |
| St. Elizabeth's Hosp.★◊■ | Gen | Church | 248 | 117 | 39 | Yes | 635 | 3,410 |
| St. Joseph Hospital★◊ | Gen | Church | 185 | 105 | 35 | Yes | 668 | 3,789 |
| St. Luke's Hospital★+◊■ | Gen | Indep | 604 | 453 | 55 | Yes | 1,249 | 13,174 |
| St. Mary of Nazareth Hospital★◊■ | Gen | Church | 212 | 146 | 38 | No | 800 | 4,920 |
| Sarah Morris Hospital for Children (Included in Michael Reese Hosp.) | | | | | | | | |
| Shriners' Hospital for Crippled Children | Ortho | Frat | 60 | 62 | .. | Yes | ... | 202 |
| South Chicago Community Hospital◊■ | Gen | Indep | 67 | 42 | 15 | No | 278 | 2,427 |
| South Shore Hospital◊ | Gen | Indep | 100 | 69 | 25 | No | 617 | 2,863 |
| Streeter Hospital | Gen | Indiv | 50 | 20 | 6 | No | ... | ..... |
| Swedish Covenant Hosp.★◊ | Gen | Church | 180 | 90 | 45 | Yes | 961 | 3,218 |
| U. S. Marine Hospital★■ | Gen | USPHS | 165 | 161 | .. | Yes | ... | 1,016 |
| University Hospital★◊ | Gen | Indep | 100 | 60 | 21 | No | 210 | 2,182 |
| University of Chicago Clinics★+ | Gen | Indep | 367 | 201 | 2 | Yes | ... | 4,615 |
| Washington Blvd. Hosp.★◊■ | Gen | Indep | 100 | 68 | 10 | Yes | 139 | 2,347 |
| Washingtonian Home (Included in Martha Washington Hospital) | | | | | | | | |
| Washington Park Community Hospital◊ | Gen | Indep | 140 | 67 | 20 | No | ... | ..... |
| Welles Park Hospital | Gen | Indep | 50 | 30 | 10 | Yes | 108 | ..... |
| Wesley Memorial Hosp.★◊■ | Gen | Church | 247 | 148 | 21 | No | 600 | 4,837 |
| West Side Hospital◊ | Gen | Indep | 142 | 74 | 19 | Yes | 690 | 3,131 |
| Women and Children's Hospital★■ | Gen | Indep | 100 | 61 | 25 | Yes | 485 | 1,854 |
| Woodlawn Hospital★ | Gen | Indep | 140 | 67 | 30 | No | 514 | 3,073 |
| Chicago Heights, 22,321—Cook Co. | | | | | | | | |
| St. James' Hospital■ | Gen | Church | 100 | 60 | 15 | No | 220 | 2,109 |
| Clinton, 5,920—De Witt Co. | | | | | | | | |
| Dr. John Warner Hosp.■ | Gen | City | 25 | 12 | 4 | No | 42 | 300 |
| Compton, 277—Lee Co. | | | | | | | | |
| Compton Hospital | Gen | Indiv | 10 | 4 | 2 | No | 11 | 169 |
| Danville, 36,765—Vermilion Co. | | | | | | | | |
| Lake View Hospital◊ | Gen | Indep | 158 | 77 | 12 | Yes | 182 | 2,571 |
| St. Elizabeth's Hospital◊■ | Gen | Church | 156 | 115 | 25 | Yes | 277 | 5,209 |
| Decatur, 57,510—Macon Co. | | | | | | | | |
| Decatur and Macon County Hospital★+◊■ | Gen | Cy&Co | 141 | 72 | 24 | Yes | 423 | 2,674 |

Key to symbols and abbreviations is on page 2078

## ILLINOIS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Macon County Tuberculosis Sanatorium+■ | TB | County | 80 | 53 | .. | Yes | ... | 67 |
| St. Mary's Hospital........ | Gen | Church | 135 | 104 | 18 | No | 349 | 3,017 |
| Wabash Employees' Hosp. | Indus | Indus | 85 | 25 | .. | Yes | ... | 911 |
| De Kalb, 8,545—De Kalb Co. | | | | | | | | |
| De Kalb County Tuberculosis Sanatorium......... | TB | County | 22 | 29 | .. | No | ... | 30 |
| De Kalb Public Hospital■. | Gen | City | 40 | 18 | 12 | No | 141 | 806 |
| St. Mary's Hospital......... | Gen | Church | 45 | 24 | 7 | No | ... | ..... |
| Des Plaines, 8,798—Cook Co. | | | | | | | | |
| Northwestern Hospital..... | Gen | Indiv | 16 | New | 5 | No | ... | ..... |
| Dixon, 9,908—Lee Co. | | | | | | | | |
| Dixon Public Hospital◊■.. | Gen | City | 60 | 30 | 11 | No | 107 | 907 |
| Duquoin, 7,593—Perry Co. | | | | | | | | |
| Marshall Browning Hosp.■ | Gen | Indep | 50 | 17 | 5 | Yes | 48 | 591 |
| Dwight, 2,534—Livingston Co. | | | | | | | | |
| Veterans Admin. Hospital■ | Gen | VetAd | 225 | 182 | .. | No | ... | 1,509 |
| East Moline, 10,107—Rock Island Co. | | | | | | | | |
| East Moline State Hosp.+◊ | N&M | State | 1,940 | 1,812 | .. | No | ... | 386 |
| East St. Louis, 74,347—St. Clair Co. | | | | | | | | |
| Christian Welfare Hosp.◊. | Gen | Church | 44 | 33 | 6 | No | 86 | 834 |
| St. Mary's Hospital★◊■.... | Gen | Church | 260 | 120 | 35 | No | 377 | 3,580 |
| Edwardsville, 6,235—Madison Co. | | | | | | | | |
| Madison County Sanit■. . | TB | County | 85 | 53 | .. | Yes | ... | 104 |
| Effingham, 4,978—Effingham Co. | | | | | | | | |
| St. Anthony's Hospital■... | Gen | Church | 70 | 25 | 8 | Yes | 40 | 750 |
| Eldorado, 4,482—Saline Co. | | | | | | | | |
| Eldorado Hospital......... | Gen | Indiv | 14 | 7 | 2 | No | 10 | 235 |
| Elgin, 35,929—Kane Co. | | | | | | | | |
| Elgin State Hospital◊..... | N&M | State | 3,777 | 3,545 | .. | Yes | ... | 1,233 |
| Resthaven Sanitarium..... | N&M | Indiv | 70 | 53 | .. | No | ... | 80 |
| St. Joseph's Hospital◊..... | Gen | Church | 125 | 53 | 20 | No | 347 | 1,837 |
| Sherman Hospital■....... | Gen | Indep | 110 | 42 | 20 | Yes | 307 | 2,212 |
| Elmhurst, 14,055—Du Page Co. | | | | | | | | |
| Elmhurst Hospital◊■....... | Gen | Indep | 77 | 41 | 18 | No | 313 | 1,707 |
| Evanston, 63,338—Cook Co. | | | | | | | | |
| Evanston Community Hospital (col.)............... | Gen | Indep | 22 | 12 | 6 | Yes | 60 | 385 |
| Evanston Hospital★+◊..... | Gen | Indep | 235 | 181 | 36 | Yes | 853 | 6,117 |
| St. Francis Hospital★◊.... | Gen | Church | 320 | 125 | 40 | No | 998 | 6,615 |
| Evergreen Park, 1,594—Cook Co. | | | | | | | | |
| Little Company of Mary Hospital ............... | Gen | Church | 102 | 49 | 48 | No | 331 | 937 |
| Flora, 4,393—Clay Co. | | | | | | | | |
| Flora Hospital............. | Gen | Indiv | 15 | New | 4 | No | ... | ..... |
| Ft. Sheridan, 602—Lake Co. | | | | | | | | |
| Station Hospital■.......... | Gen | Army | 116 | 71 | 3 | Yes | 39 | 1,849 |
| Freeport, 22,045—Stephenson Co. | | | | | | | | |
| Evangelical Deaconess Hospital◊■ ................ | Gen | Church | 86 | 49 | 16 | Yes | 172 | 1,639 |
| St. Francis Hospital◊■.... | Gen | Church | 122 | 55 | 16 | No | 276 | 1,032 |
| Galesburg, 28,830—Knox Co. | | | | | | | | |
| Galesburg Cottage Hosp.◊■ | Gen | Indep | 82 | 36 | 18 | Yes | 167 | 1,027 |
| St. Mary's Hospital■...... | Gen | Church | 120 | 53 | 18 | No | 265 | 2,149 |
| Geneseo, 3,406—Henry Co. | | | | | | | | |
| J. C. Hammond City Hosp. | Gen | City | 14 | 2 | 5 | No | 31 | 444 |
| Geneva, 4,607—Kane Co. | | | | | | | | |
| Community Hospital◊■.... | Gen | Indep | 67 | 27 | 18 | No | 214 | 1,019 |
| Gilman, 1,620—Iroquois Co. | | | | | | | | |
| Gilman Community Hosp.. | Gen | Indep | 12 | 5 | 3 | No | 41 | 237 |
| Granite City, 25,130—Madison Co. | | | | | | | | |
| St. Elizabeth's Hospital◊■ | Gen | Church | 103 | 60 | 22 | No | 143 | 1,656 |
| Great Lakes,—Lake Co. | | | | | | | | |
| U. S. Naval Hospital★■▲.. | Gen | Navy | 1,031 | 675 | .. | No | ... | 5,005 |
| Harrisburg, 11,625—Saline Co. | | | | | | | | |
| Harrisburg Hospital■...... | Gen | Indep | 30 | 9 | 1 | Yes | ... | 340 |
| Lightner Hospital......... | Gen | Indiv | 35 | 25 | 9 | No | 48 | 900 |
| Harvard, 2,988—McHenry Co. | | | | | | | | |
| Harvard Community Hospital■ ................. | Gen | Part | 21 | 10 | 5 | No | 45 | 210 |
| Harvey, 16,374—Cook Co. | | | | | | | | |
| Ingalls Memorial Hospital◊ | Gen | Indep | 95 | 30 | 25 | Yes | 347 | 1,518 |
| Herrin, 9,708—Williamson Co. | | | | | | | | |
| Herrin Hospital■.......... | Gen | Part | 35 | 17 | 5 | No | 53 | 608 |
| Highland, 3,319—Madison Co. | | | | | | | | |
| St. Joseph's Hospital■..... | Gen | Church | 65 | 52 | 6 | No | 69 | 993 |
| Highland Park, 12,203—Lake Co. | | | | | | | | |
| Highland Park Hospital.. | Gen | Indep | 53 | 28 | 17 | No | 204 | 928 |
| Hillsboro, 4,435—Montgomery Co. | | | | | | | | |
| Hillsboro Hospital■........ | Gen | Indep | 28 | 15 | 5 | No | 50 | 407 |
| Hines,—Cook Co. | | | | | | | | |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 1,655 | 1,134 | .. | Yes | ... | 5,937 |
| Hinsdale, 6,923—Du Page Co. | | | | | | | | |
| Hinsdale Sanit. & Hosp.◊ | Gen | Indep | 134 | 65 | 13 | No | 222 | 1,871 |
| Jacksonville, 17,747— Co. | | | | | | | | |
| Jacks ) | N&M | State | 3,000 | 3,154 | .. | No | ... | 553 |
| | N&M | Indep | 120 | 73 | .. | No | ... | 163 |
| ....... | TB | County | 35 | 37 | .. | No | ... | 66 |
| ior's Hospital◊■.. | Gen | Church | 76 | 52 | 15 | No | 124 | 1,397 |
| Passavant Memorial Hospital◊■ ................ | Gen | Church | 72 | 39 | 14 | Yes | 93 | 1,141 |
| Jerseyville, 4,309—Jersey Co. | | | | | | | | |
| Jerseyville Hospital........ | Gen | Indiv | 15 | 4 | 5 | Yes | 17 | 137 |
| Joliet, 42,993—Will Co. | | | | | | | | |
| St. Joseph's Hospital★◊■.. | Gen | Church | 192 | 151 | 40 | Yes | 682 | 4,355 |
| Silver Cross Hospital+◊■.. | Gen | Indep | 133 | 72 | 17 | Yes | 362 | 2,535 |
| Will County Tuber. Sanit.■ | TB | County | 100 | 59 | .. | No | ... | 78 |
| Kankakee, 20,620—Kankakee Co. | | | | | | | | |
| Kankakee State Hospital◊ | N&M | State | 4,000 | 3,939 | .. | No | ... | 868 |
| St. Mary's Hospital◊■.... | Gen | Church | 145 | 50 | 12 | No | 139 | 1,946 |
| Kenilworth, 2,501—Cook Co. | | | | | | | | |
| Kenilworth Sanitarium..... | N&M | Indiv | 30 | 25 | .. | No | ... | 15 |
| Kewanee, 17,093—Henry Co. | | | | | | | | |
| Kewanee Public Hospital◊. | Gen | Indep | 48 | 27 | 12 | Yes | 112 | 796 |
| St. Francis Hospital◊■.... | Gen | Church | 56 | 30 | 9 | Yes | 88 | 729 |
| La Harpe, 1,175—Hancock Co. | | | | | | | | |
| Davier Memorial Hospital. | Gen | Indep | 14 | 4 | 4 | No | 18 | 132 |
| Lake Forest, 6,554—Lake Co. | | | | | | | | |
| Alice Home Hospital■..... | Gen | Indep | 42 | 22 | 8 | No | 151 | 763 |
| Lake Forest Hospital (Contagious Dept. of Alice Home Hospital) | | | | | | | | |
| La Salle, 13,149—La Salle Co. | | | | | | | | |
| St. Mary's Hospital◊...... | Gen | Church | 88 | 29 | 12 | Yes | 237 | 1,861 |
| Libertyville, 3,791—Lake Co. | | | | | | | | |
| Condell Memorial Hospital | Gen | Indep | 25 | 9 | 6 | No | 53 | 354 |
| Lincoln, 12,855—Logan Co. | | | | | | | | |
| Evangelical Deaconess Hospital◊■ ................ | Gen | Church | 52 | 36 | 8 | No | 90 | 1,029 |
| St. Clara's Hospital■...... | Gen | Church | 65 | 31 | 6 | No | 62 | 1,124 |
| Litchfield, 6,612—Montgomery Co. | | | | | | | | |
| St. Francis' Hospital■..... | Gen | Church | 120 | 63 | 8 | No | 100 | 2,703 |
| Mackinaw, 760—Tazewell Co. | | | | | | | | |
| Oak Knoll Sanatorium..... | TB | County | 45 | 43 | .. | No | ... | 63 |
| Macomb, 8,509—McDonough Co. | | | | | | | | |
| Marietta Phelps Hosp.◊■.. | Gen | Indep | 40 | 25 | 5 | No | 77 | 700 |
| St. Francis' Hospital◊..... | Gen | Church | 75 | 45 | 6 | No | 113 | 1,140 |
| Manteno, 1,149—Kankakee Co. | | | | | | | | |
| Manteno State Hospital.. | N&M | State | 863 | 523 | .. | No | ... | ..... |
| Mattoon, 14,631—Coles Co. | | | | | | | | |
| Memorial Methodist Hospital◊■ ................ | Gen | Church | 43 | 26 | 10 | No | 82 | 1,095 |
| Melrose Park, 10,741—Cook Co. | | | | | | | | |
| Westlake Hospital◊■....... | Gen | Indep | 85 | 28 | 16 | No | 265 | 1,158 |
| Mendota, 4,008—La Salle Co. | | | | | | | | |
| Harris Hospital........... | Gen | Indiv | 20 | 6 | 3 | No | 17 | 316 |
| Milledgeville, 807—Carroll Co. | | | | | | | | |
| General Hospital■.......... | Gen | Indiv | 10 | 3 | 4 | No | 19 | 1,080 |
| Minonk, 1,910—Woodford Co. | | | | | | | | |
| Woodford County Tuber. Sanatorium ............ | TB | County | 12 | 10 | .. | No | ... | 14 |
| Moline, 32,236—Rock Island Co. | | | | | | | | |
| Lutheran Hospital◊........ | Gen | Church | 124 | 50 | 36 | No | 420 | 1,584 |
| Moline Public Hospital◊■. | Gen | City | 111 | 60 | 22 | No | 995 | 2,240 |
| Monmouth, 8,666—Warren Co. | | | | | | | | |
| Monmouth Hospital◊...... | Gen | City | 35 | 30 | 11 | No | 129 | 782 |
| Morris, 5,568—Grundy Co. | | | | | | | | |
| Morris Hospital............ | Gen | City | 35 | 15 | 10 | No | 100 | 485 |
| Mt. Vernon, 12,375—Jefferson Co. | | | | | | | | |
| Mt. Vernon Hospital...... | Gen | Indiv | 30 | 20 | 4 | No | ... | ..... |
| Moweaqua, 1,478—Shelby Co. | | | | | | | | |
| Moweaqua Hospital........ | Gen | Indiv | 25 | 13 | 8 | No | 16 | 93 |
| Murphysboro, 8,182—Jackson Co. | | | | | | | | |
| St. Andrew's Hospital■... | Gen | Church | 50 | 25 | 4 | No | 25 | 921 |
| Naperville, 5,118—Du Page Co. | | | | | | | | |
| Edward Sanatorium■...... | TB | Indep | 85 | 71 | .. | No | ... | 133 |
| Normal, 6,768—McLean Co. | | | | | | | | |
| Brokaw Hospital◊■........ | Gen | Church | 79 | 55 | 15 | No | 189 | 2,569 |
| Fairview Sanatorium■...... | TB | County | 50 | 44 | .. | Yes | ... | 56 |
| North Chicago, 8,466—Lake Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 1,135 | 826 | .. | No | ... | 217 |
| Oak Forest, 50—Cook Co. | | | | | | | | |
| Cook County Infirmary+■ | Gen | County | 1,054 | 1,016 | .. | No | ... | 2,771 |
| Cook County Tuber. Hospital+■ ................. | TB | County | 632 | 579 | 2 | No | ... | 980 |
| Oak Park, 63,982—Cook Co. | | | | | | | | |
| Oak Park Hospital★◊...... | Gen | Church | 135 | 95 | 40 | Yes | 795 | 8,365 |
| West Suburban Hosp.★+◊. | Gen | Indep | 327 | 188 | 100 | Yes | 1,781 | 7,934 |
| Olney, 6,140—Richland Co. | | | | | | | | |
| Olney Hospital◊■.......... | Gen | Indep | 68 | 50 | 7 | Yes | 70 | 1,786 |
| Oregon, 2,376—Ogle Co. | | | | | | | | |
| Oregon Hospital ......... | Gen | Indiv | 10 | 5 | 6 | No | 30 | 126 |
| Ottawa, 15,094—La Salle Co. | | | | | | | | |
| Highland ................ | TB | County | 60 | 44 | .. | No | ... | 74 |
| Illinois Valley Hospital.... | Gen | Indiv | 22 | 9 | 6 | No | 25 | 327 |
| Ottawa Tuberculosis Sanat. | TB | Indiv | 51 | 36 | .. | No | ... | 79 |
| Ryburn Memorial Hospital | Gen | City | 63 | 33 | 12 | No | 235 | 1,462 |
| Pana, 5,835—Christian Co. | | | | | | | | |
| Huber Memorial Hosp.◊■. | Gen | Church | 40 | 24 | 10 | No | 70 | 720 |
| Little Sanitarium.......... | Gen | Indiv | 28 | 15 | 4 | No | 34 | 400 |
| Paris, 8,781—Edgar Co. | | | | | | | | |
| Paris Hospital◊■.......... | Gen | Indiv | 35 | 27 | 10 | No | 28 | 825 |
| Pekin, 16,129—Tazewell Co. | | | | | | | | |
| Pekin Public Hospital◊.... | Gen | Indep | 25 | 22 | 7 | No | ... | ..... |
| Peoria, 104,969—Peoria Co. | | | | | | | | |
| John C. Proctor Hospital◊ | Gen | Indep | 100 | 61 | 18 | No | 204 | 2,276 |
| Methodist Hospital◊■...... | Gen | Church | 187 | 116 | 23 | No | 466 | 3,320 |
| Michell Farm.............. | N&M | Indiv | 25 | 16 | .. | No | ... | 41 |
| Peoria Municipal Tuberculosis Sanitarium+■........ | TB | City | 92 | 88 | .. | Yes | ... | 158 |
| Peoria Sanitarium......... | N&M | Indiv | 25 | 14 | .. | No | ... | 51 |
| Peoria State Hospital+◊... | N&M | State | 2,800 | 2,656 | .. | No | ... | 482 |
| St. Francis Hospital◊■▲... | Gen | Church | 300 | 174 | 30 | No | 665 | 6,330 |
| Peru, 9,121—La Salle Co. | | | | | | | | |
| People's Hospital◊........ | Gen | Indep | 40 | 38 | 12 | No | 135 | 1,546 |
| Pinckneyville, 3,046—Perry Co. | | | | | | | | |
| Hiller Hospital............. | Gen | Indiv | 20 | 8 | 3 | Yes | ... | ..... |
| Pontiac, 8,272—Livingston Co. | | | | | | | | |
| Livingston County Sanat. | TB | County | 35 | 30 | .. | No | ... | 33 |
| St. James' Hospital........ | Gen | Church | 42 | 20 | 12 | No | ... | ..... |
| Princeton, 4,762—Bureau Co. | | | | | | | | |
| Julia Rackley Perry Memorial Hospital■......... | Gen | City | 40 | 21 | 10 | No | 83 | 762 |
| Quincy, 39,241—Adams Co. | | | | | | | | |
| Adams County Tuber- Sanat ■ | TB | County | 50 | 45 | .. | Yes | ... | 47 |
| S | Gen | Indep | 130 | 65 | 22 | No | 348 | 2,269 |
| Ra | Gen | Church | 191 | 140 | 25 | No | 340 | 2,374 |
| S | Gen | Army | 50 | 21 | .. | Yes | ... | 382 |
| Rec —Randolph Co. | | | | | | | | |
| St. Clement's Hospital■.... | Gen | Church | 22 | 15 | 2 | No | 8 | 252 |

Key to symbols and abbreviations is on page 2078

## ILLINOIS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Robinson, 3,668—Crawford Co. | | | | | | | | |
| Robinson Hospital■ | Gen | Part | 18 | 5 | 5 | No | 24 | 145 |
| Rockford, 85,864—Winnebago Co. | | | | | | | | |
| Rockford Hospital◊■ | Gen | Indep | 92 | 55 | 18 | No | 317 | 2,252 |
| Rockford Municipal Sanit.+■ | TB | City | 118 | 112 | .. | Yes | ... | ..... |
| St. Anthony's Hospital◊■ | Gen | Church | 147 | 93 | 33 | Yes | 774 | 3,723 |
| [illegible] | Gen | Indep | 80 | 51 | 12 | No | 350 | 1,494 |
| [illegible] | N&M | Indiv | 35 | 31 | .. | No | ... | 151 |
| [illegible] | Gen | County | 97 | 22 | 6 | Yes | 90 | 779 |
| [illegible] Co. | | | | | | | | |
| R[illegible] | | | | | | | | |
| [illegible]culosis Sanatorium | TB | County | 22 | 23 | .. | Yes | ... | 38 |
| St. Anthony's Hospital★◊■ | Gen | Church | 150 | 75 | 18 | Yes | 212 | 2,817 |
| Rosiclare, 1,794—Hardin Co. | | | | | | | | |
| Rosiclare Hospital | Gen | Indus | 15 | 3 | 2 | No | 12 | 122 |
| Rushville, 2,388—Schuyler Co. | | | | | | | | |
| Culbertson Hospital■ | Gen | Indiv | 20 | 8 | 3 | No | 26 | 224 |
| St. Charles, 5,377—Kane Co. | | | | | | | | |
| St. Charles City Hospital■ | Gen | City | 16 | 7 | 6 | Yes | 45 | 272 |
| Sandwich, 2,611—De Kalb Co. | | | | | | | | |
| Horatio N. Woodward Memorial Hospital | Gen | Indep | 26 | 18 | 10 | No | 75 | 500 |
| Savanna, 5,086—Carroll Co. | | | | | | | | |
| Savanna City Hospital | Gen | City | 15 | 5 | 5 | No | 43 | 177 |
| Shelbyville, 3,491—Shelby Co. | | | | | | | | |
| Shelby County Memorial Hospital■ | Gen | County | 20 | 9 | 5 | No | 26 | 237 |
| Springfield, 71,864—Sangamon Co. | | | | | | | | |
| Palmer Tuberculosis Sanat. | TB | Indep | 75 | 55 | .. | No | ... | 82 |
| St. John's Hospital◊■ | Gen | Church | 540 | 422 | 60 | Yes | 774 | 10,494 |
| St. [illegible]■ | TBOrth | Church | 300 | 250 | .. | No | ... | 541 |
| Sp[illegible] | Gen | Church | 85 | 60 | 14 | No | 201 | 1,940 |
| Spri[illegible] | | | | | | | | |
| [illegible]l◊■ | Gen | Church | 68 | 43 | 7 | Yes | 139 | 1,388 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | City | 51 | 31 | 12 | Yes | 251 | 1,175 |
| Streator, 14,728—La Salle Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 112 | 65 | 13 | No | 220 | 2,333 |
| Sublette, 261—Lee Co. | | | | | | | | |
| Angear Maternity Hospital | Mater | Indiv | 15 | 5 | 10 | No | 126 | 1,828 |
| Sycamore, 4,021—De Kalb Co. | | | | | | | | |
| Sycamore Municipal Hosp.■ | Gen | City | 20 | 9 | 10 | No | ... | 335 |
| Taylorville, 7,316—Christian Co. | | | | | | | | |
| St. Vincent's Hospital◊■ | Gen | Church | 55 | 29 | 11 | No | 131 | 1,019 |
| Urbana, 13,060—Champaign Co. | | | | | | | | |
| Carle Memorial Hospital | Gen | Indep | 40 | New | 14 | No | ... | ..... |
| [illegible]■ | Gen | County | 55 | 51 | 12 | No | 62 | 662 |
| [illegible] | Gen | Church | 38 | 35 | 12 | No | 151 | 1,545 |
| [illegible]■ | TB | County | 48 | 35 | .. | No | ... | 44 |
| Vandalia, 4,342—Fayette Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 20 | 15 | 4 | No | 35 | 434 |
| [illegible]■ | Gen | Indiv | 30 | 14 | 7 | No | 67 | 436 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | County | 30 | 17 | 8 | No | 98 | 728 |
| [illegible] | | | | | | | | |
| Lake County Gen. Hosp.■ | Gen | County | 76 | 63 | 12 | Yes | 69 | 812 |
| St. Therese's Hospital◊■ | Gen | Church | 180 | 50 | 16 | No | 270 | 1,815 |
| Victory Memorial Hosp.◊■ | Gen | Indep | 76 | 42 | 14 | No | 265 | 1,669 |
| White Hall, 2,928—Greene Co. | | | | | | | | |
| White Hall Hospital | Gen | Indep | 12 | 7 | 5 | No | 59 | 412 |
| Winfield, 445—Du Page Co. | | | | | | | | |
| Winfield Sanatorium | TB | Indep | 120 | 96 | .. | Yes | ... | 159 |
| Zace Sanatorium | TB | Indep | 50 | 35 | .. | No | ... | 82 |
| Woodstock, 5,471—McHenry Co. | | | | | | | | |
| Woodstock Hospital■ | Gen | Indep | 20 | 9 | 7 | No | 74 | 381 |
| Zeigler, 3,816—Franklin Co. | | | | | | | | |
| Zeigler Hospital | Gen | Indus | 16 | 3 | 2 | No | 12 | ..... |

### Related Institutions

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Batavia, 5,045—Kane Co. | | | | | | | | |
| Kane County Home Hosp. | Inst | County | 50 | 28 | .. | No | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible]■ | Inst-Iso | County | 100 | 70 | .. | No | 14 | 1,210 |
| [illegible] | | | | | | | | |
| [illegible] | Inst | Church | 30 | 5 | .. | No | ... | 339 |
| [illegible] *Home* | Gen | Indiv | 26 | 13 | .. | No | ... | 402 |
| Beulah Home and Maternity Hospital■ | Mater | Indep | 40 | 15 | 24 | No | 48 | 105 |
| Chicago Home for Conv. Women and Children | Conv | Indep | 56 | 48 | .. | No | ... | 374 |
| Chicago Home for Incur. | Incur | Indep | 265 | 259 | .. | No | ... | 63 |
| Chicago Home for Friendless■ | Inst | Church | 85 | 15 | .. | No | ... | 670 |
| Chicago Nursery and Half Orphan Asylum | Inst | Indep | 17 | 14 | .. | No | ... | 374 |
| Church Home for Aged Persons | Inst | Church | 9 | 6 | .. | No | ... | 74 |
| Home for Aged Jews | Inst | Indep | 10 | ... | .. | No | ... | ..... |
| House of Correction and Police Emergency Hosp.■ | Inst | City | 75 | 35 | 2 | No | ... | 1,871 |
| Isolation Hospital■ | Iso | City | 35 | 7 | .. | No | ... | 156 |
| Lawrence Hall | Inst | Church | 21 | 3 | .. | No | ... | 46 |
| Marks Nathan Jewish Orphan Home | Inst | Indep | 22 | 8 | .. | No | ... | ..... |
| Methodist Episcopal Old People's Home | Inst | Church | 25 | 19 | .. | No | ... | ..... |
| Mylan Sanitarium | N&M | Indiv | 20 | 10 | .. | No | ... | 74 |
| St. Vincent's Infant and Maternity Hospital■ | Mater | Church | 70 | 20 | 70 | No | 68 | 597 |
| Salvation Army Women's Home and Hospital■ | Mater | Church | 50 | 5 | 12 | No | 162 | 175 |
| Shore View Manor | Conv | Indiv | 16 | 12 | .. | No | ... | ..... |
| Chicago Heights, 22,321—Cook Co. | | | | | | | | |
| Chicago Heights Eye, Ear, Nose and Throat Hosp. | EENT | Indiv | 5 | 1 | .. | No | ... | 100 |
| [illegible] | | | | | | | | |
| [illegible] | Indus | Indus | 13 | ... | .. | Yes | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible]■ | Inst | VetAd | 560 | 508 | .. | No | ... | 2,580 |
| Dixon, 9,908—Lee Co. | | | | | | | | |
| Dixon State Hospital◊ | MenDef | State | 2,300 | 2,877 | .. | No | ... | 471 |
| Eldorado, 4,482—Saline Co. | | | | | | | | |
| Ferrell Hospital | Gen | Indiv | 12 | 5 | 1 | No | ... | 153 |
| Evanston, 63,338—Cook Co. | | | | | | | | |
| Cradle Society | Chil | Indep | 36 | 18 | .. | No | ... | 320 |
| Grove House for Conv. | Conv | Indep | 35 | 19 | .. | No | ... | 213 |
| Fairbury, 2,310—Livingston Co. | | | | | | | | |
| Fairbury Hospital■ | Gen | City | 8 | 3 | 5 | No | 25 | 192 |
| Forest Park, 14,555—Cook Co. | | | | | | | | |
| German Old People's Home | Inst | Indep | 35 | 35 | .. | No | ... | ..... |
| Geneva, 4,607—Kane Co. | | | | | | | | |
| State Training School for *Girls*■ | *Inst* | *State* | 36 | 34 | .. | Yes | ... | 300 |
| Godfrey, 201—Madison Co. | | | | | | | | |
| Beverly Farm | MenDef | Indep | 80 | 60 | .. | Yes | ... | 8 |
| Her[illegible] | | | | | | | | |
| Di[illegible] | | Part | 8 | 4 | 3 | No | 50 | ..... |
| Hinsdale, 6,923—Du Page Co. | | | | | | | | |
| West Suburban Home for Girls | Mater | Indep | 22 | ... | 25 | ... | ... | ..... |
| [illegible] Co. | | | | | | | | |
| [illegible] | *Inst* | *State* | 18 | 10 | .. | No | ... | 195 |
| [illegible] | Inst | State | 40 | 24 | .. | No | ... | 1,066 |
| *Joliet, 42,993—Will Co.* | | | | | | | | |
| Illinois State Penit. Hosp. | Inst | State | 50 | 20 | .. | Yes | ... | ..... |
| Knoxville, 1,867—Knox Co. | | | | | | | | |
| Knox County Home & Hosp. | Gen | County | 18 | 7 | .. | No | ... | ..... |
| La Grange, 10,103—Cook Co. | | | | | | | | |
| Illinois Masonic Orphans' *Home* | Inst | Frat | 28 | 4 | .. | No | ... | 210 |
| Lincoln, 12,855—Logan Co. | | | | | | | | |
| *Lincoln State School and* Colony+◊ | MenDef | State | 2,927 | 2,752 | .. | No | ... | 434 |
| *Mattoon, 14,631—Coles Co.* | | | | | | | | |
| Independent Order Odd Fellows *Old* Folks *Home* Hospital | Inst | Frat | 56 | 25 | .. | No | ... | ..... |
| McLeansboro, 2,162—Hamilton Co. | | | | | | | | |
| McLeansboro Hospital | Gen | Indiv | 10 | 2 | 2 | No | ... | 25 |
| Menard, 22—Randolph Co. | | | | | | | | |
| Chester State Hospital | N&M | State | 465 | 380 | .. | No | ... | ..... |
| Southern Illinois Penitentiary *Hospital*■ | Inst | State | 39 | 22 | .. | Yes | ... | 370 |
| Metropolis, 5,573—Massac Co. | | | | | | | | |
| Fisher Hospital■ | Gen | Indiv | 10 | 2 | 1 | No | 2 | 52 |
| Mooseheart, 1,519—Kane Co. | | | | | | | | |
| Mooseheart Hospital | Chil | Frat | 60 | 40 | .. | Yes | ... | 3,255 |
| Mt. Prospect, 1,225—Cook Co. | | | | | | | | |
| Mt. Prospect Gen. Hosp. | Gen | Indep | 20 | 5 | 4 | ... | 20 | 200 |
| Normal, 6,768—McLean Co. | | | | | | | | |
| Soldiers' and Sailors' Children's School | Inst | State | 75 | 15 | .. | No | ... | ..... |
| Paxton, 2,892—Ford Co. | | | | | | | | |
| Paxton Community Hosp.■ | Gen | City | 24 | 4 | 3 | Yes | 17 | 286 |
| Peoria, 104,969—Peoria Co. | | | | | | | | |
| Peoria Isolation Hospital | Iso | City | 50 | 2 | .. | No | ... | 32 |
| Pontiac, 8,272—Livingston Co. | | | | | | | | |
| Illinois State Reformatory■ | Inst | State | 32 | 13 | .. | No | ... | 1,085 |
| Quincy, 39,241—Adams Co. | | | | | | | | |
| Illinois Soldiers' and Sailors' Home and Hospital■ | Inst | State | 200 | 120 | .. | Yes | ... | 600 |
| St. Charles, 5,377—Kane Co. | | | | | | | | |
| St. Charles School for Boys■ | Inst | State | 30 | 18 | .. | No | ... | 1,560 |
| Savanna, 5,086—Carroll Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 10 | 3 | .. | No | ... | 120 |
| Sullivan, 2,339—Moultrie Co. | | | | | | | | |
| Illinois Masonic Home | Inst | Frat | 91 | 80 | .. | No | ... | 175 |
| Toledo, 733—Cumberland Co. | | | | | | | | |
| Toledo Sanitarium | Gen | Indiv | 5 | 2 | 1 | No | 2 | 69 |
| Urbana, 13,060—Champaign Co. | | | | | | | | |
| McKinley University Hosp. | Inst | State | 85 | 40 | .. | No | ... | 1,349 |
| Wedron, 202—La Salle Co. | | | | | | | | |
| St. Joseph's Health Resort | Conv | Church | 55 | 36 | .. | Yes | ... | 763 |
| *West Chicago, 3,477—Du Page Co.* | | | | | | | | |
| Country Home for Convalescent Children | Conv | Indep | 120 | 80 | .. | No | ... | 67 |
| Wheaton, 7,258—Du Page Co. | | | | | | | | |
| Howe Home | N&M | Part | 10 | 7 | .. | No | ... | ..... |
| Mary E. Pogue Sanitarium | N&M | Indiv | 50 | 41 | .. | No | ... | 6 |
| Wheaton Health Resort | Gen | Part | 80 | 11 | 12 | No | 35 | 108 |
| Wheeling, 467—Cook Co. | | | | | | | | |
| *Wheeling Hospital* | Gen | Indiv | 9 | 1 | 5 | No | 24 | 45 |
| Winnetka, 12,166—Cook Co. | | | | | | | | |
| North Shore Health Resort | Conv | Indep | 75 | 60 | .. | No | ... | 386 |
| Woodstock, 5,471—*McHenry Co.* | | | | | | | | |
| Dr. Weirick's Sanitarium | Conv | Indiv | 12 | 8 | .. | No | ... | 47 |

Summary for Illinois:

| | Number | Beds | Average *Patients* | Patients *Admitted* |
|---|---|---|---|---|
| Hospitals and sanatoriums | 282 | 60,261 | 46,399 | 536,180 |
| Related institutions | 62 | 9,369 | 8,019 | 22,987 |
| Totals | 344 | 69,630 | 54,418 | 559,167 |
| Refused registration | 30 | 1,026 | | |

## INDIANA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Anderson, 39,804—Madison Co. | | | | | | | | |
| St. John's Hickey Memorial Hospital◊■ ...... | Gen | Church | 85 | 53 | 15 | No | 158 | 1,464 |
| Angola, 2,665—Steuben Co. | | | | | | | | |
| Cameron Hospital■ ........ | Gen | Indiv | 20 | 8 | 4 | No | 24 | 484 |
| Argos, 1,211—Marshall Co. | | | | | | | | |
| Kelly Hospital............ | Gen | Indiv | 10 | 6 | 4 | No | 25 | 438 |
| Auburn, 5,088—De Kalb Co. | | | | | | | | |
| Dr. Bonnell M. Souder Hospital .............. | Gen | Part | 20 | 5 | 7 | No | 26 | 141 |
| Bedford, 13,208—Lawrence Co. | | | | | | | | |
| Dunn Memorial Hospital.. | Gen | County | 25 | 12 | 3 | No | ... | ..... |
| Beech Grove, 3,552—Marion Co. | | | | | | | | |
| St. Francis' Hospital■..... | Gen | Church | 130 | 49 | 22 | No | 219 | 1,774 |
| Bloomington, 18,227—Monroe Co. | | | | | | | | |
| Bloomington Hospital◊.... | Gen | Indep | 35 | 32 | 8 | No | ... | ..... |
| Bluffton, 5,074—Wells Co. | | | | | | | | |
| Wells County Hospital.... | Gen | County | 25 | 11 | 6 | No | 59 | 421 |
| Brazil, 8,744—Clay Co. | | | | | | | | |
| Clay County Hospital■.... | Gen | County | 46 | 9 | 10 | Yes | 29 | 281 |
| Clinton, 7,936—Vermillion Co. | | | | | | | | |
| Vermillion County Hosp.■. | Gen | County | 35 | 17 | 6 | Yes | 51 | 671 |
| Columbus, 9,935—Bartholomew Co. | | | | | | | | |
| Bartholomew County Hospital■ ................ | Gen | County | 45 | 24 | 5 | No | 46 | 822 |
| Crawfordsville, 10,355—Montgomery Co. | | | | | | | | |
| Culver Hospital■......... | Gen | County | 51 | 18 | 12 | No | 103 | 1,003 |
| Crown Point, 4,046—Lake Co. | | | | | | | | |
| Lake County Tuberculosis Sanatorium■ ........... | TB | County | 193 | 147 | .. | Yes | . | 181 |
| Decatur, 5,156—Adams Co. | | | | | | | | |
| Adams County Memorial Hospital■ ............. | Gen | County | 39 | 18 | 6 | No | 62 | 6,563 |
| East Chicago, 54,784—Lake Co. | | | | | | | | |
| St. Catherine's Hosp.★◊■.. | Gen | Church | 240 | 110 | 60 | No | 372 | 3,568 |
| Elkhart, 32,949—Elkhart Co. | | | | | | | | |
| Elkhart General Hosp◊■ | Gen | City | 75 | 40 | 10 | No | 243 | 1,860 |
| Elwood, 10,635—Madison Co | | | | | | | | |
| Mercy Hospital.......... | Gen | Church | 20 | 17 | 5 | No | 127 | 619 |
| Evansville, 102,249—Vanderburg Co | | | | | | | | |
| Boehne Tuberculosis Hosp+ | TB | County | 115 | 106 | .. | Yes | . | 175 |
| Evansville State Hosp.tal. | N&M | State | 1,200 | 1,075 | . | No | ... | 287 |
| Highland Sanitarium | Gen | Indiv | 22 | 3 | .. | Yes | . . | 24 |
| Protestant Deaconess Hospital★◊■ .... | Gen | Church | 160 | 107 | 21 | No | 258 | 3,425 |
| St. Mary's Hospital◊■ | Gen | Church | 125 | 62 | 14 | No | 60 | 2,173 |
| U. S. Marine Hospital■ | Gen | USPHS | 54 | 34 | | Yes | | 394 |
| Walker Hospital◊ | Gen | Indep | 100 | 59 | 6 | No | 74 | 2,343 |
| Ft. Benjamin Harrison,—Marion Co | | | | | | | | |
| Station Hospital■ | Gen | Army | 70 | 29 | .. | Yes | ... | 845 |
| Ft. Wayne, 114,946—Allen Co | | | | | | | | |
| Ft. Wayne Lutheran Hospital★◊■ ... | Gen | Church | 166 | 111 | 23 | No | 491 | 2,972 |
| Irene Byron Tuber Sanat■ | TB | County | 190 | 185 | | No | . | 190 |
| Methodist Episcopal Hospital★◊■ .. | Gen | Church | 106 | 55 | 16 | No | 206 | 2,713 |
| St Joseph's Hospital★◊■. | Gen | Church | 203 | 114 | 57 | Yes | 671 | 4,824 |
| Frankfort, 12,196—Clinton Co | | | | | | | | |
| Clinton County Hospital■ | Gen | County | 43 | 16 | 7 | No | 71 | 506 |
| Garrett, 4,428—De Kalb Co. | | | | | | | | |
| Sacred Heart Hospital ... | Gen | Church | 45 | 35 | 6 | No | 18 | 603 |
| Gary, 100,426—Lake Co. | | | | | | | | |
| Gary Hospital■. ... | Indus | Indus | 107 | 34 | .. | Yes | . | 214 |
| Methodist Episcopal Hosp◊ | Gen | Church | 88 | 54 | 18 | No | 341 | 2,676 |
| St Antonio Hospital■ | Gen | Indep | 50 | 15 | 6 | No | 33 | 566 |
| St John Hospital (col.) | Gen | Indiv | 14 | 8 | 6 | No | 17 | 286 |
| St Mary's Mercy Hosp★◊■ | Gen | Church | 221 | 135 | 35 | No | 691 | 5,220 |
| Greencastle, 4,613—Putnam Co | | | | | | | | |
| Putnam County Hospital■ | Gen | County | 40 | 14 | 5 | No | 37 | 525 |
| Greensburg, 5,702—Decatur Co. | | | | | | | | |
| Decatur Co. Mem. Hosp. | Gen | County | 35 | 8 | 5 | No | 25 | 375 |
| Hammond, 64,560—Lake Co. | | | | | | | | |
| Mount Mercy Sanitarium. | N&M | Church | 26 | 22 | .. | No | ... | 110 |
| St Margaret's Hosp★◊■ | Gen | Church | 250 | 135 | 36 | No | 695 | 5,378 |
| Hartford City, 6,613—Blackford Co. | | | | | | | | |
| Blackford County Hosp.■ | Gen | County | 30 | 10 | 5 | No | 30 | 326 |
| Huntington, 13,420—Huntington Co. | | | | | | | | |
| Huntington County Hosp. | Gen | County | 25 | 15 | 6 | No | 54 | 560 |
| Indianapolis, 364,161—Marion Co. | | | | | | | | |
| Central State Hospital+... | N&M | State | 1,710 | 1,695 | .. | No | ... | 258 |
| Dr. W. B. Fletcher's Sanat. | N&M | Indep | 50 | 15 | .. | Yes | ... | 53 |
| Indiana Christian Hospital | Gen | Church | 100 | 36 | 10 | Yes | 81 | 988 |
| Indianapolis City Hospital★+◊■▲ .............. | Gen | City | 525 | 396 | 35 | Yes | 641 | 8,568 |
| James Whitcomb Riley Hospital for Chil. (Affil.)★+◊■ | Chil | State | 210 | 183 | .. | Yes | ... | 3,085 |
| Methodist Episcopal Hospital★◊ ................. | Gen | Church | 564 | 359 | 61 | No | 1,064 | 14,143 |
| "Norways" Sanatorium.... | N&M | Indep | 25 | 12 | .. | Yes | ... | ..... |
| Robert W. Long Hospital (Affil.)★+◊ .............. | Gen | State | 107 | 104 | .. | Yes | ... | 2,060 |
| St. Vincent's Hospital★◊.. | Gen | Church | 260 | 161 | 35 | No | 482 | 5,127 |
| Veterans Admin. Hospital■ | Gen | VetAd | 152 | New | .. | Yes | ... | ..... |
| William H. Coleman Hosp. for Women (Affil.)★+◊... | Mater | State | 68 | 67 | 35 | Yes | 1,193 | 1,895 |
| Jeffersonville, 11,946—Clark Co. | | | | | | | | |
| Clark County Mem. Hosp.■ | Gen | County | 35 | 15 | 6 | No | 43 | 434 |
| Kendallville, 5,439—Noble Co. | | | | | | | | |
| Lakeside Hospital......... | Gen | City | 19 | 11 | 12 | No | 35 | 524 |
| Kokomo, 32,843—Howard Co. | | | | | | | | |
| Good Samaritan Hosp.◊■. | Gen | Church | 50 | 14 | 5 | No | 36 | 506 |
| Howard County Hospital■ | Gen | Indep | 53 | 16 | 7 | No | 56 | 589 |

Key to symbols and abbreviations is on page 2078

## INDIANA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| La Fayette, 26,240—Tippecanoe Co. | | | | | | | | |
| La Fayette Home Hosp.◊■ | Gen | Indep | 130 | 61 | 25 | No | 273 | 1,065 |
| St. Elizabeth Hospital★◊.. | Gen | Church | 230 | 112 | 26 | No | 345 | 4,050 |
| Wabash Valley Sanitarium and Hospital◊........... | Gen | Church | 45 | 18 | 5 | No | 11 | 230 |
| William Ross Sanatorium. | TB | County | 45 | 35 | .. | No | ... | 94 |
| La Porte, 15,755—La Porte Co. | | | | | | | | |
| Fairview Hospital■........ | Gen | Indep | 32 | 10 | 8 | No | 74 | 666 |
| Holy Family Hospital..... | Gen | Church | 60 | 51 | 15 | No | 167 | 1,492 |
| Lebanon, 6,445—Boone Co. | | | | | | | | |
| Williams Hospital......... | Gen | Indep | 24 | 10 | 4 | Yes | ... | ..... |
| Witham Memorial Hospital | Gen | County | 25 | 12 | 15 | No | 33 | |
| Linton, 5,085—Greene Co. | | | | | | | | |
| Freeman Greene County Hospital ............... | Gen | County | 22 | 9 | 4 | No | 20 | |
| Logansport, 18,508—Cass Co. | | | | | | | | |
| Cass County Hospital■.... | Gen | County | 40 | 26 | 8 | No | 93 | |
| Logansport State Hosp.+ | N&M | State | 1,517 | 1,419 | .. | No | ... | |
| St Joseph's Hospital..... | Gen | Church | 65 | 20 | 9 | No | 53 | 6 |
| Madison, 6,530—Jefferson Co. | | | | | | | | |
| King's Daughters Hospital■ | Gen | Church | 27 | 11 | 10 | No | 38 | 4,23 |
| Marion, 24,496—Grant Co. | | | | | | | | |
| Grant County Hospital◊■. | Gen | Indep | 55 | 36 | 7 | No | 72 | 900 |
| Martinsville, 4,962—Morgan Co. | | | | | | | | |
| Morgan County Mem. Hosp. | Gen | County | 29 | 8 | 6 | No | 25 | 286 |
| Michigan City, 26,735—La Porte Co. | | | | | | | | |
| Clinic Hosp'tal■.......... | Gen | Indep | 45 | 22 | 8 | No | 75 | 499 |
| St Anthony's Hospital■.. | Gen | Church | 100 | 46 | 15 | No | 237 | 1,811 |
| Mishawaka, 28,630—St. Joseph Co. | | | | | | | | |
| St. Joseph Hospital◊...... | Gen | Church | 95 | 49 | 20 | Yes | 342 | 1,646 |
| Muncie, 46,548—Delaware Co. | | | | | | | | |
| Ball Memorial Hospital◊■ | Gen | Indep | 142 | 79 | 18 | No | 215 | 2,459 |
| National Military Home, 2,800—Grant Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 1,400 | 1,306 | .. | No | ... | 203 |
| New Albany, 25,819—Floyd Co. | | | | | | | | |
| St. Edward's Hospital■.... | Gen | Church | 28 | 4 | 14 | No | 209 | 1,501 |
| Newcastle, 14,027—Henry Co. | | | | | | | | |
| Henry County Hospital■. | Gen | County | 50 | 12 | 4 | No | 40 | 798 |
| Newcastle Clinic Hospital■ | Gen | Indep | 15 | 8 | 2 | No | 25 | 412 |
| Noblesville, 4,811—Hamilton Co. | | | | | | | | |
| Hamilton County Hosp.■. | Gen | County | 30 | 12 | 6 | No | 40 | 600 |
| North Madison, 573—Jefferson Co. | | | | | | | | |
| Madison State Hospital... | N&M | State | 1,475 | 1,403 | .. | No | ... | 218 |
| Oaklandon, 375—Marion Co. | | | | | | | | |
| Sunnyside Sanatorium+■.. | TB | County | 250 | 250 | .. | Yes | ... | 279 |
| Peru, 12,730—Miami Co. | | | | | | | | |
| Dukes-Miami County Memorial Hospital■......... | Gen | County | 48 | 17 | 12 | No | 82 | 556 |
| Wabash Railroad Employees Hospital■ ............... | Indus | Indus | 50 | 22 | .. | Yes | ... | 942 |
| Plymouth, 5,290—Marshall Co. | | | | | | | | |
| Marshall County Hospital | Gen | County | 30 | 11 | 6 | No | 65 | 410 |
| C. L. Morris Hospital...... | Gen | Part | 15 | 8 | 6 | No | 15 | 210 |
| Portland, 5,276—Jay Co. | | | | | | | | |
| Jay County Women's Hospital■ .................. | Gen | Indep | 13 | 7 | 3 | No | 10 | 278 |
| Princeton, 7,505—Gibson Co... | | | | | | | | |
| Methodist Episcopal Hosp.■ | Gen | Church | 30 | 16 | 5 | No | 75 | 635 |
| Rensselaer, 2,798—Jasper Co. | | | | | | | | |
| Jasper County Hospital■. | Gen | County | 28 | 19 | 8 | No | 96 | 700 |
| Richmond, 32,493—Wayne Co. | | | | | | | | |
| Reid Memorial Hospital◊■ | Gen | Indep | 124 | 51 | 22 | Yes | 259 | 2,198 |
| Richmond State Hospital. | N&M | State | 1,223 | 1,223 | .. | No | ... | ..... |
| Rochester, 3,518—Fulton Co. | | | | | | | | |
| Woodlawn Hospital■....... | Surg | Indiv | 14 | 11 | .. | No | ... | 429 |
| Rockville, 1,832—Parke Co. | | | | | | | | |
| Indiana State Sanatorium+ | TB | State | 170 | 172 | .. | Yes | ... | 97 |
| Rushville, 5,709—Rush Co. | | | | | | | | |
| Rushville City Hospital■.. | Gen | City | 11 | 5 | 2 | No | 27 | 125 |
| Seymour, 7,508—Jackson Co. | | | | | | | | |
| Schneck Memorial Hospital | Gen | Indep | 17 | 15 | 3 | No | 50 | 548 |
| Shelbyville, 10,618—Shelby Co. | | | | | | | | |
| Major Memorial Hospital■ | Gen | City | 35 | 15 | 4 | No | 50 | 506 |
| South Bend, 104,193—St. Joseph Co. | | | | | | | | |
| Epworth Hospital★◊■...... | Gen | Indep | 150 | 100 | 37 | No | 460 | 2,9 |
| Healthwin Hospital■....... | TB | County | 195 | 190 | .. | Yes | ... | 27 |
| Pennington Sanitarium.... | N&M | Indiv | 17 | 9 | .. | No | ... | .... |
| St. Joseph Hospital★◊■... | Gen | Church | 153 | 78 | 22 | Yes | 289 | 2,031 |
| Sullivan, 5,306—Sullivan Co. | | | | | | | | |
| Mary Sherman Hospital■.. | Gen | County | 50 | 17 | 10 | No | 67 | 670 |
| Tell City, 4,873—Perry Co. | | | | | | | | |
| Parkview Hospital■........ | Gen | Indiv | 10 | 3 | 3 | Yes | 22 | 264 |
| Terre Haute, 62,810—Vigo Co. | | | | | | | | |
| Hoover's Sanat. (col.).... | Gen | Indiv | 10 | 6 | 5 | Yes | 40 | 190 |
| St. Anthony's Hosp.★◊■... | Gen | Church | 169 | 82 | 23 | No | 234 | 2,300 |
| Union Hospital◊■.......... | Gen | Indep | 167 | 98 | 21 | No | 245 | 2,967 |
| Union City, 3,084—Randolph Co. | | | | | | | | |
| Union City Hospital■ .. | Gen | Indiv | 15 | 12 | 4 | No | 20 | 281 |
| Valpa | | | | | | | | |
| ........ | Gen | Indep | 18 | 10 | 5 | No | 56 | 329 |
| Vi, 17,564—Knox Co. | | | | | | | | |
| Good Samaritan Hosp.◊■ | Gen | County | 94 | 45 | 6 | No | 70 | 1,090 |
| Wabash, 8,840—Wabash Co. | | | | | | | | |
| Wabash County Hospital■ | Gen | County | 35 | 11 | 6 | No | 51 | 368 |
| Warsaw, 5,730—Kosciusko Co. | | | | | | | | |
| McDonald Hospital■....... | Gen | Indiv | 18 | 8 | 3 | No | 60 | 700 |
| Washington, 9,070—Daviess Co. | | | | | | | | |
| Daviess County Hospital■ | Gen | County | 50 | 18 | 8 | No | 76 | 900 |
| Winchester, 4,487—Randolph Co. | | | | | | | | |
| Randolph County Hosp.■ | Gen | County | 26 | 12 | 4 | No | 56 | 443 |
| Wolflake, 367—Noble Co. | | | | | | | | |
| Luckey Hospital.......... | Surg | Part | 20 | 5 | 5 | Yes | 50 | 200 |

## INDIANA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| And.. | | | | | | | | |
| Co. | | | | | | | | |
| osp. | Indus | Indus | 22 | ... | .. | Yes | ... | ..... |
| B. | | | | | | | | |
| Hospital" | TB | County | 50 | 35 | .. | Yes | ... | 82 |
| Madison County Infirm.■ | Inst | County | 14 | 14 | .. | No | ... | 6 |
| Butlerville, 450—Jennings Co. | | | | | | | | |
| Muscatatuck Colony | MenDef | State | 375 | 378 | .. | No | ... | 16 |
| Crawfordsville, 10,355—Montgomery Co. | | | | | | | | |
| Ben Hur Sanitarium | Gen | Indiv | 12 | 4 | 4 | Yes | 5 | 30 |
| Dillsboro, 502—Dearborn Co. | | | | | | | | |
| Dillsboro Sanitarium | Conv | Indep | 100 | 75 | .. | No | ... | ..... |
| Ft. Wayne, 114,946—Allen Co. | | | | | | | | |
| Concordia College Hosp. | Inst | Church | 18 | 4 | .. | Yes | ... | ..... |
| Ft. Wayne and Allen County Isolation Hospital | Iso | Cy&Co | 10 | ... | .. | No | ... | ..... |
| Ft. Wayne State School | MenDef | State | 1,130 | 1,570 | .. | Yes | ... | 101 |
| Grace Convalescent Hosp. | Conv | Indiv | 19 | 8 | .. | No | ... | 39 |
| Dr. Pulliam's Private Sanitarium | N&M | Indiv | 12 | 5 | .. | ... | ... | ..... |
| Franklin, 5,682—Johnson Co. | | | | | | | | |
| Eastern Star Hospital | Inst | Frat | 74 | 50 | .. | No | ... | 148 |
| Greencastle, 4,613—Putnam Co. | | | | | | | | |
| Indiana State Farm Hosp. | Inst | State | 20 | 20 | .. | No | ... | 622 |
| Greensburg, 5,702—Decatur Co. | | | | | | | | |
| Longley Hospital | Inst | Frat | 100 | 60 | .. | No | ... | ..... |
| Indianapolis, 364,161—Marion Co. | | | | | | | | |
| Indiana Girls School | Inst | State | 14 | 4 | .. | No | ... | ..... |
| Indianapolis Orphan Asylum | Inst | Indep | 18 | 5 | .. | No | ... | ..... |
| Indiana State School for the Deaf■ | Inst | State | 22 | 3 | .. | No | ... | 800 |
| Indiana Woman's Prison■ | Inst | State | 10 | 10 | .. | No | ... | ..... |
| Julietta Insane Hospital | N&M | County | 320 | 290 | .. | No | ... | 190 |
| Knightstown, 2,209—Henry Co. | | | | | | | | |
| Indiana Sailors and Soldiers' Children's Home■ | Inst | State | 35 | 5 | 8 | No | ... | 506 |
| La Fayette, 26,240—Tippe[illegible]e Co. | | | | | | | | |
| Indi[illegible] | | | | | | | | |
| I [illegible] | Gen | State | 200 | 130 | .. | Yes | ... | 260 |
| [illegible] Hos-[illegible]■ | Iso | Cy&Co | 8 | 8 | .. | No | ... | ..... |
| Michigan City, 26,735—La Porte Co. | | | | | | | | |
| Indiana Hospital for Insane Criminals | N&M | State | 230 | 242 | .. | No | ... | 14 |
| Indiana State Prison Hospital■ | Inst | State | 102 | 32 | .. | No | ... | 1,190 |
| Muncie, 46,548—Delaware Co. | | | | | | | | |
| Isolation Hospital | Iso | City | 12 | ... | .. | No | ... | ..... |
| Newcastle, 14,027—Henry Co. | | | | | | | | |
| Indiana Village for Epil. | Epil | State | 834 | 834 | .. | No | ... | ..... |
| Pendleton, 1,538—Madison Co. | | | | | | | | |
| Indiana Reformatory■ | Inst | State | 100 | 26 | .. | Yes | ... | 994 |
| Plainfield, 1,617—Hendricks Co. | | | | | | | | |
| Indiana Boys School Hosp. | Inst | State | 20 | 13 | .. | No | ... | 155 |
| South Bend, 104,193—St. Joseph Co. | | | | | | | | |
| South Bend Isolation Hosp. | Iso | Cy&Co | 8 | ... | .. | No | ... | ..... |
| Wilkinson, 316—Hancock Co. | | | | | | | | |
| Charles Titus Sanitarium | EENT | Indiv | 7 | ... | .. | No | ... | 450 |
| Winona Lake, 454—Kosciusko Co. | | | | | | | | |
| Franconia Convalescent and Rest Home | Conv | Indiv | 20 | 2 | .. | No | ... | ..... |
| Wolcottville, 646—La Grange Co. | | | | | | | | |
| Rarick Tonsil Clinic | Throat | Indiv | 12 | 4 | .. | No | ... | 152 |

Summary for Indiana:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 114 | 17,591 | 13,530 | 146,305 |
| Related institutions | 32 | 4,408 | 3,823 | 5,305 |
| Totals | 146 | 21,999 | 17,353 | 151,610 |
| Refused registration | 17 | 842 | | |

## IOWA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Akron, 1,304—Plymouth Co. | | | | | | | | |
| Akron Hospital | Gen | Indiv | 15 | 10 | 5 | No | 30 | 312 |
| Albia, 4,425—Monroe Co. | | | | | | | | |
| Miner's Hospital■ | Gen | Indiv | 35 | 15 | 4 | Yes | 11 | 431 |
| Algona, 3,985—Kossuth Co. | | | | | | | | |
| Kossuth Hospital■ | Gen | Indiv | 28 | 13 | 5 | No | 43 | 302 |
| Allerton, 784—Wayne Co. | | | | | | | | |
| Parker Hospital | Gen | Indiv | 10 | 5 | 2 | No | 6 | 142 |
| Alta, 1,297—Buena Vista Co. | | | | | | | | |
| Alta Community Hospital | Gen | Indep | 13 | 8 | 5 | No | 40 | 212 |
| Anamosa, 3,579—Jones Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 35 | 12 | 5 | No | 50 | 600 |
| Atlantic, 5,585—Cass Co. | | | | | | | | |
| Atlantic Hospital⊙■ | Gen | Indep | 34 | 14 | 7 | No | 40 | 518 |
| Battle Creek, 804—Ida Co. | | | | | | | | |
| New Battle Creek Hospital and Sanitarium | Gen | Indiv | 16 | 15 | 3 | No | 31 | 377 |
| Boone, 11,886—Boone Co. | | | | | | | | |
| Boone County Hospital | Gen | County | 45 | 23 | 10 | No | 217 | 821 |
| Burlington, 26,755—Des Moines Co. | | | | | | | | |
| Burlington Protestant Hospital◊■ | Gen | Indep | 105 | 61 | 20 | Yes | 185 | 1,581 |
| Mercy Hospital◊■ | Gen | Church | 125 | 52 | 20 | Yes | 126 | 1,615 |
| St. Francis Hospital■ | Gen | Church | 75 | 42 | 12 | No | 91 | 1,039 |

Key to symbols and abbreviations is on page 2078

## IOWA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Carroll, 4,691—Carroll Co. | | | | | | | | |
| St. Anthony's Hospital◊■ | Gen | Church | 108 | 65 | 22 | Yes | 312 | 1,981 |
| Cedar Falls, 7,362—Black Hawk Co. | | | | | | | | |
| Sartori Memorial Hospital■ | Gen | City | 35 | 19 | 6 | No | 116 | 651 |
| Cedar Rapids, 56,097—Linn Co. | | | | | | | | |
| Mercy Hospital★◊■ | Gen | Church | 125 | 93 | 20 | Yes | 293 | 2,597 |
| St. Luke's Methodist Hospital★◊■ | Gen | Church | 175 | 72 | 17 | No | 313 | 2,835 |
| Centerville, 8,147—Appanoose Co. | | | | | | | | |
| Centerville General Hosp.■ | Gen | Indiv | 17 | 4 | 4 | No | 36 | 400 |
| St. Joseph's Mercy Hosp.◊■ | Gen | Church | 47 | 25 | 6 | Yes | 61 | 963 |
| Chariton, 5,365—Lucas Co. | | | | | | | | |
| Yocom Hospital | Gen | Indiv | 20 | 10 | 4 | No | 29 | 394 |
| Charles City, 8,039—Floyd Co. | | | | | | | | |
| Cedar Valley Hospital | Gen | City | 25 | 17 | 5 | No | 92 | 780 |
| Cherokee, 6,443—Cherokee Co. | | | | | | | | |
| Cherokee State Hospital | N&M | State | 1,250 | 1,398 | .. | No | ... | 283 |
| Sioux Valley Hospital■ | Gen | Indep | 35 | 22 | 10 | Yes | 89 | 749 |
| Clarinda, 4,962—Page Co. | | | | | | | | |
| Clarinda State Hospital | N&M | State | 1,400 | 1,464 | .. | No | ... | 348 |
| Clinton, 25,726—Clinton Co. | | | | | | | | |
| Jane Lamb Memorial Hospital◊■ | Gen | Indep | 100 | 64 | 12 | No | 242 | 1,045 |
| St. Joseph Mercy Hosp.◊■ | Gen | Church | 73 | 35 | 12 | Yes | 159 | 1,072 |
| Colfax, 2,213—Jasper Co. | | | | | | | | |
| Colfax Sanitarium■ | Gen | Indiv | 26 | 15 | 1 | Yes | 6 | 241 |
| Council Bluffs, 42,048—Pottawattamie Co. | | | | | | | | |
| Jennie Edmundson Memorial Hospital★◊■ | Gen | Indep | 126 | 89 | 14 | No | 208 | 2,268 |
| Mercy Hospital★◊■ | Gen | Church | 135 | 92 | 12 | No | 263 | 2,409 |
| St. Bernard's Hospital | N&M | Church | 230 | 198 | .. | No | ... | 268 |
| Cresco, 3,069—Howard Co. | | | | | | | | |
| St. Joseph's Mercy Hosp.■ | Gen | Church | 30 | 11 | 6 | No | 40 | 551 |
| Creston, 8,615—Union Co. | | | | | | | | |
| Greater Community Hosp.⊙ | Gen | Indep | 50 | 25 | 5 | ... | 36 | 816 |
| Davenport, 60,751—Scott Co. | | | | | | | | |
| Mercy Hospital★◊■▲ | Gen | Church | 118 | 76 | 16 | No | 376 | 2,558 |
| Pine Knoll Sanitarium | TB | County | 110 | 94 | .. | No | ... | 133 |
| St. Luke's Hospital⊙■ | Gen | Church | 81 | 59 | 19 | No | 389 | 2,131 |
| Decorah, 4,581—Winneshiek Co. | | | | | | | | |
| Decorah Hospital | Gen | Church | 30 | 12 | 6 | No | 67 | 487 |
| Denison, 3,905—Crawford Co. | | | | | | | | |
| Denison Hospital | Gen | Indiv | 15 | 5 | 3 | No | 28 | 256 |
| Des Moines, 142,559—Polk Co. | | | | | | | | |
| Broadlawns Polk County Public Hospital★◊■ | Gen | County | 102 | 95 | 16 | Yes | 232 | 2,692 |
| Broadlawns Polk Co. Public Hospital, Tuber. Dept ■ | TB | County | 100 | 71 | .. | Yes | ... | 96 |
| Iowa Lutheran Hosp.★◊■ | Gen | Church | 138 | 98 | .. | No | ... | 3,507 |
| Iowa Lutheran Maternity Hospital⊙ | Mater | Church | 36 | 16 | 40 | No | 501 | 537 |
| Iowa Methodist Hosp.★◊■ | Gen | Church | 239 | 153 | 40 | No | 713 | 5,590 |
| Mercy Hospital★◊■ | Gen | Church | 148 | 111 | 23 | No | 278 | 3,623 |
| Polyclinic Hospital■ | Gen | Indep | 50 | 29 | 10 | Yes | 29 | 1,519 |
| The Retreat | N&M | Indep | 50 | 37 | .. | No | ... | 138 |
| Station Hospital■ | Gen | Army | 60 | 18 | .. | Yes | ... | 827 |
| Dubuque, 41,679—Dubuque Co. | | | | | | | | |
| Finley Hospital◊■ | Gen | Indep | 102 | 67 | 10 | No | 255 | 2,446 |
| St. Joseph Mercy Hosp.◊■ | Gen | Church | 100 | 76 | 18 | No | 215 | 2,072 |
| St. Joseph Sanitarium | N&M | Church | 225 | 155 | .. | No | ... | 90 |
| Sunny Crest Sanatorium | TB | County | 75 | 63 | .. | No | ... | 85 |
| Eldora, 3,200—Hardin Co. | | | | | | | | |
| Eldora Booth Mem. Hosp. | Gen | Indep | 18 | 6 | 6 | No | 32 | 390 |
| Emmetsburg, 2,865—Palo Alto Co. | | | | | | | | |
| Palo Alto Hospital■ | Gen | Indep | 14 | 6 | 2 | No | 45 | 251 |
| Estherville, 4,940—Emmet Co. | | | | | | | | |
| Birney Hospital■ | Gen | Indiv | 15 | 6 | 3 | No | 56 | 225 |
| Coleman Hospital■ | Gen | Indiv | 35 | 14 | 6 | No | 25 | 513 |
| Fairfield, 6,619—Jefferson Co. | | | | | | | | |
| Jefferson County Hospital | Gen | County | 24 | 17 | 6 | Yes | 109 | 657 |
| Forest City, 2,016—Winnebago Co. | | | | | | | | |
| Drs. Irish and Irish Hosp. | Gen | Indiv | 14 | 5 | 4 | Yes | 47 | 271 |
| Ft. Dodge, 21,895—Webster Co. | | | | | | | | |
| Lutheran Hospital | Gen | Church | 110 | New | 17 | No | ... | ..... |
| St. Joseph Mercy Hosp.◊■ | Gen | Church | 109 | 69 | 16 | No | 214 | 2,310 |
| Ft. Madison, 13,779—Lee Co. | | | | | | | | |
| A.T.& S.F. Railway Hosp.■ | Indus | Indus | 60 | 19 | .. | Yes | ... | 377 |
| Sacred Heart Hospital■ | Gen | Church | 60 | 28 | 12 | No | 139 | 1,100 |
| Grinnell, 4,949—Poweshiek Co. | | | | | | | | |
| Grinnell Community Hosp.■ | Gen | Indep | 54 | 14 | 6 | No | 83 | 560 |
| St. Francis Hospital■ | Gen | Church | 40 | 15 | 5 | No | 41 | 432 |
| Hamburg, 2,103—Fremont Co. | | | | | | | | |
| Hamburg Hospital■ | Gen | Indiv | 16 | 11 | 2 | No | 30 | 506 |
| Hampton, 3,473—Franklin Co. | | | | | | | | |
| Lutheran Hospital⊙■ | Gen | Church | 46 | 23 | 8 | No | 78 | 919 |
| Harlan, 3,145—Shelby Co. | | | | | | | | |
| Harlan Hospital | Gen | Indiv | 11 | 8 | 1 | No | 18 | 305 |
| Hartley, 1,272—O'Brien Co. | | | | | | | | |
| Hand Hospital | Gen | Indiv | 12 | 5 | 2 | No | 16 | 172 |
| Hawarden, 2,459—Sioux Co. | | | | | | | | |
| Hawarden Hospital | Gen | Part | 12 | 4 | 6 | No | 30 | 175 |
| Hull, 905—Sioux Co. | | | | | | | | |
| Hull Hospital | Gen | Indep | 15 | 7 | 2 | No | 20 | 300 |
| Ida Grove, 2,206—Ida Co. | | | | | | | | |
| Ida Grove General Hosp. | Gen | Part | 12 | 6 | 3 | No | 25 | 204 |
| Independence, 3,691—Buchanan Co. | | | | | | | | |
| Independence State Hosp. | N&M | State | 1,486 | 1,466 | .. | No | ... | 312 |
| Peoples Hospital■ | Gen | Indep | 23 | 7 | 6 | No | 73 | 442 |
| Iowa City, 15,340—Johnson Co. | | | | | | | | |
| Children's Hospital | (Included in University Hospitals) | | | | | | | |
| Iowa State Psychopathic Hospital+ | N&M | State | 60 | 44 | .. | Yes | ... | 226 |
| Mercy Hospital◊ | Gen | Church | 94 | 53 | 16 | No | 233 | 1,295 |
| Rohrbacher Sanitarium | Gen | Indiv | 12 | 5 | 4 | No | 22 | 174 |
| University Hospitals★+◊■▲ | Gen | State | 954 | 605 | 54 | Yes | 436 | 11,592 |

## IOWA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Iowa Falls, 4,112—Hardin Co. | | | | | | | | |
| Ellsworth Hospital■ | Gen | City | 15 | 12 | 6 | No | 50 | 358 |
| Keokuk, 15,106—Lee Co. | | | | | | | | |
| Graham Protestant Hospital◊■ | Gen | Indep | 65 | 40 | 10 | No | 108 | 957 |
| St. Joseph's Hospital◊■ | Gen | Church | 120 | 70 | 15 | No | 193 | 1,692 |
| Knoxville, 4,697—Marion Co. | | | | | | | | |
| Veterans Admin. Hospital■ | N&M | VetAd | 705 | 702 | .. | No | ... | 65 |
| Lake City, 2,012—Calhoun Co. | | | | | | | | |
| Lake City General Hosp. | Gen | Part | 35 | 10 | 4 | No | 92 | 360 |
| McVay Memorial Hospital | Gen | Indiv | 14 | 10 | 5 | No | 48 | 358 |
| Le Mars, 4,788—Plymouth Co. | | | | | | | | |
| Sacred Heart Hospital◊■ | Gen | Church | 50 | 35 | 10 | Yes | 131 | 1,203 |
| Manning, 1,817—Carroll Co. | | | | | | | | |
| Wyatt Memorial Hospital■ | Gen | Indiv | 25 | 5 | 4 | Yes | 25 | 115 |
| Maquoketa, 3,595—Jackson Co. | | | | | | | | |
| City Memorial Hospital | Gen | Part | 18 | 11 | 2 | No | 31 | 293 |
| Marengo, 2,112—Iowa Co. | | | | | | | | |
| Mineral Springs Hospital and Sanitarium | Gen | Indep | 20 | 7 | 5 | Yes | 23 | 97 |
| Marshalltown, 17,373—Marshall Co. | | | | | | | | |
| Evangelical Deaconess Home and Hospital◊■ | Gen | Church | 125 | 71 | 16 | No | 161 | 2,230 |
| St. Thomas Mercy Hosp.◊■ | Gen | Church | 56 | 25 | 8 | No | 66 | 895 |
| Mason City, 23,304—Cerro Gordo Co. | | | | | | | | |
| Park Hospital◊■ | Gen | Indep | 42 | 24 | 8 | No | 99 | 1,047 |
| St. Joseph's Mercy Hospital◊■ | Gen | Church | 75 | 58 | 10 | Yes | 172 | 1,541 |
| Story Hospital■ | Gen | Part | 10 | 4 | 3 | No | 23 | 146 |
| McGregor, 1,299—Clayton Co. | | | | | | | | |
| McGregor Hospital | Gen | Indiv | 10 | 4 | 2 | No | 25 | 150 |
| Monticello, 2,259—Jones Co. | | | | | | | | |
| John McDonald Hospital■ | Gen | Indep | 30 | 15 | 5 | No | 66 | 478 |
| Mt. Pleasant, 3,743—Henry Co. | | | | | | | | |
| Henry County Soldiers and Sailors Memorial Hosp. | Gen | County | 25 | 15 | 6 | No | 83 | 460 |
| Mt. Pleasant State Hosp. | N&M | State | 1,500 | 1,484 | .. | No | ... | 433 |
| Muscatine, 16,778—Muscatine Co. | | | | | | | | |
| Bellevue Hospital■ | Gen | Part | 24 | 9 | 4 | No | 20 | 265 |
| Benjamin Hershey Memorial Hospital■ | Gen | Indep | 50 | 20 | 6 | No | 39 | 806 |
| Nevada, 3,133—Story Co. | | | | | | | | |
| Iowa Sanit. and Hospital | Gen | Church | 50 | 31 | 6 | No | 29 | 705 |
| New Hampton, 2,458—Chicksaw Co. | | | | | | | | |
| St. Joseph's Hospital■ | Gen | Church | 51 | 20 | 9 | No | 74 | 797 |
| Newton, 11,560—Jasper Co. | | | | | | | | |
| City Hospital■ | Gen | City | 45 | 25 | 9 | No | 171 | 793 |
| Oakdale, 52—Johnson Co. | | | | | | | | |
| State Sanatorium for Tuberculosis■ | TB | State | 350 | 308 | .. | No | ... | 241 |
| Odebolt, 1,388—Sac Co. | | | | | | | | |
| Odebolt Hospital■ | Gen | Indiv | 10 | 5 | 3 | No | 15 | 800 |
| Oelwein, 7,794—Fayette Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 35 | 17 | 6 | No | 65 | 781 |
| Onawa, 2,538—Monona Co. | | | | | | | | |
| Onawa Hospital■ | Gen | Indiv | 12 | 5 | 3 | No | 40 | 150 |
| Osage, 2,964—Mitchell Co. | | | | | | | | |
| Nissen Hospital | Gen | City | 10 | 2 | 3 | No | 20 | 222 |
| Osceola, 2,871—Clarke Co. | | | | | | | | |
| Harken Hospital■ | Gen | Indiv | 20 | 11 | 4 | No | 20 | 346 |
| Osceola Hospital | Gen | Part | 25 | 14 | 5 | No | 24 | ..... |
| Osceola Sanit. and Hosp. | Gen | Indiv | 10 | 5 | 2 | No | 17 | 123 |
| Oskaloosa, 10,123—Mahaska Co. | | | | | | | | |
| Mercy Hospital■ | Gen | Indiv | 30 | 15 | 5 | No | 38 | 535 |
| Ottumwa, 28,075—Wapello Co. | | | | | | | | |
| Ottumwa Hospital◊■ | Gen | Indep | 65 | 39 | 12 | Yes | 69 | 1,412 |
| St. Joseph Hospital◊■ | Gen | Church | 75 | 55 | 12 | Yes | 141 | 2,321 |
| Sunnyslope Sanatorium■ | TB | County | 53 | 50 | .. | No | ... | 95 |
| Perry, 5,881—Dallas Co. | | | | | | | | |
| King's Daughters Hospital■ | Gen | Church | 28 | 17 | 6 | No | 72 | 607 |
| Postville, 1,060—Allamakee Co. | | | | | | | | |
| Postville Hospital | Gen | Indiv | 21 | 10 | 1 | No | 27 | 320 |
| Red Oak, 5,778—Montgomery Co. | | | | | | | | |
| Red Oak Hospital■ | Gen | Indiv | 12 | 4 | 5 | No | 25 | 800 |
| Sheldon, 3,320—O'Brien Co. | | | | | | | | |
| Cram Hospital | Gen | Indiv | 14 | 4 | 2 | No | 20 | 1,460 |
| Myers Hospital | Gen | Indiv | 20 | 6 | 5 | No | 22 | 167 |
| Shenandoah, 6,502—Page Co. | | | | | | | | |
| Henry and Catherine Hand Hospital | Gen | Indep | 24 | 18 | 5 | No | 78 | 644 |
| Sibley, 1,870—Osceola Co. | | | | | | | | |
| Osceola Hospital | Gen | Part | 18 | 6 | 4 | No | 20 | 309 |
| Sibley Hospital | Gen | Indiv | 15 | 8 | 4 | Yes | 14 | 162 |
| Sigourney, 2,262—Keokuk Co. | | | | | | | | |
| Sigourney Hospital | Gen | Indiv | 10 | 3 | 2 | No | 14 | 87 |
| Sioux City, 79,183—Woodbury Co. | | | | | | | | |
| Lutheran Hospital◊■ | Gen | Church | 75 | 52 | 15 | No | 346 | 2,282 |
| Methodist Hospital◊■ | Gen | Church | 120 | 80 | 18 | Yes | 279 | 3,188 |
| St. Joseph's Mercy Hospital★◊■ | Gen | Church | 180 | 135 | 20 | No | 409 | 4,698 |
| St. Vincent's Hospital◊■ | Gen | Church | 125 | 88 | 14 | ... | 264 | 3,495 |
| Spencer, 5,019—Clay Co. | | | | | | | | |
| Spencer Hospital | Gen | Indep | 12 | 9 | 3 | No | 25 | 392 |
| Toledo, 1,825—Tama Co. | | | | | | | | |
| Sac and Fox Tuber. Sanat. | TB | Indian | 88 | 82 | .. | No | ... | 84 |
| Vinton, 3,372—Benton Co. | | | | | | | | |
| Virginia Gay Hospital■ | Gen | Indep | 30 | 4 | 5 | No | 49 | 124 |
| Washington, 4,814—Washington Co. | | | | | | | | |
| Washington County Hosp. | Gen | County | 35 | 17 | 7 | No | 106 | 719 |
| Waterloo, 46,191—Black Hawk Co. | | | | | | | | |
| Allen Memorial Hospital⊙ | Gen | Church | 50 | 35 | 8 | No | 215 | 1,378 |
| Presbyterian Hospital◊■ | Gen | Church | 35 | 29 | 10 | No | 236 | 1,025 |
| St. Francis Hospital■ | Gen | Church | 75 | 52 | 15 | No | 204 | 1,901 |

Key to symbols and abbreviations is on page 2078

## IOWA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Waverly, 3,652—Bremer Co. | | | | | | | | |
| St. Joseph's Mercy Hosp. | Gen | Church | 56 | 14 | 6 | No | 68 | 894 |
| West Union, 2,056—Fayette Co. | | | | | | | | |
| West Union Community Hospital■ | Gen | City | 10 | 3 | 3 | No | 31 | 816 |
| Williamsburg, 1,219—Iowa Co. | | | | | | | | |
| Watts Hospital | Gen | Indiv | 25 | 3 | .. | No | 18 | 142 |
| **Related Institutions** | | | | | | | | |
| Ames, 10,261—Story Co. | | | | | | | | |
| Iowa State College Hosp.■ | Inst | State | 90 | 13 | .. | Yes | ... | 996 |
| Anamosa, 3,579—Jones Co. | | | | | | | | |
| Reformatory Hospital■ | Inst | State | 50 | 13 | .. | Yes | ... | ..... |
| Belmond, 1,733—Wright Co. | | | | | | | | |
| Belmond Hospital | Gen | Indiv | 8 | 3 | .. | No | ... | 142 |
| Bettendorf, 2,768—Scott Co. | | | | | | | | |
| Masonic Sanitarium | Conv | Frat | 50 | 42 | .. | No | ... | 22 |
| Burlington, 26,755—Des Moines Co. | | | | | | | | |
| Des Moines County Asylum | N&M | County | 66 | .. | .. | ... | ... | ..... |
| Clarion, 2,578—Wright Co. | | | | | | | | |
| Tompkins & Walker Hosp. | Gen | Part | 10 | 3 | .. | No | ... | 75 |
| Clinton, 25,726—Clinton Co. | | | | | | | | |
| Clinton Isolation Hosp.■ | Iso | Cy&Co | 13 | .. | .. | No | ... | 5 |
| Council Bluffs, 42,048—Pottawattamie Co. | | | | | | | | |
| Christian Home Orphanage | Inst | Indep | 35 | 10 | 3 | No | ... | 15 |
| City Isolation Hosp'tal■ | Iso | City | 15 | 2 | .. | No | ... | 135 |
| Iowa School for Deaf■ | Inst | State | 34 | 5 | .. | No | ... | 202 |
| Davenport, 60,751—Scott Co. | | | | | | | | |
| Iowa Soldiers' Orphans' Home | Inst | State | 45 | 35 | .. | No | ... | 1,860 |
| Des Moines, 142,559—Polk Co. | | | | | | | | |
| Benedict Home | Mater | Indep | 30 | 24 | 15 | ... | 18 | 27 |
| Broadlawns Polk County Public Hospital, Contagious Department■ | Iso | County | 50 | 15 | .. | No | ... | 313 |
| Salvation Army Rescue Home and Mater. Hosp. | Mater | Church | 55 | 4 | 30 | No | 86 | 101 |
| Dyersville, 2,046—Dubuque Co. | | | | | | | | |
| Mueller Hospital | Gen | Indiv | 6 | New | 3 | ... | 27 | 55 |
| Eldora, 3,200—Hardin Co. | | | | | | | | |
| Iowa Training School for Boys■ | Inst | State | 24 | 12 | .. | No | ... | 624 |
| Elkader, 1,382—Clayton Co. | | | | | | | | |
| Clayton County Hospital for Insane | N&M | County | 50 | 43 | .. | No | ... | ..... |
| Ft. Madison, 13,779—Lee Co. | | | | | | | | |
| Iowa State Penit. Hosp. | Inst | State | 28 | 25 | .. | Yes | ... | ..... |
| Glenwood, 4,269—Mills Co. | | | | | | | | |
| Iowa Institution for Feebleminded Children | MenDef | State | 1,600 | 1,624 | .. | No | ... | 91 |
| Holstein, 1,300—Ida Co. | | | | | | | | |
| Holstein Hospital | Gen | Indiv | 10 | 3 | 2 | No | 5 | 25 |
| Indianola, 3,488—Warren Co. | | | | | | | | |
| Community Hospital | Gen | Indiv | 6 | 1 | 3 | No | 25 | 83 |
| Leon, 2,006—Decatur Co. | | | | | | | | |
| Leon Hospital■ | Emerg | Part | 6 | ... | .. | No | ... | 60 |
| Manchester, 3,413—Delaware Co. | | | | | | | | |
| Manchester Hospital | Gen | Indiv | 8 | 5 | 2 | No | ... | ..... |
| Marshalltown, 17,373—Marshall Co. | | | | | | | | |
| Iowa Soldiers' Home Hospital■ | Inst | State | 180 | 133 | .. | No | ... | 631 |
| Singleton Hospital | EENT | Indiv | 10 | 4 | .. | ... | ... | ..... |
| Mason City, 23,304—Cerro Gordo Co. | | | | | | | | |
| Iowa Odd-Fellows and Orphans Home Hospital | Inst | Frat | 16 | 11 | .. | No | ... | ..... |
| Onawa, 2,538—Monona Co. | | | | | | | | |
| Davis Hospital | Gen | Indiv | 6 | 3 | 3 | No | 10 | 92 |
| Orange City, 1,727—Sioux Co. | | | | | | | | |
| Do Bey Hospital■ | Gen | Part | 8 | 6 | 4 | Yes | 15 | 60 |
| Doornink Hospital | Gen | Indiv | 10 | 3 | 3 | No | 11 | 125 |
| Primghar, 962—O'Brien Co. | | | | | | | | |
| Ward Memorial Hospital | Gen | Indiv | 8 | 1 | 1 | No | 3 | 50 |
| Red Oak, 5,778—Montgomery Co. | | | | | | | | |
| Powell School for Backward and Nervous Children | MenDef | Part | 55 | 50 | .. | No | ... | 2 |
| Rock Valley, 1,204—Sioux Co. | | | | | | | | |
| Rock Valley Hospital | Gen | Indiv | 7 | 2 | 1 | No | 3 | 60 |
| Saylor, (Des Moines P.O.)—Polk Co. | | | | | | | | |
| Polk County Hospital for Insane | N&M | County | 160 | 120 | .. | ... | ... | ..... |
| Sioux City, 79,183—Woodbury Co. | | | | | | | | |
| City Detention Hospital | Iso | Cy&Co | 18 | 4 | .. | No | ... | 76 |
| Toledo, 1,825—Tama Co. | | | | | | | | |
| Iowa State Juvenile Home Hospital | Inst | State | 25 | 15 | .. | No | ... | 175 |
| Vinton, 3,372—Benton Co. | | | | | | | | |
| Iowa School for Blind | Inst | State | 16 | 7 | .. | No | ... | 60 |
| Waukon, 2,526—Allamakee Co. | | | | | | | | |
| Hall Hospital | Mater | Indiv | 10 | 2 | 8 | ... | 71 | 75 |
| Rominger and Jeffries Emergency Hospital | Gen | Part | 8 | 2 | .. | No | ... | 138 |
| Winterset, 2,921—Madison Co. | | | | | | | | |
| Winterset Hospital | Gen | Indiv | 14 | 8 | 5 | No | 25 | 315 |
| Woodward, 901—Dallas Co. | | | | | | | | |
| Hosp. for Epileptics and School for Feebleminded | MenDef | State | 740 | 816 | .. | No | ... | 68 |

Summary for Iowa:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 132 | 14,449 | 11,578 | 130,960 |
| Related institutions | 39 | 3,566 | 3,100 | 6,383 |
| Totals | 171 | 18,015 | 14,678 | 137,343 |
| Refused registration | 14 | 433 | | |

## KANSAS

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Abilene, 5,658—Dickinson Co. | | | | | | | | |
| Dickinson County Memorial Hospital■ | Gen | Indep | 25 | 9 | 5 | No | 68 | 419 |
| Anthony, 2,947—Harper Co. | | | | | | | | |
| Galloway Hospital■ | Gen | Indiv | 21 | 13 | 6 | Yes | 172 | 791 |
| Arkansas City, 13,946—Cowley Co. | | | | | | | | |
| Mercy Hospital◊■ | Gen | Indep | 50 | 15 | 4 | No | 64 | 810 |
| Stricklen Hospital■ | Gen | Indiv | 30 | 6 | 5 | No | 18 | 384 |
| Atchison, 13,024—Atchison Co. | | | | | | | | |
| Atchison Hospital■ | Gen | Indep | 26 | 19 | 8 | No | 203 | 637 |
| Atwood, 1,166—Rawlins Co. | | | | | | | | |
| Henneberger Hospital | Gen | Indiv | 12 | 4 | 2 | No | 15 | 450 |
| Belleville, 2,383—Republic Co. | | | | | | | | |
| R. G. Patterson Memorial Hospital | Gen | Church | 18 | 11 | 4 | Yes | 65 | 256 |
| Beloit, 3,502—Mitchell Co. | | | | | | | | |
| Community Hospital+■ | Gen | Indep | 50 | 16 | 10 | Yes | 54 | 596 |
| Bonner Springs, 1,837—Wyandotte Co. | | | | | | | | |
| Bonner Springs Sanitarium | N&M | Indiv | 20 | 10 | .. | No | ... | ..... |
| Coffeyville, 16,198—Montgomery Co. | | | | | | | | |
| Coffeyville General Hosp. | Gen | Indiv | 10 | 5 | 2 | No | 6 | 147 |
| Southeast Kansas Hosp.◊ | Gen | Indep | 18 | 9 | 3 | Yes | 44 | 359 |
| Columbus, 3,235—Cherokee Co. | | | | | | | | |
| Maud Norton Memorial City Hospital■ | Gen | City | 15 | 5 | .. | No | 4 | 182 |
| Concordia, 5,792—Cloud Co. | | | | | | | | |
| Concordia Hospital▣ | Gen | Church | 30 | 13 | 5 | Yes | 15 | 373 |
| St. Joseph's Hospital◊ | Gen | Church | 65 | 40 | 10 | No | 82 | 1,113 |
| Council Grove, 2,898—Morris Co. | | | | | | | | |
| Council Grove Hospital | Gen | Part | 10 | 5 | 2 | No | ... | ..... |
| Dodge City, 10,059—Ford Co. | | | | | | | | |
| Protestant Christian Hosp.■ | Gen | Church | 69 | 16 | 11 | No | 66 | 596 |
| St. Anthony's Hospital◊■ | Gen | Church | 80 | 43 | 14 | No | 240 | 1,810 |
| Eldorado, 10,311—Butler Co. | | | | | | | | |
| Susan B. Allen Memorial Hospital◊■ | Gen | Indep | 42 | 22 | 8 | No | 159 | 739 |
| Elkhart, 1,435—Morton Co. | | | | | | | | |
| Tucker Hospital | Gen | Indep | 18 | 6 | 4 | Yes | ... | ..... |
| Ellsworth, 2,072—Ellsworth Co. | | | | | | | | |
| Ellsworth Hospital◊■ | Gen | Indep | 35 | 17 | 6 | No | 55 | 642 |
| Emporia, 14,067—Lyon Co. | | | | | | | | |
| Newman Memorial County Hospital◊■ | Gen | County | 67 | 34 | 14 | No | 177 | 1,105 |
| St. Mary's Hospital | Gen | Church | 70 | 45 | 10 | No | ... | ..... |
| Ft. Leavenworth, 5,025—Leavenworth Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 89 | 46 | 4 | Yes | 50 | 1,854 |
| Ft. Riley, 2,610—Geary Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 200 | 49 | 6 | Yes | 83 | 1,420 |
| Ft. Scott, 10,763—Bourbon Co. | | | | | | | | |
| Mercy Hospital◊ | Gen | Church | 100 | 65 | 10 | No | 127 | 1,826 |
| Garden City, 6,121—Finney Co. | | | | | | | | |
| Bailey Hospital▣ | Gen | Indiv | 10 | 8 | 3 | No | 10 | ..... |
| St. Catherine's Hospital◊ | Gen | Church | 50 | 25 | 7 | No | 120 | 593 |
| Girard, 2,442—Crawford Co. | | | | | | | | |
| Girard General Hospital■ | Gen | City | 10 | 5 | 2 | No | 5 | 196 |
| Goessel, 116—Marion Co. | | | | | | | | |
| Mennonite Bethesda Hosp. | Gen | Church | 20 | 8 | 6 | No | 60 | 168 |
| Goodland, 3,626—Sherman Co. | | | | | | | | |
| Boothroy Memorial Hosp. | Gen | Church | 25 | 15 | 3 | No | 58 | 478 |
| Great Bend, 5,548—Barton Co. | | | | | | | | |
| St. Rose Hospital◊■ | Gen | Church | 105 | 42 | 8 | No | 167 | 1,613 |
| Halstead, 1,373—Harvey Co. | | | | | | | | |
| Halstead Hospital◊■ | Gen | Indep | 170 | 100 | 8 | Yes | 42 | 3,105 |
| Hays, 4,618—Ellis Co. | | | | | | | | |
| Hays Protestant Hosp.■ | Gen | Church | 34 | 14 | 6 | Yes | 38 | 499 |
| St. Anthony's Hospital | Gen | Church | 100 | 57 | 22 | No | 232 | 1,841 |
| Hoisington, 3,001—Barton Co. | | | | | | | | |
| Atkin Hospital | Gen | Indiv | 15 | 6 | 2 | No | 11 | ..... |
| Horton, 4,049—Brown Co. | | | | | | | | |
| [illegible] | Gen | Part | 15 | 10 | 6 | No | 85 | 363 |
| ] | | | | | | | | |
| ■ | Gen | Church | 107 | 69 | 17 | Yes | 417 | 2,559 |
| St. Elizabeth's Mercy Hospital◊ | Gen | Church | 75 | 58 | 12 | No | 113 | 785 |
| Independe[illegible] Co. | | | | | | | | |
| Mercy [illegible] | | Church | 75 | 38 | 15 | Yes | 106 | 1,294 |
| Junction [illegible] | | | | | | | | |
| Junctio[illegible] Hospital■ | Gen | City | 36 | 14 | 12 | No | 44 | 413 |
| Kansas City, 121,857—Wyandotte Co. | | | | | | | | |
| Bell Memorial Hosp.★◊■ | Gen | State | 180 | 134 | 15 | Yes | 250 | 3,911 |
| Bethany Methodist Hospital★◊■ | Gen | Church | 145 | 107 | 25 | No | 411 | 3,420 |
| Douglass Hospital (col.)◊ | Gen | Church | 25 | 10 | 2 | Yes | ... | ..... |
| Grandview Sanitarium | N&M | Indiv | 37 | 20 | .. | No | ... | 89 |
| Providence Hospital◊ | Gen | Church | 65 | 52 | 12 | No | 230 | 1,558 |
| St. Margaret's Hosp.★◊■ | Gen | Church | 235 | 155 | 15 | No | 109 | 3,225 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Part | 12 | 8 | 3 | No | 40 | 268 |
| [illegible] | Gen | Indep | 15 | 7 | 3 | No | 48 | 374 |
| Larned State Hospital | N&M | State | 842 | 721 | .. | No | ... | 216 |
| Lawrence, 13,726—Douglas Co. | | | | | | | | |
| Lawrence Hospital | Gen | Indep | 30 | 10 | 2 | Yes | 8 | 162 |
| Lawrence Memorial Hosp.■ | Gen | City | 52 | 27 | 10 | No | 182 | 1,008 |
| Leavenworth, 17,466—Leavenworth Co. | | | | | | | | |
| Cushing Hospital◊ | Gen | Church | 20 | 13 | 6 | No | ... | ..... |
| St. John's Hospital◊ | Gen | Church | 43 | 18 | 7 | Yes | 77 | 660 |
| Liberal, 5,294—Seward Co. | | | | | | | | |
| Epworth Hospital◊■ | Gen | Church | 44 | 31 | 7 | Yes | 48 | 1,251 |
| Lincoln, 1,732—Lincoln Co. | | | | | | | | |
| City Hospital■ | Gen | Indiv | 10 | 3 | 1 | No | 12 | 128 |
| Little River, 618—Rice Co. | | | | | | | | |
| Hoffman Memorial Hosp.■ | Gen | Indep | 18 | 7 | 1 | No | ... | 144 |
| Lyons, 2,939—Rice Co. | | | | | | | | |
| Lyons Hospital | Gen | Indep | 18 | 7 | 4 | No | 32 | 254 |

## KANSAS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Manhattan, 10,136—Riley Co. | | | | | | | | |
| Charlotte Swift Memorial Hospital◊■ | Gen | Indep | 41 | 21 | 9 | Yes | 63 | 950 |
| Park View Hospital◊ | Gen | Indep | 30 | 17 | 6 | No | 56 | 500 |
| Marysville, 4,013—Marshall Co. | | | | | | | | |
| Randell Hospital■ | Gen | Indiv | 12 | 5 | 6 | ... | 15 | 105 |
| McPherson, 6,147—McPherson Co. | | | | | | | | |
| McPherson County Hosp.◊■ | Gen | County | 50 | 29 | 10 | No | 176 | 1,028 |
| Mulvane, 1,042—Sumner Co. | | | | | | | | |
| A.T.& S.F. Railway Hosp. | Indus | Indus | 60 | 35 | .. | No | ... | 540 |
| Nashville, 234—Kingman Co. | | | | | | | | |
| Nashville Hospital | Gen | Indiv | 12 | 9 | 2 | Yes | ... | ..... |
| Newton, 11,034—Harvey Co. | | | | | | | | |
| Axtell Christian Hosp.◊■ | Gen | Church | 45 | 24 | 12 | Yes | 91 | 1,247 |
| Bethel Deaconess Hosp.◊■ | Gen | Church | 48 | 30 | 12 | Yes | 211 | 918 |
| Norton, 2,767—Norton Co. | | | | | | | | |
| Laird Memorial Hospital | Gen | Church | 20 | 10 | 5 | No | 34 | 351 |
| State Sanat. for Tuber.▣ | TB | State | 238 | 223 | .. | Yes | ... | 286 |
| Osawatomie, 4,440—Miami Co. | | | | | | | | |
| Osawatomie State Hosp.+ | N&M | State | 1,500 | 1,476 | .. | No | ... | 303 |
| Parsons, 14,903—Labette Co. | | | | | | | | |
| Mercy Hospital◊■ | Gen | Church | 35 | 14 | 5 | No | 32 | 286 |
| M.K.& T. Railroad Hosp.■ | Indus | Indus | 53 | 27 | .. | Yes | ... | 329 |
| State Hosp. for Epileptics | Epil | State | 730 | 631 | .. | No | ... | 144 |
| Pittsburg, 18,145—Crawford Co. | | | | | | | | |
| Mt. Carmel Hospital◊■ | Gen | Church | 75 | 33 | 5 | No | 52 | 981 |
| Pratt, 6,322—Pratt Co. | | | | | | | | |
| Ninnescah Hospital◊ | Gen | Indep | 20 | 12 | 6 | No | 79 | 1,238 |
| Quinter, 570—Gove Co. | | | | | | | | |
| Quinter Hosp. and Sanit.■ | Gen | Indiv | 10 | 6 | 5 | No | ... | 321 |
| Ransom, 431—Ness Co. | | | | | | | | |
| Mid-West Hospital■ | Gen | Indiv | 10 | 4 | 5 | No | 9 | 24 |
| Sabetha, 2,332—Nemaha Co. | | | | | | | | |
| St. Anthony Murdock Memorial Hospital◊▣ | Gen | Church | 100 | 36 | 12 | No | 61 | 1,279 |
| Salina, 20,155—Saline Co. | | | | | | | | |
| Asbury Protestant Hosp.◊▣ | Gen | Church | 48 | 34 | 10 | No | 115 | 1,106 |
| St. John's Hospital◊■ | Gen | Church | 50 | 30 | 15 | No | 88 | 901 |
| Scott City, 1,544—Scott Co. | | | | | | | | |
| Scott City Hospital | Gen | Indiv | 12 | 5 | 6 | No | 42 | 234 |
| Smith Center, 1,736—Smith Co. | | | | | | | | |
| Dr. C. C. Funk's Private Hospital | Gen | Indiv | 10 | 4 | .. | No | ... | 65 |
| Spearville, 703—Ford Co. | | | | | | | | |
| Perkins' Hospital■ | Gen | Indep | 10 | 7 | 3 | No | 25 | 279 |
| Stafford, 1,614—Stafford Co. | | | | | | | | |
| Community Hospital | Gen | City | 15 | New | 4 | No | ... | ..... |
| Sterling, 1,868—Rice Co. | | | | | | | | |
| Sterling Hospital◊■ | Gen | Indep | 20 | 8 | 4 | No | 36 | 422 |
| Syracuse, 1,383—Hamilton Co. | | | | | | | | |
| Donohue Memorial Hosp.▣ | Gen | County | 25 | 6 | 6 | No | 33 | 234 |
| T[illegible] | | | | | | | | |
| ■ | Indus | Indus | 140 | 80 | .. | Yes | ... | 1,850 |
| ■ | Gen | Church | 94 | 51 | 20 | No | 213 | 1,390 |
| [illegible] | TB | Cy&Co | 50 | 35 | .. | No | ... | 81 |
| Jane C. Stormont Hosp.◊■ | Gen | Indep | 75 | 43 | 15 | No | 215 | 1,275 |
| Menninger Sanitarium⊙ | N&M | Indep | 50 | 29 | .. | Yes | ... | 158 |
| St. Francis' Hospital◊■ | Gen | Church | 75 | 52 | 12 | No | 166 | 1,255 |
| Security Benefit Home and Hospital | Gen | Frat | 250 | 80 | .. | No | ... | 2,112 |
| Topeka State Hospital | N&M | State | 1,726 | 1,736 | .. | No | ... | 397 |
| Wamego, 1,647—Pottawatomie Co. | | | | | | | | |
| Genn Hospital■ | Gen | City | 15 | 5 | 4 | No | 36 | 1,085 |
| Wellington, 7,405—Sumner Co. | | | | | | | | |
| Hatcher Hospital■ | Gen | Indiv | 30 | 13 | 5 | No | 29 | 434 |
| St. Luke's Hospital | Gen | Indep | 20 | 10 | 8 | No | ... | ..... |
| Wichita, 111,110—Sedgwick Co. | | | | | | | | |
| Coffman Hospital■ | Gen | Indiv | 15 | 7 | 3 | No | 20 | 400 |
| St. Francis Hospital★◊■ | Gen | Church | 270 | 101 | 30 | Yes | 429 | 3,440 |
| Sedgwick Co. Tuber. Sanat.▣ | TB | County | 50 | 25 | .. | No | ... | ..... |
| Wesley Hospital★◊■ | Gen | Church | 209 | 137 | 26 | Yes | 416 | 4,319 |
| [illegible] | Gen | Church | 105 | 77 | 14 | No | 257 | 2,529 |
| [illegible] | Gen | Church | 44 | 26 | 6 | No | 67 | 755 |
| William Newton Memorial Hospital◊■ | Gen | City | 39 | 23 | 10 | No | 103 | 722 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ashland, 1,232—Clark Co. | | | | | | | | |
| As[illegible] | Gen | Indep | 10 | 5 | 5 | No | 34 | 312 |
| Atc[illegible] | | | | | | | | |
| De[illegible]■ | Inst | State | 20 | 14 | .. | No | ... | ..... |
| Pro[illegible] | N&M | Indiv | 25 | 10 | .. | No | ... | ..... |
| Cherr[illegible] Co. | | | | | | | | |
| Nor[illegible] | Gen | Indiv | 5 | 1 | 1 | No | 8 | 30 |
| Ellsw[illegible] | | | | | | | | |
| Mot[illegible] and Hospital■ | Inst | State | 33 | 25 | .. | No | ... | 30 |
| Ft. Dodge, 515—Ford Co. | | | | | | | | |
| Kansas State Soldiers' Home Hospital | Gen | State | 36 | 15 | .. | Yes | ... | ..... |
| Humboldt, 2,558—Allen Co. | | | | | | | | |
| Dr. Payne's Emerg. Hosp.■ | Gen | Indiv | 7 | ... | 2 | Yes | 20 | 25 |
| Lansing, 812—Leavenworth Co. | | | | | | | | |
| Asylum for Dangerous Insane | N&M | State | 85 | 74 | .. | No | ... | 14 |
| Kansas State Penit. Hosp.■▲ | Inst | State | 43 | 26 | .. | No | ... | 312 |
| Lawrence, 13,726—Douglas Co. | | | | | | | | |
| Haskell Institute Hospital School | Inst | Indian | 46 | 8 | .. | Yes | ... | 923 |
| Watkins Memorial Hosp.■ | Inst | State | 46 | 11 | .. | Yes | ... | 873 |
| [illegible]orth Co. | | | | | | | | |
| [illegible] | Inst | County | 27 | 27 | .. | No | ... | ..... |
| [illegible] | N&M | Indiv | 30 | 16 | .. | No | ... | ..... |
| [illegible] | Inst | Fed | 205 | 160 | .. | Yes | ... | ..... |

Key to symbols and abbreviations is on page 2078

## KANSAS—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Lebanon, 723—Smith Co. | | | | | | | | |
| Lebanon Hospital | Gen | Indiv | 10 | 2 | 2 | No | 4 | 110 |
| Lincoln, 1,732—Lincoln Co. | | | | | | | | |
| Lincoln Hospital | Gen | Indiv | 7 | 2 | 4 | No | 10 | 41 |
| Manhattan, 10,136—Riley Co. | | | | | | | | |
| Kansas State Agricultural College Hospital■ | Inst | State | 30 | 2 | .. | Yes | ... | 308 |
| Marion, 1,959—Marion Co. | | | | | | | | |
| Marion Hospital■ | Gen | Indep | 9 | 2 | 1 | No | 48 | 198 |
| Marysville, 4,013—Marshall Co. | | | | | | | | |
| Marysville Hospital | Gen | Part | 10 | 4 | 2 | No | ... | ..... |
| National Military Home, 2,510—Leavenworth Co. | | | | | | | | |
| Veterans Admin. Home■▲ | Inst | VetAd | 448 | 360 | .. | Yes | ... | 1,071 |
| Norwich, 477—Kingman Co. | | | | | | | | |
| Norwich Hospital | Gen | Indiv | 6 | 3 | 2 | No | 4 | 160 |
| Olathe, 3,656—Johnson Co. | | | | | | | | |
| State School for Deaf | Inst | State | 15 | 4 | .. | ... | ... | ..... |
| Parsons, 14,903—Labette Co. | | | | | | | | |
| Parsons Hospital and Maternity Home | Gen | Indiv | 10 | 6 | 3 | ... | ... | 60 |
| Topeka, 64,120—Shawnee Co. | | | | | | | | |
| Methodist Episcopal Home for the Aged | Inst | Church | 49 | 49 | .. | No | ... | ..... |
| Nellie Johns Memorial Hospital (col.) | Inst | State | 20 | 5 | 1 | No | 1 | 115 |
| State Industrial School for Boys■ | Inst | State | 24 | 8 | .. | Yes | ... | ..... |
| Wichita, 111,110—Sedgwick Co. | | | | | | | | |
| Salvation Army Home and Hospital■ | Mater | Church | 40 | 35 | 9 | No | 126 | 175 |
| Suburban Rest Sanit▲ | Gen | Indiv | 30 | 18 | .. | No | ... | 114 |
| Wichita Children's Home Hospital | Inst | Indep | 25 | 6 | .. | ... | ... | 150 |
| Winfield, 9,398—Cowley Co. | | | | | | | | |
| State Training School | MenDef | State | 1,000 | 1,011 | .. | No | ... | ..... |

Summary for Kansas:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 102 | 10,344 | 7,583 | 83,467 |
| Related institutions | 30 | 2,351 | 1,912 | 5,924 |
| Totals | 132 | 12,695 | 9,495 | 89,391 |
| Refused registration | 22 | 616 | | |

## KENTUCKY

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ashland, 29,074—Boyd Co. | | | | | | | | |
| King's Daughters Hosp.⊙■ | Gen | Church | 40 | 29 | 10 | No | 105 | 860 |
| Stephenson Hospital and Clinic⊙■ | Gen | Indiv | 72 | 32 | 5 | No | 32 | 908 |
| Barbourville, 2,380—Knox Co. | | | | | | | | |
| Logan Hospital■ | Gen | Indiv | 14 | 6 | 2 | No | 12 | 140 |
| Berea, 1,827—Madison Co. | | | | | | | | |
| Berea College Hospital⊙■ | Gen | Indep | 125 | 29 | 2 | Yes | 22 | 2,292 |
| Beverly, 69—Bell Co. | | | | | | | | |
| Red Bird Evangelical Hosp. | Gen | Church | 16 | 5 | 4 | Yes | 9 | 133 |
| Bowling Green, 12,348—Warren Co. | | | | | | | | |
| City Hospital⊙ | Gen | City | 52 | 15 | 8 | Yes | 54 | 613 |
| Carlisle, 1,469—Nicholas Co. | | | | | | | | |
| Johnson Memorial Hosp. | Gen | County | 11 | 5 | 2 | No | 15 | 163 |
| Covington, 65,252—Kenton Co. | | | | | | | | |
| St. Elizabeth Hospital★◊■ | Gen | Church | 353 | 153 | 22 | Yes | 671 | 3,323 |
| William Booth Mem. Hosp.⊙■ | Gen | Church | 94 | 41 | 18 | No | 223 | 1,262 |
| Cynthiana, 4,386—Harrison Co. | | | | | | | | |
| Harrison Mem. Hosp.⊙■ | Gen | Indep | 30 | 14 | 5 | No | 31 | 240 |
| Danville, 6,729—Boyle Co. | | | | | | | | |
| Danville and Boyle County Hospital■ | Gen | Cy&Co | 40 | 32 | 3 | No | 36 | 1,186 |
| Dayton, 9,071—Campbell Co. | | | | | | | | |
| Speer's Memorial Hosp.⊙ | Gen | County | 97 | 55 | 15 | No | ... | ..... |
| Ft. Thomas, (Newport P.O.)—Campbell Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 52 | 8 | .. | Yes | ... | 191 |
| Franklin, 3,056—Simpson Co. | | | | | | | | |
| Southern Kentucky Sanat. | Gen | Indiv | 50 | 25 | 15 | Yes | ... | ..... |
| Frenchburg, 246—Menifee Co. | | | | | | | | |
| Frenchburg Hospital | Gen | Church | 20 | 1 | .. | Yes | 7 | 101 |
| Fulton, 3,502—Fulton Co. | | | | | | | | |
| Curlin-Neill Hospital | Gen | Part | 10 | 2 | .. | No | ... | 97 |
| Georgetown, 4,229—Scott Co. | | | | | | | | |
| John Graves Ford Memorial Hospital | Gen | Cy&Co | 23 | 10 | 6 | No | 41 | 345 |
| Glasgow, 5,042—Barren Co. | | | | | | | | |
| Sampson Community Hospital■ | Gen | County | 50 | 22 | 10 | Yes | 27 | 1,275 |
| Harlan, 4,327—Harlan Co. | | | | | | | | |
| Harlan Hospital■ | Gen | Indep | 75 | 35 | 12 | No | 65 | 1,532 |
| Harrodsburg, 4,029—Mercer Co. | | | | | | | | |
| A. D. Price Mem. Hosp.■ | Gen | Indep | 24 | 9 | 4 | No | 12 | 327 |
| Hazard, 7,021—Perry Co. | | | | | | | | |
| Hazard Hospital■ | Gen | Indep | 37 | 24 | 1 | Yes | 6 | 873 |
| Hurst-Snyder Hospital■ | Gen | Part | 34 | 18 | 6 | No | 50 | 643 |
| Henderson, 11,668—Henderson Co. | | | | | | | | |
| Henderson Hospital | Gen | Indep | 38 | 20 | 4 | No | 40 | 800 |
| Moseley Hospital | Gen | Part | 30 | 6 | 4 | No | ... | ..... |
| Hopkinsville, 10,746—Christian Co. | | | | | | | | |
| Jennie Stuart Mem. Hosp.⊙ | Gen | Indep | 30 | 20 | 3 | Yes | 15 | 802 |
| Western State Hospital | N&M | State | 1,500 | 1,702 | .. | No | ... | 428 |
| Hyden, 313—Leslie Co. | | | | | | | | |
| Hyden Hospital | Gen | Indep | 14 | 8 | 4 | Yes | 3 | 436 |

## KENTUCKY—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Jackson, 2,109—Breathitt Co. | | | | | | | | |
| Bach Hospital | Gen | Indiv | 25 | 10 | 1 | No | 10 | 693 |
| Jenkins, 8,465—Letcher Co. | | | | | | | | |
| Jenkins Hospital | Gen | Indus | 65 | 23 | 10 | Yes | ... | ..... |
| Kenvir, 1,212—Harlan Co. | | | | | | | | |
| Black Mountain Hospital | Gen | Indus | 15 | 4 | 1 | No | ... | ..... |
| Lakeland, 55—Jefferson Co. | | | | | | | | |
| Central State Hospital | N&M | State | 1,750 | 2,199 | .. | No | ... | 540 |
| Lebanon, 3,248—Marion Co. | | | | | | | | |
| Boldrick Infirmary | Gen | Indiv | 15 | 5 | 2 | No | 10 | 200 |
| Elizabeth's Hospital | Surg | Indiv | 16 | 5 | 1 | Yes | 5 | 145 |
| Lexington, 45,736—Fayette Co. | | | | | | | | |
| Eastern State Hospital | N&M | State | 900 | 1,022 | .. | No | ... | 533 |
| Good Samaritan Hosp.★◊■ | Gen | Church | 150 | 122 | 15 | No | 286 | 3,300 |
| High Oaks Sanatorium | N&M | Indiv | 35 | 21 | .. | No | ... | 99 |
| Julius Marks Sanatorium■ | TB | County | 90 | 89 | .. | No | ... | 142 |
| Shriners' Hospitals for Crippled Children | (Included in Good Samaritan Hospital) | | | | | | | |
| St. Joseph's Hospital★◊ | Gen | Church | 200 | 115 | 24 | No | 223 | 4,357 |
| Veterans Admin. Hospital■ | Gen | VetAd | 281 | 100 | .. | No | ... | 447 |
| London, 1,950—Laurel Co. | | | | | | | | |
| Pennington General Hosp. | Gen | Indep | 35 | 15 | 4 | No | ... | ..... |
| Louisa, 1,961—Lawrence Co. | | | | | | | | |
| Louisa General Hospital | Gen | Indiv | 35 | 15 | 5 | No | ... | ..... |
| Louisville, 307,745—Jefferson Co. | | | | | | | | |
| Beechhurst Sanitarium | N&M | Indiv | 30 | 12 | .. | No | ... | 55 |
| Children's Free Hospital⊙ | Chil | Indep | 72 | 65 | .. | No | ... | 937 |
| Jewish Hospital⊙ | Gen | Indep | 85 | 53 | 14 | No | ... | 1,815 |
| Kentucky Baptist Hosp.⊙ | Gen | Church | 130 | 114 | 20 | No | 278 | 3,154 |
| Kentucky State Tuberculosis Sanatorium | TB | State | 82 | 50 | .. | No | ... | 116 |
| Kosair Crippled Children Hospital | Ortho | Indep | 60 | 48 | .. | No | ... | 254 |
| Louisville City Hosp.★+◊■▲ | Gen | City | 400 | 384 | 61 | Yes | 963 | 11,009 |
| Louisville Neuropathic Sanatorium | N&M | Part | 24 | 21 | .. | No | ... | 150 |
| Methodist Episcopal Deaconess Hospital⊙ | Gen | Church | 67 | 41 | 8 | No | 103 | 1,482 |
| Norton Mem. Infirmary★⊙ | Gen | Church | 167 | 63 | 25 | Yes | ... | ..... |
| Pope Hospital | Gen | Indiv | 25 | 15 | .. | Yes | ... | ..... |
| Red Cross Hospital (col.)◊ | Gen | Indep | 60 | 30 | 7 | No | 12 | 332 |
| St. Anthony's Hospital★◊ | Gen | Church | 135 | 88 | 20 | No | 371 | 2,324 |
| St. Joseph Infirmary★◊ | Gen | Church | 300 | 117 | 26 | No | 387 | 4,074 |
| SS. Mary and Elizabeth Hospital★◊ | Gen | Church | 145 | 90 | 18 | No | 308 | 2,337 |
| Dr. Stokes Sanatorium | N&M | Indiv | 35 | 15 | .. | No | ... | 158 |
| U. S. Marine Hospital■ | Gen | USPHS | 83 | 83 | .. | Yes | ... | 778 |
| William H. Emrich Hosp. | Gen | Indiv | 12 | 5 | 4 | Yes | 30 | 94 |
| Lynch, 3,050—Harlan Co. | | | | | | | | |
| Lynch Hospital■ | Gen | Indus | 50 | 15 | 4 | Yes | 62 | 638 |
| Madisonville, 6,908—Hopkins Co. | | | | | | | | |
| Madisonville Hospital■ | Gen | Indep | 20 | 7 | 3 | No | 10 | 484 |
| Manchester, 715—Clay Co. | | | | | | | | |
| Anderson & Ricketts Hosp. | Gen | Part | 20 | 10 | 4 | No | ... | ..... |
| Martin, 799—Floyd Co. | | | | | | | | |
| Beaver Valley Hospital | Gen | Part | 50 | 25 | 2 | Yes | ... | ..... |
| Mayfield, 8,177—Graves Co. | | | | | | | | |
| Fuller-Gilliam Hospital | Gen | Part | 12 | 8 | 2 | Yes | 16 | 406 |
| Mayfield Hospital⊙■ | Gen | Part | 40 | 22 | 2 | Yes | 38 | 565 |
| Maysville, 6,557—Mason Co. | | | | | | | | |
| Hayswood Hospital■ | Gen | Indep | 38 | 15 | 5 | No | 35 | 592 |
| Middlesboro, 10,350—Bell Co. | | | | | | | | |
| Middlesboro Hospital⊙■ | Gen | Indep | 50 | 25 | 10 | No | 30 | 1,331 |
| Mt. Sterling, 4,350—Montgomery Co. | | | | | | | | |
| Mary Chiles Hospital | Gen | City | 16 | 10 | 3 | No | ... | ..... |
| Murray, 2,891—Calloway Co. | | | | | | | | |
| Keys-Houston Clinic Hosp.■ | Gen | Part | 21 | 7 | 4 | Yes | 10 | 200 |
| Wm. Mason Mem. Hosp.⊙ | Gen | Indiv | 65 | 27 | 3 | Yes | 18 | 668 |
| Outwood,—Christian Co. | | | | | | | | |
| Veterans Admin. Hospital | TB | VetAd | 375 | 348 | .. | No | ... | ..... |
| Owensboro, 22,765—Daviess Co. | | | | | | | | |
| Owensboro City Hospital◊■ | Gen | City | 100 | 32 | 10 | No | 169 | 1,456 |
| Paducah, 33,541—McCracken Co. | | | | | | | | |
| Ewart Purcell Iso. Hosp. | (Included in Riverside Hospital) | | | | | | | |
| Illinois Central Hospital■ | Gen | Indus | 90 | 45 | 3 | Yes | 11 | 1,796 |
| Riverside Hospital◊■ | Gen | City | 127 | 44 | 12 | No | 174 | 3,010 |
| Paintsville, 2,411—Johnson Co. | | | | | | | | |
| Paintsville Hospital⊙■ | Gen | Indep | 25 | 17 | 2 | No | 20 | 688 |
| Paris, 6,204—Bourbon Co. | | | | | | | | |
| W. W. Massie Mem. Hosp.⊙■ | Gen | City | 46 | 22 | 4 | No | 48 | 448 |
| Pewee Valley, 582—Oldham Co. | | | | | | | | |
| Pewee Valley Rural Sanitarium and Hospital | Gen | Indep | 20 | 7 | 3 | No | 9 | 82 |
| Pikeville, 3,376—Pike Co. | | | | | | | | |
| Methodist Hospital⊙ | Gen | Church | 49 | 32 | 5 | No | 31 | 926 |
| Pineville, 3,567—Bell Co. | | | | | | | | |
| Pineville Community Hospital■ | Gen | Indep | 25 | 10 | .. | No | 10 | ..... |
| Princeton, 4,764—Caldwell Co. | | | | | | | | |
| Princeton Hospital■ | Gen | Indep | 15 | 5 | 3 | No | 10 | 400 |
| Richmond, 6,495—Madison Co. | | | | | | | | |
| Gibson Hospital | Gen | Indiv | 20 | 4 | .. | No | ... | 148 |
| Pattie A. Clay Infirmary | Gen | Indep | 35 | 18 | 4 | No | 28 | 513 |
| U. S. Public Health Service Trachoma Hospital | Trach | USPHS | 37 | 35 | .. | Yes | ... | ..... |
| Seco, 1,150—Letcher Co. | | | | | | | | |
| Seco Hospital | Indus | Indiv | 15 | 5 | .. | Yes | ... | 300 |
| Shelbyville, 4,033—Shelby Co. | | | | | | | | |
| King's Daughters Hospital | Gen | Church | 42 | 17 | 7 | No | 61 | 324 |
| Somerset, 5,506—Pulaski Co. | | | | | | | | |
| Somerset General Hosp.■ | Gen | Indep | 20 | 7 | 3 | No | 16 | 385 |
| Stanford, 1,544—Lincoln Co. | | | | | | | | |
| Lincoln County Mem. Hosp. | Gen | County | 13 | 7 | 2 | No | ... | ..... |
| Versailles, 2,244—Woodford Co. | | | | | | | | |
| Woodford County Memorial Hospital | Gen | Cy&Co | 24 | 12 | 4 | No | ... | 300 |

Key to symbols and abbreviations is on page 2078

## KENTUCKY—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Waverly Hills,—Jefferson Co. | | | | | | | | |
| Waverly Hills Sanatorium■ | TB | Cy&Co | 465 | 463 | 10 | Yes | ... | 546 |
| Winchester, 8,233—Clark Co. | | | | | | | | |
| Clark County Hospital■ | Gen | Cy&Co | 30 | 9 | 3 | No | 25 | 337 |
| Guerrant Clinic and Hosp. | Gen | Indiv | 20 | 5 | 6 | Yes | ... | 208 |
| **Related Institutions** | | | | | | | | |
| Annville, 121—Jackson Co. | | | | | | | | |
| Annville Institute Infirm. | Inst | Church | 10 | 2 | .. | No | ... | 120 |
| Covington, 65,252—Kenton Co. | | | | | | | | |
| Kenton County Infirmary. | Inst | County | 50 | 35 | .. | No | ... | ..... |
| Danville, 6,729—Boyle Co. | | | | | | | | |
| Kentucky School for the | Inst | State | 40 | 5 | .. | No | ... | ..... |
| ■ | Indus | Indus | 10 | ... | .. | No | ... | ..... |
| Kentucky Penitentiary Hospital | Inst | State | 30 | 3 | .. | Yes | ... | ..... |
| Erlanger, 1,853—Kenton Co. | | | | | | | | |
| Highway Medical Hospital | Gen | Indiv | 25 | ... | 4 | ... | ... | ..... |
| Fleming, 1,389—Letcher Co. | | | | | | | | |
| Fleming Hospital■ | Indus | Indus | 10 | 2 | .. | No | ... | 74 |
| Frankfort, 11,626—Franklin Co. | | | | | | | | |
| Kentucky State Reformatory Hospital■ | Inst | State | 100 | 10 | .. | No | ... | 3,700 |
| State Institution for the Feebleminded | MenDef | State | 718 | 688 | .. | No | ... | 110 |
| Winnie Annett Scott Memorial Hospital (col.) | Gen | Indep | 15 | 2 | 2 | No | ... | 27 |
| Grayson, 1,022—Carter Co. | | | | | | | | |
| J. Q. Stovall Mem. Hosp.■ | Gen | Indiv | 8 | 6 | 1 | No | 6 | 127 |
| Greendale, 80—Fayette Co. | | | | | | | | |
| Kentucky House of Reform■ | Inst | State | 28 | 18 | .. | No | ... | 200 |
| ■ | Gen | Church | 8 | 2 | .. | Yes | ... | 120 |
| Co. | | | | | | | | |
| r | | | | | | | | |
| .. | Incur | Church | 88 | 75 | .. | No | ... | 26 |
| Mt. St. Agnes Sanitarium | TBN&M | Church | 40 | 20 | .. | No | ... | ..... |
| Susan Speed Davis Home and Hospital | Mater | Church | 53 | 30 | 9 | No | 68 | 91 |
| Paducah, 33,541—McCracken Co. | | | | | | | | |
| McCracken County Tubercular Sanitarium | TB | County | 22 | 16 | .. | No | ... | 39 |
| Pewee Valley, 582—Oldham Co. | | | | | | | | |
| Kentucky Confederate Home Infirmary | Inst | State | 20 | 8 | .. | No | ... | ..... |
| Richmond, 6,495—Madison Co. | | | | | | | | |
| Eastern Kentucky Colored Women's Hospital | Gen | Indep | 12 | 2 | .. | No | 2 | 32 |
| Shelbyville, 4,033—Shelby Co. | | | | | | | | |
| Amanda Smith Hosp. (col.) | Gen | Church | 8 | 5 | .. | No | 5 | 66 |
| Old Masons' Home of Kentucky Hospital | Inst | Frat | 16 | 4 | .. | Yes | ... | ..... |
| Smiths Grove, 718—Warren Co. | | | | | | | | |
| Lucy T. Owen Hospital | Gen | Indiv | 14 | 1 | 1 | No | 2 | 30 |
| Somerset, 5,506—Pulaski Co. | | | | | | | | |
| Pulaski County Hospital | Gen | Indep | 15 | ... | 3 | No | ... | ..... |

Summary for Kentucky:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 91 | 11,826 | 9,292 | 75,184 |
| Related institutions | 23 | 1,340 | 948 | 4,763 |
| Totals | 114 | 13,166 | 10,240 | 79,947 |
| Refused registration | 8 | 202 | | |

## LOUISIANA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alexandria, 23,025—Rapides Parish | | | | | | | | |
| Baptist Hospital◊■ | Gen | Church | 60 | 23 | 5 | Yes | 98 | 1,233 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 421 | 371 | .. | No | ... | 1,902 |
| Bastrop, 5,121—Morehouse Parish | | | | | | | | |
| Bastrop General Hospital■ | Gen | City | 18 | New | 3 | Yes | ... | ..... |
| Morehouse Hospital■ | Gen | Indiv | 12 | 10 | 4 | No | 30 | 467 |
| Baton Rouge, 30,729—East Baton Rouge Parish | | | | | | | | |
| Baton Rouge Gen. Hosp.◊■ | Gen | Indep | 75 | 41 | 6 | No | 52 | 1,038 |
| Our Lady of the Lake Sanitarium◊■ | Gen | Church | 100 | 56 | 10 | No | 216 | 2,516 |
| Bogalusa, 14,029—Washington Parish | | | | | | | | |
| Elizabeth Sullivan Memorial Hospital◊■ | Gen | Indus | 84 | 55 | 10 | Yes | 228 | 2,790 |
| Breaux Bridge, 1,399—St. Martin Parish | | | | | | | | |
| St. Paul Hospital■ | Gen | Indiv | 10 | 2 | 1 | No | 3 | 600 |
| Carville, 308—Iberville Parish | | | | | | | | |
| U. S. Marine Hosp.+■▲ | Leprosy | USPHS | 425 | 322 | .. | Yes | ... | 81 |
| Columbia, 760—Caldwell Parish | | | | | | | | |
| Caldwell Hospital■ | Gen | Indiv | 10 | 4 | .. | No | 15 | 175 |
| Riverview Sanitarium■ | Gen | Indiv | 20 | 12 | 5 | No | 29 | 1,225 |
| Converse, 291—Sabine Parish | | | | | | | | |
| Allen Sanitarium■ | Gen | Indiv | 24 | 6 | 4 | No | 36 | 605 |
| Covington, 3,208—St. Tammany Parish | | | | | | | | |
| New Fenwick Sanitarium | N&M | Indiv | 64 | 20 | .. | No | ... | 240 |
| Crowley, 7,656—Acadia Parish | | | | | | | | |
| Crowley Sanitarium■ | Gen | Indep | 18 | 10 | 4 | No | 24 | 714 |
| De Ridder, 3,737—Beauregard Parish | | | | | | | | |
| De Ridder Sanitarium■ | Gen | Indep | 16 | 2 | .. | No | ... | ..... |

## LOUISIANA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Elizabeth, 3,000—Allen Parish | | | | | | | | |
| Industrial Lumber Co. Hospital■ | Gen | Indus | 20 | 8 | 2 | Yes | 12 | 187 |
| Eunice, 3,597—St. Landry Parish | | | | | | | | |
| Eunice Clinic and Hosp.■ | Gen | Indep | 18 | 5 | 2 | Yes | ... | 171 |
| Haynesville, 2,541—Claiborne Parish | | | | | | | | |
| Haynesville Hospital■ | Gen | Indep | 25 | 9 | 2 | No | 15 | 405 |
| Jackson, 3,966—East Feliciana Parish | | | | | | | | |
| East Louisiana State Hospital+ | N&M | State | 2,600 | 2,975 | .. | No | ... | 479 |
| Parker Hospital | (Included in East Louisiana State Hospital) | | | | | | | |
| Lafayette, 14,635—Lafayette Parish | | | | | | | | |
| Lafayette Sanitarium■ | Gen | Indep | 25 | 12 | 1 | Yes | 19 | 394 |
| St. John Hospital | Gen | Indiv | 30 | 15 | .. | No | ... | ..... |
| Lake Charles, 15,791—Calcasieu Parish | | | | | | | | |
| St. Patrick's Sanitarium◊■ | Gen | Church | 75 | 45 | 6 | No | 100 | 1,733 |
| Lecompte, 1,247—Rapides Parish | | | | | | | | |
| Lecompte Sanitarium■ | Gen | Part | 18 | 5 | 2 | Yes | 68 | 248 |
| Mansfield, 3,837—De Soto Parish | | | | | | | | |
| ■ | Gen | Indep | 32 | 10 | 4 | No | 22 | 487 |
| | Gen | Indep | 35 | 7 | 2 | No | 28 | 398 |
| Monroe, 26,028—Ouachita Parish | | | | | | | | |
| St. Francis' Sanitarium◊ | Gen | Church | 125 | 75 | 15 | No | 187 | 3,223 |
| Natchitoches, 4,547—Natchitoches Parish | | | | | | | | |
| Natchitoches Hospital■ | Gen | Indep | 29 | 3 | 4 | No | 31 | 317 |
| New Iberia, 8,003—Iberia Parish | | | | | | | | |
| Dauterive Hospital■ | Gen | Indiv | 20 | 9 | 2 | No | 14 | 331 |
| New Orleans, 458,762—Orleans Parish | | | | | | | | |
| Charity Hospital★+◊■▲ | Gen | State | 1,756 | 1,779 | 53 | Yes | 2,100 | 42,636 |
| City Hospital for Mental Diseases | N&M | City | 100 | 52 | .. | No | ... | 560 |
| Delgado Memorial Hosp. | (Included in Charity Hospital) | | | | | | | |
| De Paul Sanitarium | N&M | Church | 250 | 250 | .. | No | ... | 245 |
| Dibert Tuberculosis Hosp. | (Included in Charity Hospital) | | | | | | | |
| Eye, Ear, Nose and Throat Hospital | EENT | Indep | 68 | 20 | .. | Yes | ... | 5,115 |
| Flint-Goodridge Hospital of Dillard Univ. (col.)★◊ | Gen | Indep | 88 | New | 12 | Yes | ... | ..... |
| French Hospital | Gen | Frat | 62 | 36 | 13 | No | 229 | 1,039 |
| Hotel Dieu Hospital★◊ | Gen | Church | 238 | 170 | 23 | No | 569 | 6,049 |
| Illinois Central Hospital■ | Indus | Indus | 60 | 26 | .. | Yes | ... | 989 |
| Mercy Hospital◊ | Gen | Church | 125 | 62 | 28 | Yes | 342 | 2,363 |
| New Orleans Hosp. & Disp. for Women and Children | Gen | Indep | 35 | 20 | 12 | Yes | ... | ..... |
| Orleans Tuber. Hospital■ | TB | Indep | 100 | 54 | .. | No | ... | 54 |
| Richard Milliken Mem. Hospital | (Included in Charity Hospital) | | | | | | | |
| Southern Baptist Hosp.★◊ | Gen | Church | 198 | 112 | 24 | No | 321 | 6,742 |
| Touro Infirmary★+◊ | Gen | Indep | 329 | 246 | 44 | Yes | 1,556 | 8,654 |
| U. S. Marine Hospital★■ | Gen | USPHS | 470 | 388 | .. | Yes | ... | 5,001 |
| Opelousas, 6,299—St. Landry Parish | | | | | | | | |
| St. Landry Sanitarium | Gen | Indiv | 15 | 7 | .. | No | ... | ..... |
| ■ | Gen | Part | 12 | 5 | .. | No | 31 | 342 |
| rish | | | | | | | | |
| | Gen | Part | 30 | 8 | 5 | No | 16 | 380 |
| h | | | | | | | | |
| | N&M | State | 1,500 | 1,451 | .. | No | ... | 376 |
| Plaquemine, 5,124—Iberville Parish | | | | | | | | |
| Plaquemine Sanitarium■ | Gen | Indep | 25 | 8 | 5 | No | 16 | 1,089 |
| Ruston, 4,400—Lincoln Parish | | | | | | | | |
| Ruston-Lincoln Sanit.■ | Gen | Indep | 30 | 5 | 1 | No | 27 | 401 |
| Shreveport, 76,655—Caddo Parish | | | | | | | | |
| Highland Sanitarium◊■ | Gen | Part | 116 | 50 | 8 | Yes | 193 | 2,479 |
| Mercy Sanitarium (col.) | Gen | Part | 16 | 6 | 2 | Yes | 11 | 102 |
| North Louisiana Sanit.◊■ | Gen | Indep | 100 | 51 | 12 | Yes | 150 | 4,224 |
| Pines Sanatorium■ | TB | Indep | 100 | 75 | .. | Yes | ... | ..... |
| T. E. Schumpert Memorial Sanitarium★◊■▲ | Gen | Church | 150 | 50 | 6 | Yes | 120 | 2,000 |
| Shreveport Charity Hospital★◊■ | Gen | State | 450 | 334 | 16 | No | 562 | 8,607 |
| Shriners Hospital for Crippled Children+■ | Ortho | Frat | 60 | 60 | .. | Yes | ... | 153 |
| Tri-State Hospital◊■ | Gen | Indep | 128 | 55 | 4 | No | 177 | 1,926 |
| Winnsboro, 1,965—Franklin Parish | | | | | | | | |
| Winnsboro Sanitarium■ | Gen | Indep | 28 | 10 | .. | No | ... | ..... |
| Zachary, 626—East Baton Rouge Parish | | | | | | | | |
| Greenwell Springs Sanat.■ | TB | State | 70 | 58 | .. | No | ... | 70 |
| **Related Institutions** | | | | | | | | |
| Alexandria, 23,025—Rapides Parish | | | | | | | | |
| State Colony and Training School■▲ | MenDef | State | 625 | 504 | .. | No | ... | 202 |
| Baton Rouge, 30,729—East Baton Rouge Parish | | | | | | | | |
| Louisiana State Penitentiary Hospital | Inst | State | 40 | 18 | .. | No | ... | ..... |
| Ferriday, 2,502—Concordia Parish | | | | | | | | |
| Ferriday Hospital■ | Gen | Part | 6 | 3 | 2 | No | 10 | 127 |
| Homer, 2,909—Claiborne Parish | | | | | | | | |
| Homer Sanitarium■ | Gen | Indiv | 10 | 1 | .. | Yes | ... | 20 |
| New Orleans, 458,762—Orleans Parish | | | | | | | | |
| Isolation Hospital | Iso | Cy&Co | 125 | 15 | .. | No | 2 | 883 |
| New Orleans Convalescent Home | Conv | Indep | 30 | 20 | .. | No | ... | 251 |
| New Orleans Home for Incurables | Incur | Indep | 130 | 108 | .. | No | ... | ..... |
| St. Anna's Asylum | Inst | Church | 10 | 4 | .. | No | ... | ..... |
| Soldiers' Home | Inst | State | 30 | 24 | .. | No | ... | 7 |

Summary for Louisiana:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 58 | 11,391 | 9,590 | 125,052 |
| Related institutions | 9 | 1,006 | 697 | 990 |
| Totals | 67 | 12,397 | 10,287 | 126,042 |
| Refused registration | 1 | 26 | | |

Key to symbols and abbreviations is on page 2078

## MAINE

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Augusta, 17,198—Kennebec Co. | | | | | | | | |
| Augusta General Hospital◊ | Gen | Indep | 85 | 41 | 20 | No | 128 | 1,310 |
| Augusta State Hospital◊ | N&M | State | 970 | 1,208 | .. | No | ... | 189 |
| Bangor, 28,749—Penobscot Co. | | | | | | | | |
| Bangor Sanatorium | TB | Indep | 30 | 17 | .. | No | ... | 42 |
| Bangor State Hospital◊ | N&M | State | 875 | 938 | .. | Yes | ... | 194 |
| Eastern Maine General Hospital★◊ | Gen | Indep | 159 | 121 | 14 | Yes | 84 | 3,409 |
| Paine Private Hospital■ | Gen | Indiv | 25 | 14 | .. | ... | 20 | 386 |
| Bar Harbor, 4,486—Hancock Co. | | | | | | | | |
| Mount Desert Island Hosp.■ | Gen | Indep | 34 | 17 | 4 | No | 29 | 778 |
| Bar Mills, 165—York Co. | | | | | | | | |
| Buxton-Hollis Hospital■ | Gen | Indiv | 12 | 4 | 2 | Yes | 9 | 250 |
| Bath, 9,110—Sagadahoc Co. | | | | | | | | |
| Bath City Hospital◊◘ | Gen | Indep | 50 | 29 | 8 | No | 120 | 720 |
| Belfast, 4,993—Waldo Co. | | | | | | | | |
| Bradbury Memorial Hosp.■ | Gen | Indep | 25 | 10 | 5 | Yes | 18 | 219 |
| Waldo County General Hospital◊■ | Gen | Indep | 27 | 15 | 6 | Yes | 84 | 559 |
| Biddeford, 17,633—York Co. | | | | | | | | |
| Trull Hospital◊ | Gen | Part | 40 | 30 | 10 | No | 155 | 840 |
| Webber Hospital◊■ | Gen | Indep | 50 | 30 | 10 | Yes | 121 | 792 |
| Blue Hill, 1,439—Hancock Co. | | | | | | | | |
| Blue Hill Memorial Hospital◊◘ | Gen | Indep | 25 | 18 | 6 | Yes | 40 | 431 |
| Boothbay Harbor, 2,076—Lincoln Co. | | | | | | | | |
| St. Andrew's Hospital | Gen | Indep | 20 | 4 | 4 | Yes | 21 | 320 |
| Brunswick, 6,144—Cumberland Co. | | | | | | | | |
| Brunswick Hospital◊ | Gen | Indiv | 46 | 23 | 6 | No | ... | 721 |
| Calais, 5,470—Washington Co. | | | | | | | | |
| Calais Hospital◊■ | Gen | Indiv | 47 | 25 | 5 | Yes | 39 | 926 |
| Cape Cottage, 33—Cumberland Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 30 | 10 | .. | Yes | ... | 339 |
| Caribou, 7,248—Aroostook Co. | | | | | | | | |
| Cary Memorial Hospital◊ | Gen | City | 40 | 25 | 10 | Yes | 107 | 874 |
| Castine, 726—Hancock Co. | | | | | | | | |
| Castine Community Hosp. | Gen | Indep | 10 | 3 | 5 | No | 30 | 200 |
| Eagle Lake, 1,780—Aroostook Co. | | | | | | | | |
| Northern Maine Gen. Hosp. | Gen | Church | 32 | 18 | .. | No | ... | 391 |
| Ellsworth, 3,557—Hancock Co. | | | | | | | | |
| Hurley Private Hospital | Gen | Indiv | 12 | 6 | 5 | Yes | ... | ..... |
| Fairfield, 3,529—Somerset Co. | | | | | | | | |
| Central Maine Sanatorium | TB | State | 188 | 165 | .. | No | ... | 158 |
| Farmington, 1,737—Franklin Co. | | | | | | | | |
| Franklin County Memorial Hospital■ | Gen | Indep | 49 | 31 | 10 | Yes | 67 | 878 |
| Ft. Fairfield, 2,616—Aroostook Co. | | | | | | | | |
| Community Hospital■ | Gen | Indep | 20 | 8 | 7 | No | 55 | 493 |
| Gardiner, 5,609—Kennebec Co. | | | | | | | | |
| Gardiner General Hosp.◊ | Gen | Indep | 40 | 18 | 12 | Yes | 139 | 788 |
| Greenville Junction, 345—Piscataquis Co. | | | | | | | | |
| Charles A. Dean Hospital | Gen | Indep | 23 | 8 | 4 | No | 35 | 245 |
| Greenwood Mountain,—Oxford Co. | | | | | | | | |
| Western Maine Sanat.+◘ | TB | State | 149 | 141 | .. | No | ... | 98 |
| Houlton, 6,865—Aroostook Co. | | | | | | | | |
| Aroostook Hospital◊ | Gen | Indep | 35 | 23 | 8 | No | 84 | 899 |
| Madigan Memorial Hosp.◊ | Gen | Church | 33 | 19 | 7 | No | 47 | 574 |
| Lewiston, 34,948—Andrascoggin Co. | | | | | | | | |
| Central Maine General Hospital★◊◘ | Gen | Indep | 109 | 82 | 16 | Yes | 198 | 1,873 |
| St. Mary's General Hospital★◊■ | Gen | Church | 136 | 92 | 14 | Yes | 116 | 2,158 |
| Old Town, 7,266—Penobscot Co. | | | | | | | | |
| Deering Private Hospital | Gen | Indiv | 12 | 3 | 5 | No | 9 | 100 |
| Portland, 70,810—Cumberland Co. | | | | | | | | |
| Children's Hospital◎■ | Chil | Indep | 100 | 74 | .. | Yes | ... | 483 |
| Farrington Hospital■▲ | Gen | City | 86 | 72 | 8 | No | 46 | 350 |
| Dr. Leighton's Private Maternity Hospital | Mater | Indiv | 16 | 11 | 16 | No | 146 | 360 |
| Maine Eye and Ear Infirmary General Hospital◊■ | Gen | Indep | 110 | 108 | 20 | Yes | 323 | 3,282 |
| Maine General Hosp.tal★◊■ | Gen | Indep | 199 | 135 | 26 | Yes | 201 | 3,247 |
| Queen's Hospital◊■ | Gen | Church | 52 | 30 | 8 | No | 123 | 617 |
| St. Barnabas Hospital◊ | Gen | Indiv | 75 | 52 | 15 | No | 148 | 1,603 |
| State Street Hospital◊ | Gen | Indep | 50 | 25 | 12 | Yes | ... | ..... |
| U. S. Marine Hospital■ | Gen | USPHS | 72 | 73 | .. | Yes | ... | 797 |
| Dr. C. P. Wescott Sanat. | Nerv | Indiv | 14 | 8 | .. | No | ... | 37 |
| Presque Isle, 4,662—Aroostook Co. | | | | | | | | |
| Northern Maine Sanat.◘ | TB | State | 117 | 110 | .. | No | ... | 121 |
| Presque Isle Gen. Hosp.◊ | Gen | Indep | 50 | 35 | 9 | Yes | 115 | 1,282 |
| Rockland, 9,075—Knox Co. | | | | | | | | |
| Knox County Gen. Hosp.◊■ | Gen | Indep | 67 | 45 | 7 | Yes | 110 | 1,131 |
| Rumford, 10,340—Oxford Co. | | | | | | | | |
| Rumford Community Hospital◊ | Gen | Indep | 50 | 30 | 8 | Yes | 102 | 663 |
| Sanford, 13,392—York Co. | | | | | | | | |
| Henrietta D. Goodall Hospital◊■ | Gen | Indep | 42 | 17 | 8 | No | ... | 646 |
| Skowhegan, 6,433—Somerset Co. | | | | | | | | |
| Kennebec Valley Hosp'tal◊ | Gen | Indiv | 40 | 31 | 3 | Yes | 20 | 1,148 |
| Waterville, 15,454—Kennebec Co. | | | | | | | | |
| Elm City Hospital◊ | Gen | Indiv | 21 | 17 | 4 | ... | 30 | 342 |
| Sisters Hospital◊■ | Gen | Church | 85 | 58 | 10 | Yes | 83 | 2,070 |
| Thayer Hospital | Gen | Indep | 30 | 15 | 4 | No | 37 | 649 |
| Westbrook, 10,807—Cumberland Co. | | | | | | | | |
| Westbrook Hospital | Gen | Indiv | 18 | 10 | 7 | No | 64 | 267 |
| York Village, 1,230—York Co. | | | | | | | | |
| York Hospital◘ | Gen | Indep | 16 | 11 | 6 | No | 53 | 248 |

### MAINE—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Auburn, 18,571—Andrascoggin Co. | | | | | | | | |
| Auburn Private Hospital | Gen | Indiv | 10 | 4 | 6 | No | 80 | ..... |
| Augusta, 17,198—Kennebec Co. | | | | | | | | |
| Veterans Admin. Home■▲ | Inst | VetAd | 324 | 211 | .. | No | ... | 662 |
| Bangor, 28,749—Penobscot Co. | | | | | | | | |
| Fellows Private Hospital | Gen | Indiv | 17 | 6 | 1 | No | 1 | ..... |
| Friendship Hospital | Gen | Indiv | 10 | 5 | 2 | No | 2 | 245 |
| Home Private Hospital | Mater | Indiv | 12 | 3 | 12 | No | 71 | 70 |
| Laura Purcell Hospital | Gen | Indiv | 15 | 3 | 5 | No | 10 | 150 |
| Stinson Private Hospital | Gen | Indiv | 14 | 8 | 5 | No | ... | ..... |
| Bridgton, 2,659—Cumberland Co. | | | | | | | | |
| Northern Cumberland Memorial Hospital | Gen | Indep | 10 | 1 | 4 | No | 2 | 33 |
| Dexter, 4,063—Penobscot Co. | | | | | | | | |
| Plummer Memorial Hosp. | Gen | Indep | 12 | 8 | 3 | No | ... | ..... |
| Dover-Foxcroft, 3,750—Piscataquis Co. | | | | | | | | |
| Dover-Foxcroft Hospital | Gen | Indiv | 9 | 3 | 2 | No | 6 | 150 |
| East Parsonfield, 306—York Co. | | | | | | | | |
| Restland | Conv | Indep | 50 | 25 | .. | No | ... | 25 |
| Freeport, 973—Cumberland Co. | | | | | | | | |
| Freeport Hospital | Gen | Part | 12 | 5 | 4 | No | ... | ..... |
| Mars Hill, 1,837—Aroostook Co. | | | | | | | | |
| Mars Hill Hospital | Gen | Indiv | 8 | 3 | .. | No | ... | ..... |
| Millinocket, 5,830—Penobscot Co. | | | | | | | | |
| Bryant Hospital■ | Gen | Indiv | 7 | 6 | 3 | No | 39 | 234 |
| Portland, 70,810—Cumberland Co. | | | | | | | | |
| Dr. Black's Private Maternity Hospital◘ | Mater | Indiv | 10 | 5 | 10 | No | ... | 20 |
| Portland Isolation Cottage | Iso | City | 25 | 2 | .. | No | ... | 34 |
| Pownal, 462—Cumberland Co. | | | | | | | | |
| Pownal State School | MenDef | State | 810 | 674 | .. | Yes | ... | 26 |
| Strong, 878—Franklin Co. | | | | | | | | |
| Dr. Bell's Private Hospital | Gen | Indiv | 12 | 10 | .. | No | ... | 486 |
| Union, 1,060—Knox Co. | | | | | | | | |
| Jones Sanitarium | N&M | Indep | 30 | 28 | .. | No | ... | 8 |

Summary for Maine:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 54 | 5,003 | 4,163 | 41,497 |
| Related institutions | 19 | 1,397 | 1,010 | 2,303 |
| Totals | 73 | 6,400 | 5,173 | 43,800 |
| Refused registration | 5 | 61 | | |

## MARYLAND

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aberdeen Proving Ground, 215—Harford Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 50 | 4 | .. | Yes | ... | 144 |
| Annapolis, 12,531—Anne Arundel Co. | | | | | | | | |
| Annapolis Emergency Hospital◊■ | Gen | State | 80 | 35 | 20 | Yes | 155 | 1,347 |
| U. S. Naval Hospital■ | Gen | Navy | 224 | 59 | .. | No | ... | 1,741 |
| Baltimore, 804,874—Baltimore City | | | | | | | | |
| Baltimore City Hospitals (General)★+■ | Gen | City | 630 | 525 | 6 | Yes | 118 | 3,768 |
| Baltimore City Hospitals (Psychopathic)+■ | N&M | City | 325 | 301 | .. | Yes | ... | 266 |
| Baltimore City Hospitals (Tuberculosis)+■ | TB | City | 172 | 128 | .. | No | ... | 465 |
| Baltimore Eye, Ear and Throat Charity Hosp.+ | EENT | Indep | 60 | 25 | .. | Yes | ... | 2,656 |
| Bon Secours Hospital◊ | Gen | Church | 60 | 51 | 12 | Yes | ... | 1,027 |
| Children's Hospital School | Ortho | Indep | 120 | 82 | .. | No | ... | 238 |
| Church Home & Infirm.★◊ | Gen | Church | 157 | 118 | 19 | Yes | 258 | 2,778 |
| Franklin Square Hosp.★◊ | Gen | Indep | 129 | 79 | 15 | No | 276 | 2,402 |
| Hospital for Women★◊ | Gen | Indep | 111 | 102 | 24 | Yes | 588 | 1,984 |
| Howard A. Kelly Hospital | Sk&Ca | Indep | 30 | 11 | .. | Yes | ... | ..... |
| Jas. Lawrence Kernan Hospital and Indus. School for Crippled Children■ | Ortho | Indep | 80 | 68 | .. | Yes | ... | 166 |
| Johns Hopkins Hosp.★+◊▲ | Gen | Indep | 782 | 610 | 70 | Yes | 1,072 | 11,637 |
| Johnston Memorial Children's Hospital | (Children's Dept. of Union Memorial Hosp.) | | | | | | | |
| Maryland General Hosp.★◊■ | Gen | Church | 203 | 166 | 25 | Yes | 167 | 3,730 |
| Mercy Hospital★+◊ | Gen | Church | 275 | 250 | 26 | Yes | 442 | 5,178 |
| Mt. Hope Retreat⊙ | N&M | Church | 670 | 670 | .. | No | ... | 60 |
| Presbyterian Eye, Ear and Throat Charity Hosp.◘ | EENT | Church | 50 | 9 | .. | Yes | ... | 2,338 |
| Provident Hospital and Free Dispensary (col.)★◊ | Gen | Indep | 111 | 81 | 9 | Yes | 141 | 1,586 |
| St. Agnes' Hospital★+◊ | Gen | Church | 187 | 142 | 18 | Yes | 320 | 5,129 |
| St. Joseph's Hospital★+◊■ | Gen | Church | 254 | 212 | 34 | Yes | 640 | 5,554 |
| Sinai Hospital★+◊ | Gen | Indep | 231 | 189 | 40 | Yes | 744 | 4,552 |
| South Baltimore General Hospital★◊■ | Gen | Indep | 100 | 60 | 15 | Yes | 137 | 2,109 |
| Sydenham Hospital■ | Iso | City | 110 | 65 | .. | No | ... | 1,379 |
| Union Memorial Hosp.★+◊ | Gen | Indep | 311 | 214 | 24 | Yes | 24 | 4,367 |
| U. S. Marine Hospital★■ | Gen | USPHS | 222 | 200 | .. | Yes | ... | 2,010 |
| University of Maryland Hospital★+◊■ | Gen | State | 250 | 221 | 25 | Yes | 291 | 5,565 |
| Volunteers of America Hospital | Gen | Indep | 36 | 10 | 4 | Yes | 45 | 1,153 |
| West Baltimore General Hospital★+◊■ | Gen | Indep | 165 | 101 | 20 | Yes | 311 | 2,309 |
| Cambridge, 8,544—Dorchester Co. | | | | | | | | |
| Cambridge-Maryland Hosp.◊ | Gen | Indep | 75 | 31 | 14 | Yes | 148 | 733 |
| Eastern Shore State Hosp. | N&M | State | 342 | 319 | .. | No | ... | 77 |
| Catonsville, 4,560—Baltimore Co. | | | | | | | | |
| Gundry Sanitarium | N&M | Indiv | 45 | ... | .. | No | ... | 10 |
| Harlem Lodge | N&M | Part | 35 | 28 | .. | No | ... | 68 |
| Spring Grove State Hosp. | N&M | State | 1,500 | 1,250 | .. | No | ... | 496 |
| Crisfield, 3,850—Somerset Co. | | | | | | | | |
| Edward W. McCready Memorial Hospital◊■ | Gen | County | 34 | 15 | 5 | No | 49 | 345 |

Key to symbols and abbreviations is on page 2078

## MARYLAND—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| )—Anne Arundel Co. | | | | | | | | |
| | )N&M | State | 950 | 867 | .. | No | ... | 265 |
| Co. | | | | | | | | |
| | TB | Indiv | 22 | 23 | .. | No | ... | ..... |
| ■ | Gen | Church | 90 | 59 | 10 | Yes | 162 | 1,903 |
| Memorial Hospital■ | Gen | Cy&Co | 128 | 89 | 20 | Yes | 288 | 2,918 |
| Easton, 4,092—Talbot Co. | | | | | | | | |
| Emergency Hospital◊■ | Gen | Indep | 72 | 48 | 10 | Yes | 140 | 1,576 |
| | en | Army | 60 | 17 | .. | Yes | ... | 668 |
| | en | Part | 53 | 27 | 7 | No | 101 | 902 |
| | &M | Indep | 25 | 15 | .. | No | ... | 29 |
| Ft. George G. Meade,—Anne Arundel Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 84 | 22 | .. | Yes | ... | 1,004 |
| F | | | | | | | | |
| | | Army | 12 | 4 | .. | No | ... | 1,485 |
| F Co. | | | | | | | | |
| | Gen | Army | 28 | 10 | .. | Yes | ... | 335 |
| F | | | | | | | | |
| ■ | Gen | Indep | 112 | 58 | 13 | Yes | 182 | 1,856 |
| F | | | | | | | | |
| ■ | en | State | 35 | 14 | 5 | Yes | 44 | 500 |
| Co. | | | | | | | | |
| pital◊■ | en | County | 109 | 80 | 16 | Yes | 221 | 2,486 |
| Havr rd Co. | | | | | | | | |
| Ha | Gen | City | 40 | 25 | 10 | Yes | ... | ..... |
| Henr | | | | | | | | |
| Maryland Tuberculosis Sanatorium (col.) | TB | State | 156 | 128 | .. | No | ... | 231 |
| Ijamsville, 72—Frederick Co. | | | | | | | | |
| Riggs Cottage Sanitarium | N&M | Indiv | 25 | 25 | .. | No | ... | 11 |
| Laurel, 2,532—Prince Georges Co. | | | | | | | | |
| Laurel Sanitarium | N&M | Indep | 75 | 68 | .. | No | ... | 80 |
| Mount Wilson,—Baltimore Co. | | | | | | | | |
| Mt. Wilson Branch, Maryland Tuberculosis Sanat. | TB | State | 156 | 157 | .. | No | ... | 185 |
| Olney, 83—Montgomery Co. | | | | | | | | |
| Montgomery County General Hospital■ | Gen | Indep | 37 | 28 | 8 | No | 78 | 956 |
| Perry Point, 80—Cecil Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 1,015 | 993 | .. | No | ... | 519 |
| Prince Frederick, 200—Calvert Co. | | | | | | | | |
| Calvert County Hospital■ | Gen | County | 40 | 15 | 6 | No | ... | ..... |
| Reisterstown, 1,030—Baltimore Co. | | | | | | | | |
| Mt. Pleasant+ | TB | Indep | 60 | 57 | .. | No | ... | 66 |
| Rockville, 1,422—Montgomery Co. | | | | | | | | |
| Chestnut Lodge Sanitarium | N&M | Indiv | 30 | 25 | .. | No | ... | 32 |
| Salisbury, 10,997—Wicomico Co. | | | | | | | | |
| Eastern Shore Tuberculosis Sanatorium | TB | State | 50 | 49 | .. | No | ... | 77 |
| Peninsula General Hosp.◊ | Gen | Indep | 88 | 60 | 16 | No | 317 | 2,127 |
| Sparrows Point, 4,000—Baltimore Co. | | | | | | | | |
| Sparrows Point Hospital■ | Indus | Indus | 16 | New | .. | Yes | ... | ..... |
| State Sanatorium, 260—Frederick Co. | | | | | | | | |
| Maryland Tuber. Sanat. | TB | State | 445 | 441 | .. | No | ... | 698 |
| Sykesville, 661—Carroll Co. | | | | | | | | |
| Springfield State Hosp.+ | N&M | State | 2,400 | 2,261 | .. | No | ... | 278 |
| *Towson, 3,500—Baltimore Co.* | | | | | | | | |
| Aigburth Manor | Nerv | Indiv | 23 | 18 | .. | ... | ... | 55 |
| Hospital for Consumptives | TB | Indep | 185 | 176 | 5 | No | ... | 215 |
| Sheppard and Enoch Pratt *Hospital*+⊙ | N&M | Indep | 275 | 247 | .. | *No* | ... | 248 |

### Related Institutions

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Baltimore, 804,874—Baltimore City | | | | | | | | |
| Baltimore City Jail Hosp.■ | Inst | City | 32 | 14 | .. | No | ... | 86 |
| Edgewood Sanitarium | Conv | Indiv | 27 | 18 | .. | ... | ... | ..... |
| Happy Hills Convalescent Home for Children | Conv | Indep | 50 | 48 | .. | No | ... | ..... |
| Home for Incurables | Incur | Indep | 117 | 100 | .. | No | ... | ..... |
| Home for the Aged of the M. E. Church | Inst | Church | 18 | 18 | .. | No | ... | ..... |
| Maryland Penitentiary Hospital■ | Inst | State | 45 | 27 | .. | Yes | ... | 1,009 |
| Strathmore Park Hospital | Gen | Indiv | 15 | 4 | 3 | ... | ... | ..... |
| Cheltenham, 37—Prince Georges Co. | | | | | | | | |
| House of Reformation (col.) | Inst | State | 14 | 8 | .. | ... | ... | 45 |
| College Park, 316—Prince Georges Co. | | | | | | | | |
| Infirmary, University of Maryland | Inst | State | 12 | 4 | .. | No | ... | 100 |
| Cumberland, 37,747—Allegany Co. | | | | | | | | |
| Sylvan Retreat | N&M | County | 90 | 80 | .. | No | ... | ..... |
| Ellicott City, 1,216—Howard Co. | | | | | | | | |
| Beth Hillel Sanitarium | MenDef | Indep | 25 | 5 | .. | No | ... | 11 |
| Frederick, 14,434—Frederick Co. | | | | | | | | |
| Maryland State School for the Deaf | Inst | State | 10 | 2 | .. | No | ... | 25 |
| | | Indiv | 16 | 10 | 2 | No | ... | ..... |
| Jessups, 161—Howard Co. | | | | | | | | |
| Hill Top School | MenDef | Indiv | 24 | 20 | .. | ... | ... | ..... |
| Maryland House of Correction Hospital■ | Inst | State | 73 | 32 | .. | No | ... | 1,170 |
| Leonardtown, 697—St. Marys Co. | | | | | | | | |
| St. Marys County Hosp.■ | Gen | Indep | 30 | 5 | 6 | No | 28 | 98 |
| Loch Raven, 62—Baltimore Co. | | | | | | | | |
| Maryland Training School for Boys | Inst | State | 8 | 1 | .. | No | ... | 33 |

## MARYLAND—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Orange Grove, (Catonsville P.O.)—Baltimore Co. | | | | | | | | |
| St. *Gabriel's Home for* Convalescent Girls | Conv | Church | 25 | 25 | .. | No | ... | 48 |
| Owings Mills, 215—Baltimore Co. | | | | | | | | |
| Rosewood State Training School | MenDef | State | 1,050 | 1,060 | .. | ... | ... | ..... |
| | &M | Part | 35 | 20 | .. | No | ... | 36 |
| | onv | Indiv | 15 | 14 | .. | No | ... | ..... |
| Co. | | | | | | | | |
| | &M | Indiv | 22 | 11 | .. | ... | ... | ..... |

| Summary for Maryland: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 69 | 15,085 | 12,513 | 100,813 |
| Related institutions | 20 | 1,620 | 1,412 | 2,650 |
| *Totals* | 89 | 16,705 | 13,925 | 103,463 |
| Refused registration | 4 | 91 | | |

## MASSACHUSETTS

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Acushnet, 4,092—Bristol Co. | | | | | | | | |
| Acushnet Sanit. and Hosp. | Gen | Indiv | 35 | 16 | 16 | Yes | 63 | 446 |
| Adams, 12,697—Berkshire Co. | | | | | | | | |
| W. B. Plunkett Mem. Hosp.■ | Gen | City | 42 | 23 | 12 | No | 147 | 714 |
| Amesbury, 11,899—Essex Co. | | | | | | | | |
| ■ | Gen | Indep | 30 | 15 | 6 | No | 85 | 854 |
| o. | | | | | | | | |
| | N&M | Indep | 60 | 47 | .. | No | ... | 130 |
| ■ | Gen | Indep | 80 | 43 | 20 | No | 338 | 2,025 |
| ■ | TB | County | 60 | 53 | .. | No | ... | 85 |
| Sturdy Memorial Hosp.◊■ | Gen | Indep | 104 | 42 | 21 | No | 291 | 1,407 |
| Ayer, 3,060—Middlesex Co. | | | | | | | | |
| Community Mem. Hosp.■ | Gen | Indep | 22 | 10 | 7 | Yes | 59 | 315 |
| | N&M | VetAd | 644 | 536 | .. | Yes | ... | 43 |
| McLean Hospital+◊ | N&M | Indep | 232 | 209 | .. | No | ... | 115 |
| Beverly, 25,086—Essex Co. | | | | | | | | |
| Beverly Hospital★◊■ | Gen | Indep | 121 | 90 | 20 | Yes | 291 | 3,409 |
| Boston, 781,188—Suffolk Co. | | | | | | | | |
| Adams Nervine | N&M | Indep | 30 | 30 | .. | No | ... | ..... |
| Bay State Hospital■ | Gen | Indep | 21 | 3 | 6 | No | 88 | 824 |
| Beth Israel Hospital★+◊■ | Gen | Indep | 194 | 135 | .. | Yes | ... | 4,396 |
| Boston City Hosp.★+◊■▲ | Gen | City | 1,159 | 1,038 | 129 | Yes | 2,005 | 25,716 |
| Boston Lying-In Hospital■ | Mater | Indep | 204 | 128 | 204 | Yes | 2,763 | 3,405 |
| *Boston Psychopathic Hos*pital+ | N&M | State | 110 | 85 | .. | Yes | ... | 1,914 |
| *Boston Sanatorium*■ | *TB* | *City* | *580* | *416* | .. | *No* | ... | *492* |
| Boston State Hospital+ | N&M | State | 2,308 | 2,262 | .. | No | ... | 706 |
| Carney Hospital★◊ | Gen | Church | 190 | 116 | 20 | Yes | 339 | 2,929 |
| Children's Hospital+◊■ | Chil | Indep | 254 | 165 | 32 | Yes | ... | 5,158 |
| Codman Square Hospital | Gen | Indep | 19 | 12 | 12 | No | 148 | 497 |
| Collis P. Huntington Memorial Hospital+■ | Sk&Ca | Indep | 25 | 18 | .. | Yes | ... | 1,071 |
| Emerson Hospital■ | Gen | Indep | 40 | 30 | 25 | No | 376 | 803 |
| Evangeline Booth Maternity Hosp. and Home■ | Mater | Church | 30 | 25 | 35 | No | 559 | 796 |
| Faulkner Hospital◊■ | Gen | Indep | 130 | 89 | 20 | No | 411 | 2,047 |
| Fenway Hospital◊■ | Gen | Indiv | 40 | 20 | 3 | No | 12 | 560 |
| Glenside Sanat. & Hosp. | N&M | Indiv | 50 | 36 | .. | Yes | ... | 61 |
| Greater Boston Bikur Cholim Hospital | Gen | Indep | 42 | 23 | .. | No | ... | 85 |
| Harley Private Hospital◊ | Gen | Indep | 60 | 53 | 21 | No | 429 | 1,760 |
| Hart Private Hospital◊ | Gen | Indiv | 60 | 33 | 25 | No | 260 | 973 |
| House of the Good Samaritan | Cardiac-Cancer | Indep | 75 | 68 | .. | Yes | ... | 258 |
| Infants' Hospital+ | Chil | Indep | 27 | 46 | 38 | No | ... | 948 |
| Jackson Memorial-Boston Floating Hospital+■ | Chil | Indep | 48 | New | .. | ... | ... | 48 |
| Long Island Hospital★+◊■ | Gen | City | 535 | 456 | 15 | Yes | 26 | 1,608 |
| MacLeod Hospital | Gen | Indep | 25 | 20 | 5 | No | 19 | 545 |
| Massachusetts Eye and Ear Infirmary+■ | EENT | Indep | 219 | 135 | 12 | Yes | ... | 7,720 |
| Massachusetts General Hospital★+◊■ | Gen | Indep | 405 | 381 | .. | Yes | ... | 7,200 |
| Massachusetts General Hospital (The Baker Memorial) | Gen | Indep | 193 | 89 | 31 | Yes | 40 | 1,973 |
| Massachusetts Memorial *Hospitals*★+◊■ | Gen | Indep | 513 | 329 | 91 | Yes | 1,385 | 9,125 |
| Massachusetts Women's *Hospital*◊ | Gen | Indep | 62 | 37 | 20 | No | 306 | 1,109 |
| New England Baptist Hospital◊■ | Gen | Indep | 150 | 111 | 25 | No | 228 | 4,174 |
| New England Deaconess Hospital+◊■ | Gen | Church | 265 | 229 | .. | Yes | 1 | 5,957 |
| New England Hospital for Women and Children★◊■ | Gen | Indep | 185 | 105 | 75 | Yes | 1,152 | 2,806 |
| Peter Bent Brigham Hospital★+◊■ | Gen | Indep | 247 | 213 | .. | Yes | ... | 4,121 |
| Riverbank Hospital | Gen | Indiv | 32 | 9 | 6 | No | 37 | 317 |
| Robert Breck Brigham Hospital■ | Gen | Indep | 115 | 94 | .. | No | ... | 466 |
| Roxbury Hospital■ | Gen | Church | 24 | 14 | 7 | Yes | 87 | 753 |

Key to symbols and abbreviations is on page 2078

## MASSACHUSETTS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Elizabeth's Hosp.★◊ | Gen | Church | 250 | 187 | 50 | Yes | 1,030 | 5,174 |
| St. Margaret's Hospital◊ | Gen | Church | 48 | 44 | 32 | No | 609 | 1,159 |
| St. Mary's Infant Asylum and Lying-In Hospital | Gen | Church | 52 | 28 | 12 | No | 154 | 430 |
| South Department for Infectious Diseases of the Boston City Hospital■ | Iso | City | 335 | 181 | .. | No | 1 | 1,925 |
| Strong Hospital | Gen | Indiv | 22 | 14 | 14 | No | 125 | 850 |
| Dr. Taylor's Private Hosp. | N&M | Indiv | 18 | 6 | .. | No | ... | 374 |
| Vincent Memorial Hosp.■ | Gen | Indep | 22 | 13 | .. | No | ... | ..... |
| Braintree, 15,712—Norfolk Co. | | | | | | | | |
| Norfolk County Hospital■ | TB | County | 134 | 120 | .. | No | 2 | 130 |
| Bridgewater, 9,055—Plymouth Co. | | | | | | | | |
| Bridgewater State Hosp. | N&M | State | 985 | 945 | .. | No | ... | 82 |
| Brockton, 63,797—Plymouth Co. | | | | | | | | |
| Brockton Hospital★◊■ | Gen | Indep | 131 | 87 | 27 | Yes | 342 | 2,371 |
| Ducy Hospital | Gen | Indiv | 12 | 5 | 4 | No | 25 | ..... |
| Goddard Hospital◊■ | Gen | Indep | 60 | 46 | 15 | Yes | 357 | 1,727 |
| Moore Hospital | Gen | Indep | 25 | 14 | 9 | No | 72 | 620 |
| Brookline, 47,490—Norfolk Co. | | | | | | | | |
| Bournewood Hospital | N&M | Indiv | 17 | 12 | .. | No | ... | ..... |
| Brookline General Hosp.■ | Gen | Indep | 40 | 20 | 12 | No | 45 | 405 |
| Brooks Hospital | Gen | Indep | 45 | 34 | .. | No | ... | 1,042 |
| Corey Hill Hospital | Gen | Indep | 50 | 35 | .. | No | ... | 523 |
| Free Hospital for Women■ | Gen | Indep | 97 | 70 | .. | Yes | ... | 2,039 |
| Trumbull Hospital | Gen | Indep | 47 | 35 | .. | No | ... | 1,127 |
| Cambridge, 113,643—Middlesex Co. | | | | | | | | |
| Cambridge City Hosp.◊■ | Gen | City | 114 | 87 | 30 | Yes | 422 | 2,29[illegible] |
| Cambridge Hospital★◊■ | Gen | Indep | 250 | 116 | 50 | Yes | 758 | 4,938 |
| Cambridge Relief Hosp.■ | Gen | Indep | 40 | 30 | 4 | Yes | 22 | 675 |
| Cambridge Sanatorium■ | TB | City | 85 | 79 | .. | No | ... | 195 |
| Charlesgate Hospital◊ | Gen | Indep | 85 | ... | .. | No | ... | ..... |
| Chester Hospital◊ | Gen | Indep | 50 | 35 | 20 | No | 406 | 1,015 |
| Canton, 5,816—Norfolk Co. | | | | | | | | |
| Massachusetts Hospital School■ | Ortho | State | 350 | 283 | .. | No | ... | ..... |
| Chelsea, 45,816—Suffolk Co. | | | | | | | | |
| Chelsea Memorial Hosp.◊■ | Gen | Indep | 85 | 76 | 25 | Yes | 539 | 2,511 |
| U. S. Marine Hospital■ | Gen | USPHS | 167 | 156 | .. | Yes | ... | 1,867 |
| U. S. Naval Hospital★ | Gen | Navy | 853 | 448 | .. | No | ... | 6,283 |
| Chicopee, 43,930—Hampden Co. | | | | | | | | |
| Health Department Hosp. | TB | City | 30 | 22 | .. | No | ... | 40 |
| Clinton, 12,817—Worcester Co. | | | | | | | | |
| Carter Memorial Hospital (Included in Clinton Hospital) | | | | | | | | |
| Clinton Hospital◊■ | Gen | Indep | 67 | 22 | 20 | Yes | 204 | 974 |
| Cohasset, 3,083—Norfolk Co. | | | | | | | | |
| Cohasset Private Hosp. | Gen | Indiv | 20 | 8 | 8 | No | 80 | 339 |
| Concord, 7,477—Middlesex Co. | | | | | | | | |
| Emerson Hospital■ | Gen | Indep | 36 | 20 | 12 | No | 185 | 747 |
| Danvers, 12,957—Essex Co. | | | | | | | | |
| Danvers State Hospital◊ | N&M | State | 2,050 | 2,035 | .. | Yes | ... | 860 |
| Hunt Memorial Hospital■ | Gen | City | 17 | 11 | 5 | Yes | 72 | 366 |
| Everett, 48,424—Middlesex Co | | | | | | | | |
| Everett Cottage Hospital or Whidden Mem. Hosp◊■ | Gen | Indep | 116 | 31 | 13 | No | 217 | 1,203 |
| Fall River, 115,274—Bristol Co. | | | | | | | | |
| Fall River General Hosp.★◊ | GenIso | City | 271 | 226 | 24 | Yes | 467 | 3,936 |
| St. Anne's Hospital◊■ | Gen | Church | 90 | 45 | 26 | Yes | 209 | 1,283 |
| Truesdale Hospital+◊■ | Gen | Indep | 115 | 67 | 10 | No | 169 | 2,212 |
| Union Hospital★◊ | Gen | Indep | 150 | 82 | 25 | Yes | 303 | 2,191 |
| Fitchburg, 40,692—Worcester Co. | | | | | | | | |
| Burbank Hospital★◊ | Gen | City | 189 | 143 | 22 | Yes | 402 | 3,189 |
| Forest Hills, (Boston P.O.)—Suffolk Co. | | | | | | | | |
| Forest Hills Hospital◊■ | Gen | Indep | 115 | 95 | 35 | No | 558 | 2,551 |
| Foxboro, 5,347—Norfolk Co. | | | | | | | | |
| Foxboro State Hospital | N&M | State | 1,000 | 1,056 | .. | Yes | ... | 248 |
| Framingham, 22,210—Middlesex Co. | | | | | | | | |
| Framingham-Union Hosp.◊■ | Gen | Indep | 130 | 82 | 30 | No | 442 | 3,562 |
| Gardner, 19,399—Worcester Co. | | | | | | | | |
| Gardner State Colony+ | N&M | State | 1,300 | 1,300 | .. | Yes | ... | 198 |
| Henry Heywood Memorial Hospital◊ | Gen | Indep | 77 | 41 | 19 | Yes | 212 | 1,487 |
| Gloucester, 24,204—Essex Co. | | | | | | | | |
| Addison Gilbert Hospital◊■ | Gen | Indep | 50 | 42 | 15 | Yes | 260 | 1,541 |
| Great Barrington, 5,934—Berkshire Co. | | | | | | | | |
| Fairview Hospital■ | Gen | Indep | 50 | 20 | 15 | Yes | 83 | 482 |
| Greenfield, 15,500—Franklin Co. | | | | | | | | |
| Franklin County Public Hospital◊■ | Gen | Indep | 88 | 50 | 18 | Yes | 211 | 1,105 |
| Groton, 2,434—Middlesex Co. | | | | | | | | |
| Groton General Hospital■ | Gen | Indiv | 15 | 6 | 4 | No | 11 | 169 |
| Haverhill, 48,710—Essex Co. | | | | | | | | |
| General Stephen Henry Gale Hospital◊■ | Gen | City | 107 | 75 | 18 | No | 289 | 2,557 |
| Hale Hospital◊□ | Gen | City | 60 | 31 | 9 | No | 114 | 782 |
| Haydenville, 1,300—Hampshire Co. | | | | | | | | |
| Hampshire County Sanat.■ | TB | County | 100 | 84 | .. | Yes | ... | 122 |
| Holbrook, 3,353—Norfolk Co. | | | | | | | | |
| Elmhurst Sanitarium | N&M | Indiv | 15 | 12 | .. | No | ... | ..... |
| Holden, 3,871—Worcester Co. | | | | | | | | |
| Holden District Hospital□ | Gen | Indep | 26 | 21 | 6 | No | 85 | 626 |
| Holyoke, 56,537—Hampden Co. | | | | | | | | |
| Holyoke Hospital◊■ | Gen | Indep | 130 | 76 | 20 | Yes | 295 | 2,077 |
| Holyoke Tuber. Sanatorium | TB | City | 56 | 32 | .. | Yes | ... | 35 |
| Providence Hospital★◊ | Gen | Church | 120 | 99 | 25 | No | 409 | 3,777 |
| Hyannis, 1,800—Barnstable Co. | | | | | | | | |
| Cape Cod Hospital■ | Gen | Indep | 45 | 30 | 12 | Yes | 171 | 835 |
| Ipswich, 5,599—Essex Co. | | | | | | | | |
| Benjamin Stickney Cable Memorial Hospital■ | Gen | Indep | 25 | 15 | 7 | No | 97 | 339 |
| Lawrence, 85,068—Essex Co. | | | | | | | | |
| Clover Hill Hospital | Gen | Indep | 25 | 13 | 8 | No | 96 | 525 |
| Lawrence General Hosp.★◊■ | Gen | Indep | 127 | 87 | 20 | Yes | 325 | 2,770 |
| Lawrence Municipal Hosp.■ | Gen | City | 60 | 50 | 4 | Yes | ... | ..... |
| Leominster, 21,810—Worcester Co. | | | | | | | | |
| Leominster Hospital◊■ | Gen | Indep | 61 | 31 | 12 | Yes | 156 | 1,117 |

Key to symbols and abbreviations is on page 2078

## MASSACHUSETTS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Lowell, 100,234—Middlesex Co. | | | | | | | | |
| Lowell General Hosp.★◊ | Gen | Indep | 150 | 66 | 30 | Yes | 258 | 2,604 |
| Lowell Tuber. Hospital or Lowell Isolation Hosp. | TB,Iso | City | 84 | 56 | .. | No | ... | ..... |
| St. John's Hospital★◊■ | Gen | Church | 133 | 88 | 24 | Yes | 338 | 3,205 |
| St. Joseph's Hospital◊■ | Gen | Church | 95 | 70 | 13 | Yes | 296 | 2,156 |
| Shaw Hospital□ | Gen | Indiv | 18 | 12 | 8 | No | 58 | 150 |
| Ludlow, 8,876—Hampden Co. | | | | | | | | |
| Ludlow Hospital■ | Gen | Indep | 29 | 15 | 11 | No | 106 | 456 |
| Lynn, 102,320—Essex Co. | | | | | | | | |
| Lynn Hospital★◊■ | Gen | Indep | 157 | 118 | 46 | Yes | 700 | 4,751 |
| Union Hospital◊■ | Gen | Indep | 65 | 37 | 25 | No | 432 | 1,363 |
| Malden, 58,036—Middlesex Co. | | | | | | | | |
| Malden Hospital◊■ | Gen | Indep | 92 | 72 | 26 | No | 448 | 2,757 |
| Marblehead, 8,668—Essex Co. | | | | | | | | |
| Mary A. Alley Emergency Hospital | Gen | City | 15 | 10 | 8 | No | 63 | 374 |
| Marlboro, 15,587—Middlesex Co. | | | | | | | | |
| Marlboro Hospital■ | Gen | Indep | 59 | 33 | 22 | No | 234 | 1,150 |
| Medfield, 4,066—Norfolk Co. | | | | | | | | |
| Medfield State Hospital◊ | N&M | State | 1,800 | 1,785 | .. | Yes | ... | 287 |
| Medford, 59,714—Middlesex Co. | | | | | | | | |
| Lawrence Memorial Hosp.◊■ | Gen | Indep | 105 | 56 | 34 | No | 777 | 2,075 |
| Melrose, 23,170—Middlesex Co. | | | | | | | | |
| Melrose Hospital◊■ | Gen | Indep | 104 | 64 | 28 | Yes | 495 | 2,001 |
| New England Sanitarium and Hospital+◊ | Gen | Indep | 141 | 104 | 16 | Yes | 258 | 1,5[illegible] |
| Reeves' Sanatorium | N&M | Indiv | 14 | 8 | .. | No | ... | ..... |
| Methuen, 21,069—Essex Co. | | | | | | | | |
| Mary E. Barr Sanitarium | Surg | Indiv | 25 | 8 | .. | No | ... | ..... |
| Middleboro, 8,608—Plymouth Co. | | | | | | | | |
| Lakeville State Sanat.■ | TB | State | 304 | 233 | .. | Yes | ... | 16[illegible] |
| St. Luke's Hospital■ | Gen | Indep | 23 | 14 | 8 | No | 103 | 396 |
| Middleton, 1,712—Essex Co. | | | | | | | | |
| Essex Sanatorium◊■ | TB | County | 360 | 293 | .. | Yes | ... | 298 |
| Milford, 14,741—Worcester Co. | | | | | | | | |
| Milford Hospital◊ | Gen | Indep | 45 | 40 | 10 | No | 240 | 1,668 |
| Milton, 16,434—Norfolk Co. | | | | | | | | |
| Milton Hosp'tal■ | Gen | Indep | 25 | 16 | 12 | Yes | 116 | 515 |
| Montague City, 761—Franklin Co. | | | | | | | | |
| Farren Memorial Hosp.◊□ | Gen | Church | 80 | 30 | 12 | No | 106 | 1,137 |
| Nantucket, 3,678—Nantucket Co. | | | | | | | | |
| Nantucket Cottage Hosp.■ | Gen | Cy&Co | 19 | 9 | 5 | Yes | 62 | 362 |
| Natick, 13,589—Middlesex Co. | | | | | | | | |
| Leonard Morse Hospital◊■ | Gen | City | 43 | 33 | 14 | No | 233 | 1,015 |
| Needham, 10,848—Norfolk Co. | | | | | | | | |
| Glover Memorial Hospital | Gen | City | 11 | 4 | 5 | No | ... | ..... |
| New Bedford, 112,597—Bristol Co. | | | | | | | | |
| St. Luke's Hospital★◊□ | Gen | Indep | 285 | 200 | 45 | Yes | 634 | 5,084 |
| Sassaquin Sanatorium+■ | TB | Indep | 118 | 111 | .. | No | ... | 101 |
| Union Hospital | Gen | Indiv | 32 | 26 | 6 | Yes | 22 | 910 |
| Newburyport, 15,084—Essex Co. | | | | | | | | |
| Anna Jaques Hospital◊ | Gen | Indep | 50 | 32 | 10 | Yes | 170 | 852 |
| Newburyport Homeopathic Hospital | Gen | Indep | 25 | 9 | 8 | No | 54 | 277 |
| Newton, 65,276—Middlesex Co. | | | | | | | | |
| Newton Hospital★◊□ | Gen | Indep | 244 | 146 | 46 | Yes | 692 | 3,936 |
| North Adams, 21,621—Berkshire Co. | | | | | | | | |
| North Adams Hospital◊ | Gen | Indep | 100 | 50 | 19 | Yes | 252 | 1,347 |
| Dr. Vrooman's Sanitarium | Dr&Al | Indiv | 17 | ... | .. | No | ... | ..... |
| Northampton, 24,381—Hampshire Co. | | | | | | | | |
| Cooley Dickinson Hosp.◊ | Gen | Indep | 128 | 75 | 24 | Yes | 322 | 2,419 |
| Northampton State Hosp. | N&M | State | 1,620 | 1,564 | .. | Yes | ... | 519 |
| Veterans Admin. Hospital | N&M | VetAd | 555 | 546 | .. | No | ... | 40 |
| North Dighton, 1,220—Bristol Co. | | | | | | | | |
| Mt. Hope Hospital | Gen | Indus | 15 | 5 | 7 | No | 44 | 126 |
| North Grafton, 2,340—Worcester Co. | | | | | | | | |
| Grafton State Hospital+◊ | N&M | State | 1,152 | 1,416 | .. | Yes | ... | 125 |
| North Reading, 1,945—Middlesex Co. | | | | | | | | |
| North Reading State Sanatorium□ | TB | State | 297 | 226 | .. | Yes | ... | 296 |
| Norwood, 15,049—Norfolk Co. | | | | | | | | |
| Norwood Hospital■ | Gen | Indep | 80 | 52 | 20 | Yes | 399 | 1,915 |
| Oak Bluffs, 1,333—Dukes Co. | | | | | | | | |
| Martha's Vineyard Hosp.■ | Gen | Indep | 26 | 5 | 10 | No | 54 | 327 |
| Palmer, 9,577—Hampden Co. | | | | | | | | |
| Monson State Hospital+◊ | Epil | State | 1,197 | 1,316 | .. | Yes | ... | 232 |
| Wing Memorial Hosp'tal■ | Gen | Indep | 29 | 13 | 8 | No | 76 | 724 |
| Peabody, 21,345—Essex Co. | | | | | | | | |
| Josiah B. Thomas Hosp.◊■ | Gen | City | 40 | 29 | 10 | No | 199 | 827 |
| Pittsfield, 49,677—Berkshire Co. | | | | | | | | |
| Hillcrest Hospital◊ | Gen | Indep | 42 | 38 | 10 | Yes | 155 | 947 |
| House of Mercy Hosp.★◊□ | Gen | Indep | 190 | 85 | 32 | Yes | 460 | 2,833 |
| St. Luke's Hospital◊■ | Gen | Church | 127 | 91 | 29 | Yes | 439 | 3,399 |
| Plymouth, 13,042—Plymouth Co. | | | | | | | | |
| Jordan Hospital◊■ | Gen | Indep | 66 | 30 | 10 | Yes | 159 | 836 |
| Pocasset, 365—Barnstable Co. | | | | | | | | |
| Barnstable County Sanat.■ | TB | County | 38 | 26 | .. | Yes | ... | 132 |
| Quincy, 71,983—Norfolk Co. | | | | | | | | |
| Quincy City Hospital◊■ | Gen | City | 206 | 107 | 54 | No | 696 | 4,103 |
| Dr. Reynolds Private Hosp. | Gen | Indiv | 25 | 14 | 12 | Yes | 50 | 200 |
| Whitehouse Maternity Hospital | Mater | Indiv | 12 | 6 | 12 | No | 72 | 72 |
| Rutland, 2,442—Worcester Co. | | | | | | | | |
| Central New England Sanatorium□ | TB | Indep | 100 | 98 | .. | Yes | ... | 141 |
| Rutland State Sanat.◊□ | TB | State | 370 | 363 | .. | Yes | ... | 277 |
| Rutland Heights,—Worcester Co. | | | | | | | | |
| Veterans Admin. Hospital□ | TB | VetAd | 420 | 403 | .. | Yes | ... | ..... |
| Salem, 43,353—Essex Co. | | | | | | | | |
| North Shore Babies Hosp.■ | Chil | Indep | 50 | 32 | .. | No | ... | 337 |
| Salem Hospital★◊■ | Gen | Indep | 150 | 121 | 30 | Yes | 445 | 3,301 |
| Sharon, 3,351—Norfolk Co. | | | | | | | | |
| Balfour Sanatorium | TB | Indiv | 20 | 12 | .. | ... | ... | ..... |
| Sharon Sanatorium | TB | Indep | 51 | 45 | .. | No | ... | ..... |

## MASSACHUSETTS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Somerville, 103,908—Middlesex Co. | | | | | | | | |
| Central Hospital | Gen | Indiv | 50 | 23 | 25 | Yes | 260 | ..... |
| Chandler Street Hospital.. | Gen | Indiv | 15 | 7 | 10 | No | 84 | 169 |
| Somerville Hospital◊■ | Gen | Indep | 61 | 49 | 19 | Yes | 239 | 1,638 |
| Southbridge, 14,264—Worcester Co. | | | | | | | | |
| Harrington Mem. Hosp.■. | Gen | Indep | 39 | 18 | 7 | No | 52 | 356 |
| [illegible]ol Co. | | | | | | | | |
| [illegible] | Ortho | Indep | 100 | 47 | .. | No | ... | 32 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | TB | County | 140 | [illegible] | .. | No | ... | 102 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | City | 113 | 110 | 18 | No | 69 | 420 |
| Health Dept. Hospital | TB,Iso | City | 178 | 110 | .. | No | ... | 299 |
| Mercy Hospital*◊■ | Gen | Church | 300 | 196 | 50 | Yes | 1,092 | 6,974 |
| Shriners' Hospital for Crippled Children | Ortho | Frat | 60 | 63 | .. | Yes | ... | 280 |
| Springfield Hospital*◊■ | Gen | Indep | 171 | 133 | .. | Yes | 4 | 4,583 |
| Wesson Maternity Hosp.. | Mater | Indep | 51 | 41 | 60 | Yes | 1,155 | 1,264 |
| Wesson Memorial Hosp.◊■ | Gen | Indep | 120 | 68 | 11 | Yes | ... | 2,476 |
| [illegible] Co. | | | | | | | | |
| [illegible] | N&M | Indep | 45 | 38 | .. | Yes | ... | 315 |
| [illegible] | Gen | Indep | 75 | 35 | 12 | Yes | 219 | 1,555 |
| Taunton State Hospital+◊ | N&M | State | 1,525 | 1,490 | .. | Yes | ... | 582 |
| [illegible]■ | Gen | State | 2,800 | 2,917 | 40 | No | 139 | 3,542 |
| [illegible]o. | | | | | | | | |
| [illegible]■ | Gen | USPHS | 28 | 30 | .. | Yes | ... | 186 |
| [illegible] | Gen | Indiv | 12 | 4 | 4 | No | ... | ..... |
| Metropolitan State Hosp.. | N&M | State | 1,248 | 896 | .. | No | ... | 1,183 |
| Middlesex County Sanat.. | TB | County | 225 | New | .. | Yes | ... | ..... |
| Waltham Hospital*◊■ | Gen | Indep | 163 | 85 | 53 | Yes | 522 | 2,505 |
| Ware, 7,385—Hampshire Co. | | | | | | | | |
| Mary Lane Hospital■ | Gen | Indep | 34 | 20 | 12 | No | 224 | 514 |
| Webster, 12,902—Worcester Co. | | | | | | | | |
| Webster District Hospital■ | Gen | Indep | 20 | 15 | 7 | No | 66 | 558 |
| Wellesley, 11,439—Norfolk Co. | | | | | | | | |
| Channing Sanitarium | N&M | Indep | 34 | 33 | .. | No | ... | 23 |
| [illegible] | N&M | Indep | 32 | 26 | .. | No | ... | 15 |
| W[illegible] | | | | | | | | |
| [illegible] | N&M | State | 1,468 | 1,421 | .. | Yes | ... | 477 |
| Westfield, 19,775—Hampden Co. | | | | | | | | |
| Noble Hospital◊■ | Gen | Indep | 90 | 43 | 17 | No | 176 | 1,380 |
| Westfield State Sanat.+■.. | TB | State | 306 | 281 | .. | Yes | ... | 210 |
| Westwood, 2,097—Norfolk Co. | | | | | | | | |
| Westwood Lodge | N&M | Indep | 21 | 18 | .. | No | ... | 31 |
| [illegible] | | | | | | | | |
| [illegible]■ | [illegible]n | Indep | 42 | 30 | 18 | No | 263 | 1,268 |
| Whitinsville Hospital | Gen | Indus | 15 | 11 | 7 | No | 116 | 680 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Indep | 25 | 15 | 6 | No | 54 | 577 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | Indep | 65 | 36 | 20 | No | 227 | 1,286 |
| [illegible]■ | Gen | Army | 120 | 38 | 8 | Yes | 56 | 597 |
| [illegible]pital | Gen | Indep | 26 | 21 | 12 | No | ... | ..... |
| Woburn, 19,434—Middlesex Co. | | | | | | | | |
| Charles Choate Memorial Hospital◊■ | Gen | Indep | 43 | 26 | 18 | Yes | 296 | 941 |
| Worcester, 195,311—Worcester Co. | | | | | | | | |
| Belmont Hospital+■ | TB,Iso | City | 210 | 115 | .. | Yes | ... | 928 |
| Fairlawn Hospital | Gen | Indep | 45 | 28 | 16 | No | 217 | 836 |
| Harvard Private Hospital | Gen | Indep | 20 | 15 | 7 | Yes | 60 | 359 |
| Herbert Hall Hospital | N&M | Indep | 25 | 15 | .. | No | ... | ..... |
| Louis Pasteur Hospital■.. | Gen | Indep | 30 | 6 | 6 | No | 39 | 295 |
| Memorial Hospital*+◊■ | Gen | Indep | 185 | 125 | 30 | Yes | 596 | 4,790 |
| St. Vincent Hospital*◊■ | Gen | Church | 250 | 189 | 27 | No | 391 | 4,641 |
| Worcester City Hosp.*◊■. | Gen | City | 360 | 319 | 40 | Yes | 647 | 7,345 |
| Worcester Hahnemann Hospital◊■ | Gen | Indep | 111 | 61 | 29 | No | 497 | 1,844 |
| [illegible] | N&M | State | 2,175 | 2,230 | 6 | Yes | ... | 786 |
| [illegible] Co. | | | | | | | | |
| Pondville Hospital+■ | Cancer | State | 115 | 100 | .. | Yes | ... | 651 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Acushnet, 4,092—Bristol Co. | | | | | | | | |
| Ashley Sanitarium | Inst | Indiv | 15 | 11 | .. | No | ... | 41 |
| Allerton, 800—Plymouth Co. | | | | | | | | |
| Sturgis Hospital | Gen | Indiv | 14 | 6 | 2 | Yes | ... | ..... |
| Sylvester Hospital■ | Gen | Indiv | 15 | 8 | 3 | No | 2 | 35 |
| [illegible] Co. | | | | | | | | |
| [illegible]■.. | Inst | Indep | 15 | 3 | .. | No | ... | 270 |
| [illegible] | | | | | | | | |
| Isham Infirmary | Inst | Indep | 36 | 3 | .. | ... | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible] | [illegible]ter | Indiv | 11 | 3 | 8 | ... | 118 | ..... |
| [illegible]dren■ | Chil | Indep | 125 | 93 | .. | No | ... | 44 |
| Belchertown, 3,139—Hampshire Co. | | | | | | | | |
| Belchertown State School. | MenDef | State | 2,000 | 1,[illegible]04 | .. | Yes | ... | 211 |
| Boston, 781,188—Suffolk Co. | | | | | | | | |
| Boston Home for Incur.. | Incur | Indep | 58 | 58 | .. | No | ... | 12 |
| Convalescent Home of the Boston City Hospital■.. | Conv | City | 34 | 15 | .. | No | ... | 347 |
| Deer Island Hospital■ | Inst | Cy&Co | 24 | 20 | .. | Yes | ... | ..... |
| Detention Hospital■ | Iso | City | 51 | 3 | 4 | No | ... | 15 |
| Dorchester Cottage Hosp.. | Gen | Indep | 12 | 5 | 8 | No | 105 | 180 |
| Dudley Hospital | Gen | Indiv | 12 | 7 | 3 | No | 55 | 156 |
| East Boston Relief Station of the Boston City Hospital■ | Emerg | City | 11 | 1 | 1 | Yes | 1 | 209 |

## MASSACHUSETTS—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Eliot Hospital | Gen | Indep | 30 | 10 | .. | No | ... | 500 |
| Florence Crittenton Home and Hospital■ | Mater | Indep | 24 | 16 | 28 | No | 95 | 95 |
| Haymarket Square Relief Station of the Boston City Hospital■ | Emerg | City | 29 | 8 | .. | Yes | 2 | 2,270 |
| Home for Jewish Children | Inst | Indep | 12 | 2 | .. | No | ... | 14 |
| Massachusetts State Prison Hospital■ | Inst | State | 40 | 19 | .. | Yes | ... | 213 |
| New England Home for Little Wanderers | Inst | Indep | 20 | 20 | 6 | No | ... | ..... |
| Prendergast Preventorium■ | TB | Indep | 100 | 50 | .. | No | ... | 187 |
| Riley Private Hospital | Gen | Indiv | 19 | 10 | 10 | No | ... | ..... |
| St. Luke's Home for Convalescents | Conv | Church | 25 | 15 | .. | ... | ... | 317 |
| Talitha Cumi Maternity Home and Hospital | Mater | Indep | 16 | 8 | 16 | No | 67 | 67 |
| Washingtonian Home | Alcohol | Indep | 35 | 10 | .. | No | ... | 241 |
| Braintree, 15,712—Norfolk Co. | | | | | | | | |
| Braintree Cottage Hosp... | Mater | Indiv | 6 | 1 | 6 | No | 82 | 82 |
| Brookline, 47,490—Norfolk Co. | | | | | | | | |
| Board of Health Hospital | TB,Iso | City | 50 | 23 | .. | No | ... | 122 |
| Bosworth Hospital | Gen | Indiv | 20 | 6 | .. | ... | ... | ..... |
| Channing Home | TB | Indep | 24 | 22 | .. | No | ... | 44 |
| Cambridge, 113,643—Middlesex Co. | | | | | | | | |
| Holy Ghost Hospital for [illegible]■ | Incur | Church | 215 | 210 | .. | No | ... | 209 |
| [illegible] | Inst | Indep | 26 | 8 | .. | Yes | ... | ..... |
| C[illegible] | | | | | | | | |
| [illegible] | Gen | Army | 40 | New | .. | Yes | ... | ..... |
| C[illegible] | | | | | | | | |
| [illegible]■ | Inst | Indep | 235 | 192 | .. | Yes | ... | 1,169 |
| Dracut, 6,912—Middlesex Co. | | | | | | | | |
| Blanchard Private Hosp.. | Mater | Indiv | 8 | 3 | 6 | No | 34 | 48 |
| [illegible] | | | | | | | | |
| [illegible] | Conv | Indep | 75 | 67 | .. | No | ... | 7,563 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Inst | State | 60 | 19 | .. | No | ... | 537 |
| Woodside Cottages | Conv | Indep | 16 | 9 | .. | No | ... | 23 |
| Greenfield, 15,500—Franklin Co. | | | | | | | | |
| Greenfield Isolation Hosp.■ | Iso | City | 20 | 2 | .. | ... | ... | 65 |
| Haverhill, 48,710—Essex Co. | | | | | | | | |
| Benson Hospital | Gen | Indiv | 10 | 6 | 2 | No | 6 | ..... |
| Haverhill Infirmary | Chron | City | 60 | 55 | .. | No | ... | 115 |
| Holyoke, 56,537—Hampden Co. | | | | | | | | |
| Carpenter Isolation Hosp. | Iso | City | 20 | 3 | .. | No | ... | 96 |
| Holyoke Surgical Hospital | Gen | Part | 12 | .. | .. | No | ... | ..... |
| Lancaster, 2,897—Worcester Co. | | | | | | | | |
| Industrial School for Girls | Inst | State | 19 | ... | .. | Yes | ... | ..... |
| Lowell, 100,234—Middlesex Co. | | | | | | | | |
| Chelmsford Street Hosp.■ | Inst | City | 135 | 122 | 3 | No | 3 | ..... |
| Malden, 58,036—Middlesex Co. | | | | | | | | |
| Malden Contagious Hosp.■ | Iso | City | 40 | 2 | .. | No | ... | ..... |
| Marblehead, 8,668—Essex Co. | | | | | | | | |
| Children's Island Sanit.■.. | Conv | Indep | 94 | 94 | .. | No | ... | 104 |
| Medford, 59,714—Middlesex Co. | | | | | | | | |
| Dearborn Hospital | Chron | Indiv | 25 | 15 | .. | No | ... | ..... |
| *Medford Hospital* | Gen | Indiv | 20 | 5 | .. | No | ... | ..... |
| Methuen, 21,069—Essex Co. | | | | | | | | |
| Henry C. Nevins Home for Aged and Incurables | Incur | Indep | 32 | 25 | .. | No | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible] | Ortho | Indep | 115 | 115 | .. | No | ... | ..... |
| [illegible] | Epil | Indiv | 11 | 10 | .. | No | ... | ..... |
| [illegible] | | | | | | | | |
| Pittsfield Anti-Tuber. Assn. Hospital and Coolidge Memorial Home | TB | Indep | 14 | 12 | .. | No | ... | 13 |
| Rutland, 2,442—Worcester Co. | | | | | | | | |
| Summit House | TB | Indiv | 35 | 25 | .. | No | ... | 29 |
| Wachusett Cottage | TB | Indiv | 15 | 8 | .. | No | ... | ..... |
| Salem, 43,353—Essex Co. | | | | | | | | |
| Health Dept. Hospital for Contagious Diseases | Iso | City | 60 | 25 | .. | No | ... | ..... |
| Shirley, 2,427—Middlesex Co. | | | | | | | | |
| Industrial School for Boys■ | Inst | State | 28 | 7 | .. | Yes | ... | 387 |
| Somerville, 103,908—Middlesex Co. | | | | | | | | |
| City of Somerville Contagious Diseases Hospital■ | Iso | City | 40 | 17 | .. | Yes | ... | 302 |
| Springfield, 149,900—Hampden Co. | | | | | | | | |
| Buscall Nursing Home | Conv | Part | 25 | 15 | .. | No | ... | 37 |
| Hampden County Children's Preventorium■ | Conv | Indep | 176 | 176 | .. | No | ... | 40 |
| Swampscott, 10,346—Essex Co. | | | | | | | | |
| Florence Crittenton Hope Cottage and Hospital■.. | Mater | Indep | 11 | 7 | 15 | No | 151 | 170 |
| Waltham, 39,247—Middlesex Co. | | | | | | | | |
| Teresian Lying-In Hosp.. | Mater | Indiv | 10 | 6 | 6 | No | 43 | 67 |
| Walter E. Fernald State School | MenDef | State | 1,450 | 1,652 | .. | Yes | ... | 198 |
| [illegible]■ | [illegible] | Indep | None | 4 | 22 | Yes | ... | 49 |
| [illegible] | [illegible] | Indiv | 8 | 4 | .. | Yes | ... | ..... |
| Cedar Lodge | Conv | Indiv | 8 | 4 | .. | No | ... | ..... |
| Convalescent Home of the Children's Hospital | Gen | Indep | 83 | 62 | .. | No | ... | ..... |
| Simpson Infirmary of Wellesley College■ | Inst | Indep | 20 | 7 | .. | Yes | ... | 442 |
| Westboro, 6,409—Worcester Co. | | | | | | | | |
| Lyman School Hospital■.. | Inst | State | 31 | 6 | .. | Yes | ... | 380 |
| West Concord, 1,851—Middlesex Co. | | | | | | | | |
| Massachusetts Reformatory Hospital■ | Inst | State | 50 | 2 | .. | Yes | ... | 382 |

Key to symbols and abbreviations is on page 2078

## MASSACHUSETTS—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| West Pittsfield, (Pittsfield P.O.)—Berkshire Co. | | | | | | | | |
| Frederick S. Coolidge Memorial Home | TB | Indep | 8 | 6 | .. | No | ... | 9 |
| West Rutland, 315—Worcester Co. | | | | | | | | |
| Prison Camp and H | TB | State | 40 | 28 | .. | No | ... | ..... |
| Willi | | | | | | | | |
| W Co. | | | | | | | | |
| I | st | Indep | 21 | 3 | .. | No | ... | 191 |
| Sanitarium | Conv | Part | 15 | 12 | .. | No | ... | ..... |
| Wrentham, 3,584—Norfolk Co. | | | | | | | | |
| Wrentham State School | MenDef | State | 1,643 | 1,621 | .. | No | ... | 171 |

Summary for Massachusetts:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 220 | 47,480 | 38,753 | 314,569 |
| Related institutions | 75 | 6,824 | 5,864 | 17,967 |
| Totals | 295 | 54,304 | 44,617 | 332,536 |
| Refused registration | 10 | 307 | | |

## MICHIGAN

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Adrian, 13,064—Lenawee Co. | | | | | | | | |
| Emma L. Bixby Hospital■ | Gen | City | 33 | 24 | 10 | No | 150 | 832 |
| Lenawee Co. Tuber. Sanat.■ | TB | County | 25 | 17 | .. | No | ... | 20 |
| Albion, 8,324—Calhoun Co. | | | | | | | | |
| James W. Sheldon Memorial Hospital◊ | Gen | City | 40 | 18 | 10 | No | 49 | 722 |
| Allegan, 3,941—Allegan Co. | | | | | | | | |
| Emergency Hospital | Gen | Part | 14 | 4 | 6 | No | 38 | 190 |
| Alma, 6,734—Gratiot Co. | | | | | | | | |
| Gratiot General Hospital□ | Gen | Indep | 19 | 7 | 4 | No | 21 | 218 |
| Alpena, 12,166—Alpena Co. | | | | | | | | |
| Donald McRae Hospital | Gen | Indep | 23 | 13 | 5 | No | 25 | 459 |
| Ann Arbor, 26,944—Washtenaw Co. | | | | | | | | |
| Ann Arbor Private Hosp. | Gen | Indiv | 10 | 4 | 4 | No | 48 | 101 |
| Cowie Hospital | Gen | Indiv | 12 | 4 | 1 | Yes | ... | 286 |
| Mercywood Sanitarium | N&M | Church | 50 | 30 | .. | No | ... | ..... |
| St. Joseph's Mercy Hospital★◊■▲ | Gen | Church | 115 | 104 | 15 | Yes | 249 | 2,836 |
| State Psychopathic Hosp. at the Univ. of Michigan+ | N&M | State | 64 | 61 | .. | Yes | ... | 215 |
| University Hospital★+◊■ | Gen | State | 1,235 | 1,129 | 34 | Yes | 198 | 21,552 |
| Bad Axe, 2,332—Huron Co. | | | | | | | | |
| Hubbard Memorial Hosp.■ | Gen | County | 28 | 19 | 7 | No | 58 | 382 |
| Battle Creek, 43,573—Calhoun Co. | | | | | | | | |
| American Legion Hosp.+■ | TB | State | 400 | 324 | .. | No | ... | 302 |
| Battle Creek Sanit.+◊■▲ | Gen | Indep | 1,000 | 315 | 13 | Yes | 203 | 8,374 |
| Calhoun County Public Hospital■ | TB | County | 75 | 64 | .. | Yes | ... | 111 |
| Leila Y. Post Montgomery Hospital★◊ | Gen | Church | 180 | 90 | 20 | Yes | 163 | 2,398 |
| Nichols Memorial Hosp.◊■ | Gen | Indep | 87 | 54 | 13 | No | 319 | 2,749 |
| Bay City, 47,355—Bay Co. | | | | | | | | |
| Bay City General Hospital | Gen | City | 22 | 18 | 6 | No | 34 | 555 |
| Bay City Samaritan Hosp.■ | Gen | Indep | 40 | 26 | 3 | No | 24 | 905 |
| Mercy Hospital★◊■ | Gen | Church | 144 | 76 | 16 | Yes | 272 | 2,179 |
| Benton Harbor, 15,434—Berrien Co. | | | | | | | | |
| Benton Harbor Hospital◊□ | Gen | Indep | 40 | 27 | 10 | No | 161 | 982 |
| Big Rapids, 4,671—Mecosta Co. | | | | | | | | |
| Community Hospital■ | Gen | City | 13 | 9 | 4 | No | 58 | 510 |
| Brighton, 1,287—Livingston Co. | | | | | | | | |
| Mellus Hospital | Gen | Indiv | 13 | 7 | 4 | No | 35 | 250 |
| Byron Center, 320—Kent Co. | | | | | | | | |
| Christian Psychopathic Hospital | N&M | Church | 225 | 200 | .. | No | ... | 92 |
| Cadillac, 9,570—Wexford Co. | | | | | | | | |
| Mercy Hospital◊■ | Gen | Church | 38 | 27 | 6 | No | 53 | 928 |
| Wexford County Hosp.■ | Gen | County | 19 | 15 | .. | No | ... | 50 |
| Calumet, 1,557—Houghton Co. | | | | | | | | |
| Calumet & Hecla Hospital | Indus | Indus | 25 | 19 | .. | Yes | ... | 722 |
| Camp Custer,—Kalamazoo Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 636 | 605 | .. | No | ... | 125 |
| Caro, 2,554—Tuscola Co. | | | | | | | | |
| Caro Community Hosp.■ | Gen | City | 20 | 8 | 2 | No | 6 | 270 |
| Cassopolis, 1,448—Cass Co. | | | | | | | | |
| McCutcheon Hospital■ | Gen | Part | 10 | 5 | 5 | No | 17 | 178 |
| Charlevoix, 2,247—Charlevoix Co. | | | | | | | | |
| Charlevoix Hospital | Gen | City | 25 | 8 | 7 | No | 48 | 236 |
| Coldw | | | | | | | | |
| ■ | Gen | Indiv | 25 | 12 | 5 | No | 34 | 437 |
| Cr | | | | | | | | |
| Falls Gen. Hosp.■ | Gen | Indiv | 14 | 5 | 2 | Yes | 16 | 194 |
| Dearborn, 50,358—Wayne Co. | | | | | | | | |
| St. Joseph's Retreat | N&M | Church | 400 | 373 | .. | No | ... | 250 |
| Detroit, 1,568,662—Wayne Co. | | | | | | | | |
| Cass Central Hospital | Gen | Indiv | 12 | 3 | 4 | No | 21 | 166 |
| Charles Godwin Jennings Hospital | Gen | Indep | 66 | 20 | 6 | No | 25 | 864 |
| Children's Hospital+◊■ | Chil | Indep | 239 | 229 | .. | Yes | ... | 5,789 |
| City of Detroit Receiving Hospital★+■▲ | Gen | City | 650 | 724 | 7 | Yes | 10 | 18,262 |
| City of Detroit Receiving Hosp. (Redford Branch) | Gen | City | 49 | 38 | .. | Yes | 6 | 1,791 |
| Delray Industrial Hosp.■ | Gen | Indus | 77 | 52 | 15 | Yes | 204 | 2,100 |
| Detroit Eye, Ear, Nose and Throat Hospital■ | EENT | Indiv | 150 | 86 | .. | Yes | ... | 3,173 |
| Detroit Tuberculosis Sanat. | TB | Indep | 150 | 143 | .. | No | ... | 143 |

## MICHIGAN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Dunbar Memorial Hospital (col.) | Gen | Indep | 67 | 55 | 7 | No | 71 | 2,463 |
| East Side Hospital | Gen | Indiv | 65 | 27 | 27 | No | 350 | 997 |
| Evangelical Deaconess Hospital★◊■ | Gen | Church | 115 | 72 | 20 | Yes | 372 | 2,915 |
| Fairview Sanat. (col.) | TB | Indep | 31 | 29 | .. | No | ... | ..... |
| Florence Crittenton Hosp.■ | Gen | Indep | 88 | 62 | 55 | Yes | 1,668 | 2,283 |
| General Hosp. and Clinic | Gen | Indiv | 40 | 35 | 2 | No | ... | ..... |
| Grace Hospital★+◊■ | Gen | Indep | 341 | 279 | 74 | Yes | 1,038 | 10,206 |
| Harper Hospital★+◊■ | Gen | Indep | 650 | 419 | 100 | Yes | 1,544 | 16,814 |
| Henry Ford Hosp.★+◊□▲ | Gen | Indep | 526 | 363 | 48 | Yes | 755 | 10,132 |
| Herman Kiefer Hosp.+⊃■ | GenTB | City | 1,235 | 994 | 65 | Yes | 1,868 | 8,691 |
| Jefferson Clinic and Diagnostic Hospital+ | Gen | Indep | 60 | 30 | 2 | Yes | 16 | 1,344 |
| Lincoln Hospital□ | Gen | Indep | 90 | 57 | 7 | Yes | 77 | 1,248 |
| Michigan Mutual Hosp.■ | Indus | Indus | 35 | 27 | .. | Yes | ... | 984 |
| Miriam Memorial Hospital (Included in Grace Hospital) | | | | | | | | |
| Northwestern Hospital■ | Gen | Indep | 26 | 14 | 6 | Yes | 48 | 403 |
| Pingree General Hospital | Gen | Indep | 20 | 10 | 11 | No | 97 | 400 |
| Providence Hospital★◊■ | Gen | Church | 348 | 314 | 102 | No | 2,236 | 8,563 |
| St. Joseph's Mercy Hospital★◊□ | Gen | Church | 138 | 88 | 32 | Yes | 669 | 3,168 |
| St. Mary's Hospital★◊□ | Gen | Church | 345 | 307 | 30 | Yes | 708 | 8,855 |
| U. S. Marine Hospital□ | Gen | USPHS | 132 | 130 | .. | Yes | ... | 1,168 |
| Warren Avenue Diagnostic Hospital■ | Gen | Indiv | 17 | 11 | 3 | Yes | 12 | 1,282 |
| West Side Sanitarium | Gen | Indiv | 30 | 15 | .. | Yes | ... | 155 |
| Woman's Hospital+⊃■ | Mater | Indep | 216 | 131 | 100 | Yes | 2,153 | 5,362 |
| Dowagiac, 5,550—Cass Co. | | | | | | | | |
| Lee Memorial Hospital□ | Gen | Church | 25 | 15 | 4 | No | 42 | 500 |
| Durand, 3,081—Shiawassee Co. | | | | | | | | |
| Durand Hospital | Gen | Indep | 14 | 6 | 4 | No | 50 | 234 |
| Eaton Rapids, 2,822—Eaton Co. | | | | | | | | |
| Harriet Chapman Hospital | Gen | Indiv | 18 | 7 | 2 | No | 28 | 250 |
| Eloise, 710—Wayne Co. | | | | | | | | |
| Eloise Hospital for Mental Diseases□ | N&M | County | 2,707 | 2,412 | .. | No | ... | 542 |
| Eloise Infirmary★■ | Gen | County | 4,394 | 2,507 | .. | Yes | ... | 2,792 |
| Escanaba, 14,524—Delta Co. | | | | | | | | |
| Laing Hospital | Gen | Indiv | 25 | 10 | .. | No | ... | 270 |
| St. Francis Hospital | Gen | Church | 100 | 47 | 18 | No | 336 | 1,720 |
| Flint, 156,492—Genesee Co. | | | | | | | | |
| Hurley Hospital★+◊■▲ | Gen | City | 375 | 265 | 50 | Yes | 969 | 9,006 |
| St. Joseph's Hospital■ | Gen | Church | 42 | 50 | 20 | No | 474 | 1,300 |
| Women's Hospital■ | Gen | Indep | 40 | 24 | 24 | No | 493 | 915 |
| Fremont, 2,157—Newaygo Co. | | | | | | | | |
| Gerber Memorial Hospital□ | Gen | City | 15 | 9 | 5 | No | 26 | 408 |
| Goodrich, 324—Genesee Co. | | | | | | | | |
| Goodrich General Hospital | Gen | Indiv | 26 | 16 | 2 | Yes | 27 | 1,034 |
| Grand Haven, 8,345—Ottawa Co. | | | | | | | | |
| Elizabeth Hatton Memorial Hospital■ | Gen | Indep | 20 | 10 | 6 | Yes | 57 | 403 |
| Grand Rapids, 168,592—Kent Co. | | | | | | | | |
| Blodgett Memorial Hospital★+◊■ | Gen | Indep | 132 | 105 | 18 | Yes | 425 | 3,886 |
| Butterworth Hospital★◊■ | Gen | Indep | 220 | 120 | 50 | Yes | 883 | 4,482 |
| City General Hospital■ | Gen | City | 53 | 35 | 4 | Yes | ... | 802 |
| Ferguson-Droste-Ferguson Sanitarium□ | Proct | Indep | 33 | 17 | .. | No | ... | 620 |
| St. Mary's Hospital★+◊■ | Gen | Church | 218 | 126 | 35 | Yes | 819 | 5,977 |
| Sunshine Sanatorium+■ | TB | City | 145 | 134 | .. | Yes | ... | 161 |
| Grayling, 1,973—Crawford Co. | | | | | | | | |
| Mercy Hospital◊ | Gen | Church | 30 | 9 | 8 | No | 22 | 41 |
| Greenville, 4,730—Montcalm Co. | | | | | | | | |
| United Memorial Hospital■ | Gen | Indep | 19 | 10 | 6 | No | 32 | 380 |
| Grosse Pointe, 5,173—Wayne Co. | | | | | | | | |
| Grosse Pointe Hospital | Gen | Indiv | 35 | 8 | 15 | No | 298 | 750 |
| Grosse Pointe Farms (Grosse Pointe P.O.), 3,533—Wayne Co. | | | | | | | | |
| Cottage Hospital■ | Gen | Indep | 45 | 30 | 13 | No | 395 | 1,444 |
| Hamtramck, 56,268—Wayne Co. | | | | | | | | |
| Hamtramck Municipal Hospital■ | Gen | City | 45 | 25 | 6 | No | 46 | 1,544 |
| Hancock, 5,795—Houghton Co. | | | | | | | | |
| St. Joseph's Hospital◊ | Gen | Church | 60 | 52 | 8 | No | 95 | 1,326 |
| Harbor Beach, 1,892—Huron Co. | | | | | | | | |
| Harbor Beach Hospital | Gen | Indus | 20 | 2 | 3 | No | 15 | 172 |
| Hart, 1,690—Oceana Co. | | | | | | | | |
| Oceana Hospital■ | Gen | Indep | 20 | 12 | 6 | No | 68 | 450 |
| Hastings, 5,227—Barry Co. | | | | | | | | |
| Pennock Hospital■ | Gen | Cy&Co | 27 | 10 | 8 | Yes | 146 | 788 |
| Highland Park, 52,959—Wayne Co. | | | | | | | | |
| Highland Park General Hospital★◊□ | Gen | City | 160 | 109 | 35 | Yes | 871 | 3,727 |
| Hillsdale, 5,896—Hillsdale Co. | | | | | | | | |
| Hillsdale Hospital | Gen | City | 18 | 9 | 3 | No | 57 | 466 |
| Holland, 14,346—Ottawa Co. | | | | | | | | |
| Holland City Hospital | Gen | City | 50 | 24 | 12 | No | 189 | 1,020 |
| Houghton, 3,757—Houghton Co. | | | | | | | | |
| Copper Country Sanat. | TB | County | 55 | 54 | .. | Yes | ... | 35 |
| Howell, 3,615—Livingston Co. | | | | | | | | |
| McPherson Memorial Hosp. | Gen | City | 25 | 8 | 6 | No | 61 | 275 |
| Michigan State Sanat.■ | TB | State | 475 | 324 | .. | Yes | ... | 397 |
| Hudson, 2,361—Lenawee Co. | | | | | | | | |
| Thorn Memorial Hospital■ | Gen | City | 20 | 7 | 4 | No | 37 | 195 |
| Ionia, 6,562—Ionia Co. | | | | | | | | |
| Ionia Community Maternity Home and Hospital | Gen | Part | 18 | 6 | 6 | No | 50 | 200 |
| Ionia State Hospital | N&M | State | 608 | 690 | .. | Yes | ... | 67 |
| Iron Mountain, 11,652—Dickinson Co. | | | | | | | | |
| Iron Mountain Gen. Hosp. | Gen | City | 28 | 12 | 9 | No | 154 | 638 |
| Ironwood, 14,299—Gogebic Co. | | | | | | | | |
| Grand View Hospital | GenTB | County | 110 | 95 | 10 | Yes | ... | 1,210 |
| Newport Hospital | Gen | Indus | 12 | 10 | 3 | Yes | 63 | ..... |
| Twin City Hospital | Gen | Indiv | 21 | 17 | 3 | No | 21 | 464 |
| Ishpeming, 9,238—Marquette Co. | | | | | | | | |
| Ishpeming Hospital | Gen | Indus | 37 | 28 | 6 | No | 123 | 971 |

Key to symbols and abbreviations is on page 2078

## MICHIGAN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Jackson, 55,187—Jackson Co. | | | | | | | | |
| W. A. Foote Memorial Hospital★◊■ | Gen | City | 126 | 92 | 20 | Yes | 472 | 3,870 |
| Jackson County Sanat.■ | TB | County | 63 | 48 | .. | Yes | ... | 107 |
| Mercy Hospital◊ | Gen | Church | 100 | 54 | 30 | No | 363 | 2,896 |
| Kalamazoo, 54,786—Kalamazoo Co. | | | | | | | | |
| Borgess Hospital◊■ | Gen | Church | 323 | 110 | 27 | No | 393 | 3,288 |
| Bronson Methodist Hospital◊■ | Gen | Church | 113 | 79 | 30 | No | 551 | 3,217 |
| Fairmount Hospital■ | TB,Iso | County | 170 | 109 | .. | Yes | ... | 405 |
| Kalamazoo State Hosp.+◊ | N&M | State | 2,768 | 2,631 | .. | Yes | ... | 534 |
| Lake Linden, 1,714—Houghton Co. | | | | | | | | |
| Lake Superior Gen. Hosp. | Gen | Indus | 15 | 7 | 5 | No | 32 | 241 |
| Lakeview, 850—Montcalm Co. | | | | | | | | |
| Kelsey Hospital■ | Gen | Indiv | 11 | 5 | 2 | No | 9 | 279 |
| Lansing, 78,394—Ingham Co. | | | | | | | | |
| Edward W. Sparrow Hospital★◊□ | Gen | Indep | 117 | 74 | 28 | Yes | 360 | 2,458 |
| Ingham Sanatorium | TB | County | 110 | 39 | .. | Yes | ... | 67 |
| St. Lawrence Hospital★◊■ | Gen | Church | 100 | 76 | 28 | No | 511 | 3,772 |
| Lapeer, 5,008—Lapeer Co. | | | | | | | | |
| Lapeer City Hospital | Gen | Part | 15 | 6 | 2 | No | ... | ..... |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indep | 25 | 22 | 5 | No | 143 | 886 |
| [illegible] | | | | | | | | |
| [illegible]■ | Gen | Cy&Co | 22 | 15 | 3 | No | 75 | 491 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Church | 54 | 24 | 6 | No | 50 | 788 |
| [illegible] Co. | | | | | | | | |
| Shaw Private Hospital | Gen | Indiv | 20 | 12 | 3 | No | 38 | 169 |
| Marenisco, 510—Gogebic Co. | | | | | | | | |
| Charcoal Iron Co. Hosp.■ | Indus | Indiv | 16 | 8 | .. | No | ... | 216 |
| Marquette, 14,789—Marquette Co. | | | | | | | | |
| Morgan Heights Sanat.+■ | TB | County | 90 | 83 | .. | Yes | ... | 109 |
| St. Luke's Hospital◊ | Gen | Indep | 68 | 34 | 15 | No | 78 | 1,414 |
| St. Mary's Hospital■ | Gen | Church | 60 | 31 | 11 | No | 152 | 1,136 |
| Marshall, 5,019—Calhoun Co. | | | | | | | | |
| Oak Lawn Hospital■ | Gen | Indep | 12 | 7 | 4 | No | 72 | 259 |
| Menominee, 10,320—Menominee Co. | | | | | | | | |
| St. Joseph's Hospital | Gen | Church | 60 | 49 | 12 | No | 180 | 1,950 |
| M[illegible] | | | | | | | | |
| [illegible] | Gen | Indus | 18 | 6 | 2 | No | 17 | 210 |
| M[illegible] | | | | | | | | |
| [illegible]■ | Gen | Church | 58 | 26 | 12 | No | 94 | 827 |
| Monroe Hospital■ | Gen | Indep | 38 | 34 | 8 | Yes | 61 | 1,002 |
| Mt. Clemens, 13,497—Macomb Co. | | | | | | | | |
| St. Joseph's Hospital and Sanitarium◊■ | Gen | Church | 150 | 76 | 12 | No | 154 | 2,573 |
| Station Hospital | Gen | Army | 35 | 18 | .. | No | ... | 580 |
| Mt. Pleasant, 5,211—Isabella Co. | | | | | | | | |
| Brondstetters Mem. Hosp. | Gen | Part | 15 | 10 | 3 | Yes | 24 | 329 |
| Munising, 3,956—Alger Co. | | | | | | | | |
| Munising Hospital | Gen | Indep | 18 | 14 | 3 | No | 49 | 488 |
| Muskegon, 41,390—Muskegon Co. | | | | | | | | |
| Hackley Hospital★◊■ | Gen | Indep | 108 | 66 | 17 | No | 520 | 2,357 |
| Mercy Hospital★◊ | Gen | Church | 124 | 76 | 24 | Yes | 471 | 2,795 |
| Muskegon County Tuberculosis Sanatorium■ | TB | County | 70 | 67 | .. | Yes | ... | 143 |
| Negaunee, 6,552—Marquette Co. | | | | | | | | |
| Dr. Robbins' Hospital | Gen | Indiv | 20 | ... | 3 | Yes | ... | ..... |
| Twin City Hospital | Gen | Part | 15 | 7 | 3 | No | ... | ..... |
| Newberry, 2,465—Luce Co. | | | | | | | | |
| Newberry State Hospital+ | N&M | State | 975 | 1,149 | .. | No | ... | 164 |
| Perry-Spinks Hospital | Gen | Part | 15 | 10 | 6 | No | 50 | ..... |
| Niles, 11,326—Berrien Co. | | | | | | | | |
| Pawating Hospital■ | Gen | Indep | 35 | 19 | 9 | No | 141 | 693 |
| Northville, 2,566—Wayne Co. | | | | | | | | |
| East Lawn Sanatorium | TB | Indiv | 76 | 76 | .. | No | ... | 127 |
| Wm. H. Maybury Sanat.+ | TB | City | 840 | 627 | .. | No | ... | 510 |
| Norway, 4,016—Dickinson Co. | | | | | | | | |
| Penn Iron Mining Company Hospital | Gen | Indus | 13 | 7 | 5 | No | 47 | 307 |
| Omer, 216—Arenac Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 12 | 6 | 4 | No | ... | .... |
| [illegible] Co. | | | | | | | | |
| [illegible] | TB | County | 12 | 9 | .. | No | ... | ... |
| [illegible] | Gen | Indiv | 14 | 9 | .. | No | ... | 155 |
| Oshtemo, 125—Kalamazoo Co. | | | | | | | | |
| Pin[illegible] | TB | Indep | 75 | 59 | .. | No | ... | 93 |
| Owos[illegible] | | | | | | | | |
| Me[illegible] | Gen | Indep | 90 | 63 | 10 | Yes | 199 | 1,710 |
| Petoskey, 5,740—Emmet Co. | | | | | | | | |
| Lockwood Hospital | Gen | City | 30 | 20 | 6 | No | 68 | 411 |
| Petoskey Hospital◊■ | Gen | Indep | 40 | 26 | 6 | Yes | 82 | 915 |
| Pinckney, 433—Livingston Co. | | | | | | | | |
| Pinckney Sanitarium | Gen | Indiv | 10 | 5 | 4 | No | 21 | 150 |
| Plainwell, 2,279—Allegan Co. | | | | | | | | |
| Wm. Crispe Hospital■ | Gen | City | 17 | 7 | 6 | No | ... | 261 |
| Pompeii, 319—Gratiot Co. | | | | | | | | |
| Pompeii Hospital | Gen | Indiv | 16 | 4 | .. | No | ... | 200 |
| Pontiac, 64,928—Oakland Co. | | | | | | | | |
| Oakland County Contagious Hospital■ | Iso | County | 85 | 51 | .. | No | ... | 999 |
| Oakland Co. Tuber. Sanat.■ | TB | County | 175 | 170 | .. | Yes | ... | 209 |
| Pontiac City Hospital■ | Gen | City | 95 | 48 | 25 | No | 240 | 1,940 |
| Pontiac State Hospital+ | N&M | State | 1,752 | 1,735 | .. | No | ... | 164 |
| St. Joseph's Mercy Hosp.◊□ | Gen | Church | 150 | 59 | 15 | Yes | 199 | 1,885 |
| Pt. Huron, 31,361—St. Clair Co. | | | | | | | | |
| Pt. Huron Hospital◊ | Gen | Indep | 50 | 43 | 10 | No | 130 | 1,572 |
| Powers, 300—Menominee Co. | | | | | | | | |
| Pinecrest Sanatorium | TB | County | 100 | 96 | .. | Yes | ... | 124 |
| Reed City, 1,792—Osceola Co. | | | | | | | | |
| Reed City Hospital■ | Gen | City | 10 | 4 | 3 | No | 17 | 110 |
| Royal Oak, 22,904—Oakland Co. | | | | | | | | |
| Royal Oak Private Hosp.■ | Gen | Indiv | 19 | 9 | 4 | No | 64 | 334 |

## MICHIGAN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Saginaw, 80,175—Saginaw Co. | | | | | | | | |
| Saginaw City Hospital■ | Gen | City | 24 | 21 | 5 | No | 60 | 271 |
| Saginaw Co. Contag. Hosp.■ | Iso | County | 75 | 30 | .. | No | ... | 316 |
| Saginaw Co. Tuber. Hosp. | TB | County | 26 | 25 | .. | No | ... | 60 |
| Saginaw General Hosp.★◊■ | Gen | Indep | 133 | 87 | 23 | Yes | 381 | 2,507 |
| St. Luke's Hospital◊ | Gen | Church | 50 | 27 | 12 | No | 170 | 931 |
| St. Mary's Hospital★◊□ | Gen | Church | 156 | 84 | 20 | Yes | 255 | 2,651 |
| St. Clair, 3,389—St. Clair Co. | | | | | | | | |
| St. Clair Community Hosp. | Gen | City | 12 | 4 | 5 | No | ... | 196 |
| St. Johns, 3,929—Clinton Co. | | | | | | | | |
| Clinton Memorial Hosp.■ | Gen | Indep | 50 | 15 | 10 | No | 72 | 703 |
| St. Joseph, 8,349—Berrien Co. | | | | | | | | |
| St. Joseph Sanitarium | Gen | Indep | 30 | 13 | 4 | Yes | ... | ..... |
| Sandusky, 1,305—Sanilac Co. | | | | | | | | |
| Tweedie Hospital | Gen | Part | 10 | 6 | 1 | No | 6 | 238 |
| Sault Ste. Marie, 13,755—Chippewa Co. | | | | | | | | |
| Chippewa County War Memorial Hospital◊□ | Gen | County | 61 | 50 | 12 | No | 169 | 1,753 |
| Station Hospital | Gen | Army | 10 | 8 | .. | Yes | ... | 249 |
| South Haven, 4,804—Van Buren Co. | | | | | | | | |
| City Hospital■ | Gen | City | 30 | 10 | 6 | No | 60 | 360 |
| Penoyar Memorial Hosp. | Gen | Part | 13 | 8 | 6 | No | 31 | 298 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indus | 28 | 12 | 6 | No | 75 | 480 |
| [illegible] | | | | | | | | |
| Sturgis Memorial Hosp.■ | Gen | City | 38 | 15 | 6 | Yes | 106 | 574 |
| Three Rivers, 6,863—St. Joseph Co. | | | | | | | | |
| Three Rivers Hospital■ | Gen | City | 30 | 11 | 6 | Yes | 74 | 480 |
| Traverse City, 12,539—Grand Traverse Co. | | | | | | | | |
| James Decker Munson Hospital■ | Gen | State | 56 | 29 | 11 | No | 145 | 1,130 |
| Traverse City State Hospital+◊■ | N&M | State | 2,300 | 2,098 | .. | No | ... | 224 |
| [illegible]ghton Co. | | | | | | | | |
| [illegible]al | Gen | Indus | 20 | 9 | 1 | Yes | 17 | 285 |
| [illegible] Co. | | | | | | | | |
| [illegible]osp. | Gen | Indus | 13 | 3 | 5 | No | 32 | 135 |
| W[illegible]o. | | | | | | | | |
| [illegible]p. | Gen | City | 65 | 50 | 12 | Yes | 270 | 3,363 |
| Y[illegible] Co. | | | | | | | | |
| Beyer Memorial Hospital■ | Gen | City | 35 | 17 | 6 | No | 115 | 594 |
| Hull Mem. City Hospital | (Contagious Ward of Beyer Mem. Hospital) | | | | | | | |
| Leland After Cure Farm [illegible] | TB | Indep | 124 | 99 | .. | No | ... | 140 |
| [illegible] | N&M | State | 1,000 | New | .. | Yes | ... | 860 |
| Z[illegible] | | | | | | | | |
| [illegible] | Gen | Cy&Co | 13 | 5 | 3 | No | 35 | 199 |
| **Related Institutions** | | | | | | | | |
| Addison, 452—Lenawee Co. | | | | | | | | |
| Addison Community Hosp.■ | Gen | Indiv | 5 | 2 | 2 | No | 17 | 123 |
| Alma, 6,734—Gratiot Co. | | | | | | | | |
| Michigan Masonic Home and Hospital | Inst | Frat | 50 | 16 | .. | Yes | ... | 93 |
| C[illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | Indep | 6 | 2 | 2 | No | 16 | 100 |
| Coldwater, 6,735—Branch Co. | | | | | | | | |
| Branch County Infirmary and Hospital | Inst | County | 12 | 6 | .. | No | ... | 19 |
| State Public School | Inst | State | 40 | 6 | .. | No | ... | 614 |
| Detroit, 1,568,662—Wayne Co. | | | | | | | | |
| Boulevard Home Hospital | Mater | Indiv | 30 | 17 | 3 | No | 11 | 70 |
| Fenwood Hospital | Gen | Indiv | 7 | 4 | 5 | No | 10 | 170 |
| Memorial Hospital | Sk&Ca | Indiv | 6 | 1 | .. | No | ... | 300 |
| Pennsylvania Ave. Sanit. | N&M | Indiv | 10 | 4 | .. | No | ... | ..... |
| Protestant Orphan Asylum | Inst | Indep | 20 | 3 | .. | No | ... | 50 |
| William Booth Mem. Hosp.□ | Mater | Church | 22 | 8 | 26 | No | 381 | 393 |
| East Lansing, 4,389—Ingham Co. | | | | | | | | |
| Hospital of Michigan State College of Agriculture and Applied Science■ | Inst | State | 35 | 2 | .. | Yes | ... | 384 |
| Farmington, 1,243—Oakland Co. | | | | | | | | |
| Children Hospital■ | Conv | Indep | 240 | 234 | .. | No | ... | 599 |
| Flint, 156,492—Genesee Co. | | | | | | | | |
| Fisher Body Hospital, Units 1 and 2 | Indus | Indus | 6 | ... | .. | Yes | ... | ..... |
| Genesee County Infirmary■ | Inst | County | 13 | 8 | .. | No | 25 | 385 |
| Michigan School for Deaf■ | Inst | State | 35 | 11 | .. | Yes | ... | ..... |
| Grand Rapids, 168,592—Kent Co. | | | | | | | | |
| Holland Union Benevolent Home | Inst | Indep | 9 | 1 | .. | No | ... | 40 |
| Kent County Receiving Hospital | N&M | County | 40 | 14 | .. | No | ... | 495 |
| Michigan Soldiers' Home Hospital■ | Gen | State | 250 | 150 | .. | No | ... | ..... |
| Municipal Isolation Hosp.■ | Iso | City | 30 | 11 | .. | No | ... | 176 |
| Salvation Army Evangeline Booth Home and Hosp. | Mater | Church | 10 | 4 | 10 | No | 100 | 98 |
| Harrisville, 438—Alcona Co. | | | | | | | | |
| Dr. A. R. Miller's Private Hospital | Gen | Indiv | 4 | 3 | 1 | Yes | 3 | 100 |
| Highland Park, 52,959—Wayne Co. | | | | | | | | |
| Sheppard Sanitarium | Gen | Indiv | 25 | 3 | .. | No | ... | 2 |
| Ionia, 6,562—Ionia Co. | | | | | | | | |
| Michigan State Reformatory■ | Inst | State | 75 | 50 | .. | No | ... | 1,500 |
| Iron Mountain, 11,652—Dickinson Co. | | | | | | | | |
| Ford Motor Company Industrial Hospital | Indus | Indus | 5 | 2 | .. | Yes | ... | 53 |
| Jackson, 55,187—Jackson Co. | | | | | | | | |
| Jackson County Contagious Hospital■ | Iso | Cy&Co | 35 | 8 | .. | ... | ... | 115 |
| Michigan State Prison Hospital■▲ | Inst | State | 150 | 46 | .. | Yes | ... | 1,728 |

Key to symbols and abbreviations is on page 2078

## MICHIGAN—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Lansing, 78,397—Ingham Co. | | | | | | | | |
| Boys' Vocational School Hospital■ | Inst | State | 58 | 12 | .. | No | ... | 694 |
| Lansing City Hospital | Iso | City | 70 | ... | .. | No | ... | ..... |
| Lapeer, 5,008—Lapeer Co. | | | | | | | | |
| Michigan Home and Training School+ | MenDef | State | 3,713 | 3,036 | .. | No | ... | 594 |
| Manistique, 5,198—Schoolcraft Co. | | | | | | | | |
| Manistique Hospital | Gen | Indiv | 12 | 5 | 4 | No | 12 | ..... |
| Marquette, 14,789—Marquette Co. | | | | | | | | |
| Hospital of the State House of Correction▲ | Inst | State | 24 | 7 | .. | No | ... | 272 |
| Morenci, 1,773—Lenawee Co. | | | | | | | | |
| Hal C. Blair Hospital | Surg | Indiv | 5 | ... | .. | No | ... | ..... |
| Mt. Clemens, 13,497—Macomb Co. | | | | | | | | |
| Sigma Gamma Convalescent Home for Crippled Chil. | Ortho | Indep | 50 | 48 | .. | No | ... | 200 |
| Mt. Pleasant, 5,211—Isabella Co. | | | | | | | | |
| Mt. Pleasant Indian School Hospital | Inst | Indian | 31 | 6 | .. | Yes | ... | 288 |
| Nahma, 710—Delta Co. | | | | | | | | |
| Bay View Hospital | Indus | Indiv | 11 | 6 | .. | No | ... | ..... |
| Northville, 2,566—Wayne Co. | | | | | | | | |
| Wayne County Training School | MenDef | County | 800 | 655 | .. | Yes | ... | 121 |
| Okemos, 216—Ingham Co. | | | | | | | | |
| Ingham County Infirmary | Inst | County | 34 | 28 | .. | No | ... | ..... |
| Pontiac, 64,928—Oakland Co. | | | | | | | | |
| Oakland County Infirm.■ | Inst | County | 125 | 120 | 8 | No | 161 | 430 |
| Pt. Huron, 31,361—St. Clair Co. | | | | | | | | |
| Pt. Huron Emerg. Hosp. | Iso | City | 18 | 6 | 4 | No | ... | ..... |
| Rogers City, 3,278—Presque Isle Co. | | | | | | | | |
| Rogers City Hospital | Gen | Indiv | 6 | 2 | 2 | No | 6 | 100 |
| Royal Oak, 22,904—Oakland Co. | | | | | | | | |
| Oakland Maternity Hosp. | Mater | Indiv | 10 | 3 | 6 | No | 80 | 92 |
| Shelby, 1,152—Oceana Co. | | | | | | | | |
| Shelby Community Hosp. | Gen | Indep | 9 | 3 | 4 | No | ... | ..... |
| Unionville, 478—Tuscola Co. | | | | | | | | |
| Unionville General Hosp. | Gen | Indiv | 7 | 3 | 1 | No | ... | 102 |
| Wahjamega, 111—Tuscola Co. | | | | | | | | |
| Michigan Farm Colony for Epileptics | Epil | State | 837 | 804 | .. | No | ... | 106 |
| West Branch, 1,164—Ogemaw Co. | | | | | | | | |
| Tolfree Memorial Hosp.■ | Gen | City | 15 | 6 | 5 | No | 18 | 240 |

| Summary for Michigan: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 192 | 35,931 | 26,958 | 293,716 |
| Related institutions | 46 | 7,005 | 5,384 | 10,371 |
| Totals | 238 | 42,936 | 32,342 | 304,087 |
| Refused registration | 17 | 511 | | |

## MINNESOTA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ada, 1,285—Norman Co. | | | | | | | | |
| Norman Co. Mem. Hosp. | Gen | Indep | 10 | 3 | 3 | No | 29 | 395 |
| Ah-gwah-ching, 45—Cass Co. | | | | | | | | |
| Minnesota State Sanat. | TB | State | 315 | 250 | .. | No | ... | 280 |
| Albert Lea, 10,169—Freeborn Co. | | | | | | | | |
| Naeve Hospital⊙■ | Gen | Cy&Co | 70 | 40 | 10 | No | 282 | 1,702 |
| Alexandria, 3,876—Douglas Co. | | | | | | | | |
| Douglas County Hospital | Gen | Indep | 35 | 8 | 5 | No | 28 | 370 |
| St. Luke's Hospital■ | Gen | Indiv | 16 | 7 | 3 | No | 18 | 261 |
| Anoka, 4,851—Anoka Co. | | | | | | | | |
| Gates' Hospital | Gen | Indiv | 14 | 5 | 6 | No | 65 | 743 |
| Appleton, 1,625—Swift Co. | | | | | | | | |
| Kaufman Hospital | Gen | Indiv | 18 | 9 | 6 | No | 23 | 357 |
| Austin, 12,276—Mower Co. | | | | | | | | |
| St. Olaf Lutheran Hosp.⊙■ | Gen | Church | 49 | 23 | 11 | No | 249 | 1,442 |
| Bagley, 885—Clearwater Co. | | | | | | | | |
| Clearwater Hospital | Gen | Indiv | 12 | 5 | 2 | No | 18 | 120 |
| Barrett, 368—Grant Co. | | | | | | | | |
| Powers Hospital | Gen | Indiv | 10 | 3 | .. | No | ... | 178 |
| Battle Lake, 552—Otter Tail Co. | | | | | | | | |
| Otter Tail County Sanat. | TB | County | 44 | 40 | .. | No | ... | 42 |
| Bemidji, 7,202—Beltrami Co. | | | | | | | | |
| Lutheran Hospital | Gen | Indep | 28 | New | 4 | No | ... | ..... |
| Benson, 2,095—Swift Co. | | | | | | | | |
| Swift County Hospital | Gen | Indep | 19 | 10 | 5 | No | ... | 508 |
| Biwabik, 1,383—St. Louis Co. | | | | | | | | |
| Biwabik Hospital | Gen | Indiv | 10 | 2 | .. | No | 12 | 157 |
| Blue Earth, 2,884—Faribault Co. | | | | | | | | |
| Blue Earth Hospital | Gen | Indiv | 10 | 5 | 4 | No | ... | ..... |
| Braham, 579—Isanti Co. | | | | | | | | |
| Braham Hospital | Gen | Indiv | 12 | 8 | 4 | No | 40 | 231 |
| Brainerd, 10,221—Crow Wing Co. | | | | | | | | |
| St. Joseph's Hospital | Gen | Church | 70 | 49 | 15 | No | 192 | 2,474 |
| Breckenridge, 2,264—Wilkin Co. | | | | | | | | |
| St. Francis Hospital⊙■ | Gen | Church | 50 | 24 | 8 | No | 101 | 861 |
| Buffalo, 1,409—Wright Co. | | | | | | | | |
| Catlin Hospital | Gen | Indiv | 12 | 7 | 3 | No | 20 | 167 |
| Caledonia, 1,554—Houston Co. | | | | | | | | |
| Caledonia Hospital | Gen | Indiv | 15 | 8 | 8 | No | ... | ..... |
| Canby, 1,738—Yellow Medicine Co. | | | | | | | | |
| John Swenson Mem. Hosp. | Gen | City | 18 | 6 | 5 | No | 34 | 223 |
| Cannon Falls, 1,358—Goodhue Co. | | | | | | | | |
| Mineral Springs Sanat. | TB | County | 100 | 62 | .. | No | 1 | 90 |

## MINNESOTA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Chisholm, 8,308—St. Louis Co. | | | | | | | | |
| Rood Hospital | Gen | Indiv | 17 | 10 | 5 | Yes | 33 | 357 |
| Cloquet, 6,782—Carlton Co. | | | | | | | | |
| Cloquet Hospital | Gen | Indiv | 11 | 3 | 4 | No | 27 | 239 |
| Fond du Lac Indian Hosp. | Gen | Indian | 30 | 17 | 4 | No | ... | ..... |
| Raiter Hospital | Gen | Part | 28 | 15 | 4 | No | 94 | 643 |
| Cokato, 1,125—Wright Co. | | | | | | | | |
| Cokato Hospital■ | Gen | Indiv | 10 | 6 | 3 | No | 50 | 234 |
| Crookston, 6,321—Polk Co. | | | | | | | | |
| Bethesda Hospital⊙ | Gen | Church | 42 | 32 | 8 | No | 92 | 973 |
| St. Vincent's Hospital⊙■ | Gen | Church | 44 | 20 | 6 | No | 80 | 740 |
| Sunnyrest Sanatorium■ | TB | County | 60 | 60 | .. | Yes | ... | 26 |
| Crosby, 3,451—Crow Wing Co. | | | | | | | | |
| Miner's Hospital■ | Gen | Indus | 20 | 8 | 6 | Yes | 61 | 397 |
| Dawson, 1,386—Lac qui Parle Co. | | | | | | | | |
| Dawson Surgical Hosp.⊙ | Gen | Indep | 25 | 13 | 4 | No | 21 | 365 |
| Deerwood, 552—Crow Wing Co. | | | | | | | | |
| Deerwood Sanatorium■ | TB | County | 24 | 23 | .. | Yes | ... | 32 |
| Detroit Lakes, 3,675—Becker Co. | | | | | | | | |
| Community Hospital■ | Gen | Indep | 19 | 12 | 6 | No | 63 | 464 |
| Duluth, 101,463—St. Louis Co. | | | | | | | | |
| Duluth Hospital■ | Gen | Indiv | 20 | 5 | 8 | No | 22 | 209 |
| *St. Luke's Hospital*★◊■ | *Gen* | *Indep* | *237* | *166* | *33* | Yes | *691* | *5,349* |
| St. Mary's Hospital★◊■▲ | Gen | Church | 260 | 216 | 30 | Yes | 593 | 6,206 |
| Webber Hospital■ | Gen | Indiv | 36 | 25 | 10 | No | 159 | 1,190 |
| Ellsworth, 644—Nobles Co. | | | | | | | | |
| Ellsworth Hospital | Gen | Indiv | 10 | 2 | 3 | Yes | 15 | 26 |
| Ely, 6,156—St. Louis Co. | | | | | | | | |
| Shipman Hospital■ | Gen | Part | 15 | 5 | 6 | No | 28 | 237 |
| Eveleth, 7,484—St. Louis Co. | | | | | | | | |
| More Hospital■ | Gen | Indiv | 30 | 19 | 8 | Yes | 93 | 777 |
| Fairmont, 5,521—Martin Co. | | | | | | | | |
| Fairmont Hospital | Gen | Part | 10 | 4 | 3 | No | 19 | 243 |
| Faribault, 12,767—Rice Co. | | | | | | | | |
| St. Lucas Deaconess Hospital⊙■ | Gen | Church | 54 | 45 | 14 | No | 234 | 1,173 |
| Farmington, 1,342—Dakota Co. | | | | | | | | |
| Community Hospital■ | Gen | Indiv | 22 | 10 | 4 | No | 19 | 332 |
| Fergus Falls, 9,389—Otter Tail Co. | | | | | | | | |
| Fergus Falls State Hosp.⊙ | N&M | State | 1,700 | 1,695 | .. | No | ... | 452 |
| George B. Wright Memorial Hospital⊙■ | Gen | City | 53 | 25 | 12 | No | 65 | 860 |
| St. Luke's Hospital⊙■ | Gen | Church | 70 | 33 | 9 | No | 127 | 1,070 |
| Ft. Snelling, 1,327—Hennepin Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 72 | 26 | 1 | Yes | 4 | 925 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 562 | 573 | .. | Yes | ... | 2,410 |
| Fosston, 978—Polk Co. | | | | | | | | |
| Fosston Hospital■ | Gen | Part | 15 | 6 | 4 | No | 40 | 178 |
| Frazee, 1,041—Becker Co. | | | | | | | | |
| Frazee Hospital | Gen | Indiv | 10 | 5 | 2 | No | 12 | 202 |
| Graceville, 969—Big Stone Co. | | | | | | | | |
| Western Minnesota Hosp⊙ | Gen | Indep | 35 | 22 | 5 | No | 126 | 803 |
| Grand Rapids, 3,206—Itasca Co. | | | | | | | | |
| Itasca County Hospital | Gen | County | 46 | 19 | 10 | No | ... | ..... |
| Granite Falls, 1,791—Yellow Medicine Co. | | | | | | | | |
| Granite Falls Hospital | Gen | Indiv | 10 | 6 | 5 | No | 38 | 228 |
| Riverside Sanatorium | TB | County | 54 | 53 | .. | Yes | ... | 41 |
| Hallock, 869—Kittson Co. | | | | | | | | |
| Kittson War Veterans' Memorial Hospital■ | Gen | County | 23 | 18 | 4 | No | 56 | 530 |
| Hastings, 5,086—Dakota Co. | | | | | | | | |
| St. Raphael Hospital■ | Gen | Indiv | 17 | 10 | 5 | No | ... | ..... |
| Hendricks, 702—Lincoln Co. | | | | | | | | |
| Hendricks Hospital | Gen | Indep | 16 | 9 | 4 | No | 22 | 880 |
| Heron Lake, 786—Jackson Co. | | | | | | | | |
| Southwestern Minnesota Hospital | Gen | Indiv | 12 | 4 | 2 | No | 16 | 130 |
| Hibbing, 15,666—St. Louis Co. | | | | | | | | |
| Adams Hospital | Gen | Indiv | 25 | 11 | 6 | No | 53 | 607 |
| Rood Hospital■ | Gen | Indiv | 40 | 20 | 8 | Yes | 114 | 1,016 |
| Hutchinson, 3,406—McLeod Co. | | | | | | | | |
| Hutchinson Community Hospital | Gen | Indep | 22 | 18 | 8 | No | 87 | 602 |
| International Falls, 5,036—Koochiching Co. | | | | | | | | |
| Craig Hospital■ | Gen | Indiv | 18 | 7 | 6 | No | 23 | 263 |
| Northern Minnesota Hosp.■ | Gen | Indep | 50 | 13 | 6 | Yes | 28 | 204 |
| Jackson, 2,206—Jackson Co. | | | | | | | | |
| Halloran Hospital | Gen | Indiv | 12 | 5 | 3 | No | 20 | ..... |
| Lake City, 3,210—Wabasha Co. | | | | | | | | |
| Lake City Hospital | Gen | Indep | 19 | 10 | 4 | No | 49 | 328 |
| Lake Park, 624—Becker Co. | | | | | | | | |
| Sand Beach Sanatorium■ | TB | County | 46 | 39 | .. | Yes | ... | 25 |
| Litchfield, 2,880—Meeker Co. | | | | | | | | |
| Litchfield Hospital⊙ | Gen | Indep | 29 | 18 | 6 | No | 95 | 654 |
| Little Falls, 5,014—Morrison Co. | | | | | | | | |
| St. Gabriel's Hospital⊙■ | Gen | Church | 42 | 22 | 8 | No | 115 | 1,427 |
| Long Prairie, 1,854—Todd Co. | | | | | | | | |
| Long Prairie Hospital | Gen | Indiv | 10 | 2 | 2 | No | 32 | 169 |
| Luverne, 2,644—Rock Co. | | | | | | | | |
| Luverne Hospital | Gen | Part | 15 | 4 | 5 | No | 44 | 324 |
| Madelia, 1,397—Watonwan Co. | | | | | | | | |
| Madelia Hospital | Gen | Indiv | 13 | 5 | 4 | No | 72 | 1,892 |
| Madison, 1,916—Lac qui Parle Co. | | | | | | | | |
| Ebenezer Hospital | Gen | Church | 25 | 12 | 5 | No | 54 | 367 |
| Mankato, 14,038—Blue Earth Co. | | | | | | | | |
| Immanuel Hospital⊙■ | Gen | Church | 60 | 40 | 15 | No | 163 | 1,213 |
| St. Joseph's Hospital | Gen | Church | 125 | 55 | 14 | No | 306 | 1,700 |
| Marshall, 3,250—Lyon Co. | | | | | | | | |
| Marshall Hospital | Gen | Indep | 30 | 12 | 5 | No | 29 | 352 |
| McGregor, 216—Aitkin Co. | | | | | | | | |
| McGregor Hosp. and Clinic | Gen | Indiv | 20 | 8 | 5 | Yes | 34 | 236 |
| Melrose, 1,601—Stearns Co. | | | | | | | | |
| Melrose Hospital■ | Gen | Indiv | 10 | 5 | 3 | Yes | 24 | 195 |
| Minneapolis, 464,356—Hennepin Co. | | | | | | | | |
| Abbott Hospital★◊■ | Gen | Church | 90 | 65 | 18 | No | 186 | 2,574 |
| Asbury Hospital★◊■ | Gen | Church | 143 | *97* | 25 | Yes | *461* | *3,037* |

Key to symbols and abbreviations is on page 2078

## MINNESOTA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Eitel Hospital★◊■.......... | Gen | Indep | 101 | 86 | 19 | No | 333 | 4,051 |
| Fairview Hospital★◊■...... | Gen | Church | 200 | 122 | 27 | No | 442 | 4,619 |
| Harriet Walker Hospital□. | Mater | Indep | 21 | 20 | 10 | No | 95 | 149 |
| Hill Crest Surgical Hosp.◊ | Gen | Indep | 53 | 34 | 22 | No | 341 | 1,262 |
| Lutheran Deaconess Home and Hospital★◊■......... | Gen | Church | 120 | 107 | 30 | No | 518 | 3,161 |
| Maternity Hospital⊙■...... | Mater | Indep | 84 | 59 | 35 | Yes | 633 | 1,091 |
| Minneapolis Gen. Hosp.★+◊■ | Gen | City | 404 | 391 | 51 | Yes | 1,012 | 8,462 |
| Northwestern Hospital★◊■. | Gen | Indep | 160 | 123 | 40 | No | 322 | 4,727 |
| St. Andrew's Hospital◊.... | Gen | Church | 80 | 43 | 20 | No | 356 | 2,816 |
| St. Barnabas Hosp.★◊■... | Gen | Church | 150 | 91 | 25 | No | 367 | 3,394 |
| St. Mary's Hospital★◊□... | Gen | Church | 270 | 163 | 30 | Yes | 559 | 5,380 |
| Shriners Hospital for Crippled Children............. | Ortho | Frat | 60 | 61 | .. | Yes | ... | 238 |
| Swedish Hospital★◊□....... | Gen | Indep | 290 | 212 | 42 | No | 934 | 6,395 |
| University Hospitals★◊□... | Gen | State | 420 | 326 | 30 | Yes | 344 | 6,030 |
| Montevideo, 4,319—Chippewa Co. | | | | | | | | |
| Montevideo Hospital⊙...... | Gen | Indep | 55 | 39 | 10 | No | 107 | 1,731 |
| Moorhead, 7,651—Clay Co | | | | | | | | |
| St. Ansgars Hospital⊙..... | Gen | Church | 46 | 30 | 8 | No | 71 | 1,129 |
| Moose Lake, 742—Carlton Co. | | | | | | | | |
| Moose Lake Community Hospital ................ | Gen | Indiv | 15 | 6 | 3 | No | 28 | 133 |
| Morris, 2,474—Stevens Co. | | | | | | | | |
| Morris Hospital........... | Gen | Indiv | 13 | 7 | 4 | No | 47 | 246 |
| Mountain Lake, 1,388—Cottonwood Co. | | | | | | | | |
| Bethel Deaconess Hosp.■.. | Gen | Church | 13 | 8 | 5 | No | 73 | 318 |
| New Prague, 1,543—Le Sueur Co. | | | | | | | | |
| New Prague Community Hospital ................ | Gen | Indep | 20 | 11 | 3 | No | ... | 381 |
| New Ulm, 7,308—Brown Co. | | | | | | | | |
| Loretto Hospital.......... | Gen | Church | 45 | 25 | 8 | No | 111 | 786 |
| Union Hospital⊙........... | Gen | Indep | [illegible] | 36 | 9 | No | 120 | 1,162 |
| Nopeming, 12—St. Louis Co. | | | | | | | | |
| Nopeming Sanatorium+⊙■. | TB | County | 230 | 230 | .. | Yes | ... | 225 |
| Northfield, 4,153—Rice Co. | | | | | | | | |
| Northfield Hospital........ | Gen | Indep | 12 | 5 | 4 | No | 52 | 184 |
| Oak Terrace,—Hennepin Co. | | | | | | | | |
| Glen Lake Sanatorium+⊙■ | TB | County | 692 | 695 | 6 | Yes | 7 | 434 |
| Onigum, 19—Cass Co. | | | | | | | | |
| Chippewa Tubercular Sanatorium and General Hosp. | Gen | Indian | 95 | 71 | 4 | Yes | 41 | 397 |
| Ortonville, 2,017—Big Stone Co. | | | | | | | | |
| Ortonville Evangelical Hospital ..................... | Gen | Church | 20 | 8 | 4 | No | 36 | 427 |
| Owatonna, 7,654—Steele Co. | | | | | | | | |
| Owatonna City Hospital⊙■ | Gen | City | 22 | 16 | 6 | No | 91 | 570 |
| Parkers Prairie, 631—Otter Tail Co. | | | | | | | | |
| Leibold Hospital........... | Surg | Indiv | 12 | 3 | .. | No | ... | 128 |
| Paynesville, 1,121—Stearns Co. | | | | | | | | |
| Paynesville Hospital....... | Gen | Indiv | 12 | 8 | 2 | No | 9 | 111 |
| Perham, 1,411—Otter Tail Co. | | | | | | | | |
| St. James' Hospital■....... | Gen | Church | 35 | 18 | 5 | No | 48 | 700 |
| Pipestone, 3,489—Pipestone Co. | | | | | | | | |
| Ashton Memorial Hosp.⊙.. | Gen | Cy&Co | 43 | 17 | 4 | No | 72 | 827 |
| Pokegama,—Pine Co. | | | | | | | | |
| Pokegama Sanatorium..... | TB | Indep | 58 | 29 | .. | No | ... | 79 |
| Princeton, 1,636—Mille Lacs Co. | | | | | | | | |
| Northwestern Hospital..... | Gen | Indep | 30 | 7 | 3 | No | 27 | 277 |
| Puposky, 63—Beltrami Co. | | | | | | | | |
| Lake Julia Tuber. Sanat.■ | TB | County | 53 | 50 | .. | No | ... | 51 |
| [illegible] | | | | | | | | |
| | Gen | Indian | 28 | 19 | 6 | Yes | 62 | 504 |
| ] | | | | | | | | |
| | Gen | City | 35 | 22 | 6 | No | 47 | 693 |
| ■ | Gen | Indep | 75 | 42 | 15 | No | 167 | 1,268 |
| Redwood Falls, 2,552—Redwood Co. | | | | | | | | |
| Redwood Falls Hospital.. | Gen | Part | 15 | 6 | 4 | No | 60 | 435 |
| Richmond, 603—Stearns Co. | | | | | | | | |
| Richmond Hospital........ | Gen | Indep | 10 | 4 | .. | No | 18 | ..... |
| Rochester, 20,621—Olmsted Co. | | | | | | | | |
| Colonial Hospital◊■........ | Gen | Indep | 267 | 211 | .. | No | ... | 7,162 |
| Kahler Hospital◊■.......... | Gen | Indep | 169 | 100 | .. | Yes | ... | 3,656 |
| Rochester State Hospital◊ | N&M | State | 1,345 | 1,447 | .. | No | ... | 438 |
| St. Mary's Hospital◊...... | Gen | Church | 543 | 431 | 26 | No | 438 | 9,774 |
| Worrall Hospital and Annex◊■ ................ | SkCaEENT | Indep | 191 | 135 | .. | Yes | ... | 10,159 |
| Roseau, 1,028—Roseau Co. | | | | | | | | |
| Budd Hospital.............. | Gen | Indiv | 15 | 6 | 3 | No | 12 | 202 |
| St. Cloud, 21,000—Stearns Co. | | | | | | | | |
| St. Cloud Hospital◊■...... | Gen | Church | 171 | 101 | 30 | No | 357 | 3,670 |
| Veterans Admin. Hospital. | N&M | VetAd | 494 | 526 | .. | No | ... | 81 |
| St. James, 2,808—Watonwan Co. | | | | | | | | |
| St. James Hospital■...... | Gen | Church | 20 | 8 | 8 | No | 72 | 821 |
| St. Paul, 271,606—Ramsey Co. | | | | | | | | |
| Ancker Hospital★+◊■▲..... | Gen | Cy&Co | 1,000 | 652 | 50 | Yes | 1,146 | 9,537 |
| Bethesda Hospital★◊■...... | Gen | Church | 96 | 78 | 14 | No | 314 | 2,539 |
| Charles T. Miller Hosp.★◊■ | Gen | Indep | 195 | 130 | 21 | Yes | 405 | 3,463 |
| Children's Hospital⊙■...... | Chil | Indep | 70 | 40 | .. | Yes | ... | 1,436 |
| Gillette State Hospital for Crippled Children+⊙■..... | Ortho | State | 250 | 229 | .. | Yes | ... | 462 |
| Midway Hospital★◊□....... | Gen | Church | 102 | 87 | 25 | Yes | 527 | 2,633 |
| Mounds Park Sanit.◊▲.... | Gen | Church | 125 | 109 | 12 | Yes | 181 | 1,749 |
| Northern Pacific Beneficial Association Hospital★+◊■ | Gen | Indep | 150 | 93 | 12 | Yes | 187 | 2,884 |
| St. John's Hospital◊■..... | Gen | Church | 75 | 58 | 15 | No | 259 | 2,453 |
| St. Joseph's Hospital★◊■▲ | Gen | Church | 242 | 144 | 28 | No | 712 | 6,912 |
| St. Luke's Hospital◊□.... | Gen | Church | 125 | 70 | 25 | No | 262 | 8,226 |
| St. Paul Hospital■........ | Gen | Church | 89 | 31 | 21 | Yes | 223 | 1,222 |
| West Side General Hosp.■ | Gen | Church | 65 | 31 | 16 | No | 194 | 1,026 |
| St. Peter, 4,811—Nicollet Co. | | | | | | | | |
| Covell Hospital........... | Gen | Indiv | 30 | 11 | 10 | No | 62 | 840 |
| St. Peter State Hosp.+◊.. | N&M | State | 1,908 | 1,764 | .. | No | ... | 532 |
| Slayton, 1,102—Murray Co. | | | | | | | | |
| Home Hospital⊙........... | Gen | Part | 26 | 18 | 5 | Yes | 68 | 462 |

## MINNESOTA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Soudan, 20—St. Louis Co. | | | | | | | | |
| Soudan Hospital........... | Gen | Indus | 15 | 10 | 4 | Yes | 24 | 126 |
| Springfield, 2,049—Brown Co. | | | | | | | | |
| St. John's Hospital□....... | Gen | Church | 16 | 7 | 5 | No | 40 | 260 |
| Spring Grove, 867—Houston Co. | | | | | | | | |
| Spring Grove Hospital.... | Gen | Indep | 16 | 10 | 5 | No | 96 | 303 |
| Starbuck, 781—Pope Co. | | | | | | | | |
| Minnewaska Hospital■..... | Gen | Indep | 15 | 9 | 5 | No | 30 | 300 |
| Stillwater, 7,173—Washington Co. | | | | | | | | |
| Lakeview Mem. Hosp.⊙□.. | Gen | Cy&Co | 44 | 21 | 6 | No | 98 | 562 |
| Thief River Falls, 4,268—Pennington Co. | | | | | | | | |
| Oakland Park Sanatorium | TB | County | 59 | 58 | .. | Yes | ... | 24 |
| Physicians Hospital■....... | Gen | Indep | 25 | 12 | 5 | No | 80 | 544 |
| St. Luke's Hospital....... | Gen | Indep | 38 | 18 | 6 | No | 46 | 664 |
| Tracy, 2,570—Lyon Co. | | | | | | | | |
| Clinic Hospital............ | Gen | Part | 12 | 6 | 4 | No | 36 | 307 |
| Tracy Hospital■........... | Gen | Indiv | 17 | 8 | 4 | No | 61 | 426 |
| Two Harbors, 4,425—Lake Co. | | | | | | | | |
| Burns & Christensen Hosp. | Gen | Part | 40 | 20 | .. | Yes | 84 | 857 |
| Tyler, 905—Lincoln Co. | | | | | | | | |
| Tyler Hospital............. | Gen | Indep | 17 | 10 | 5 | No | 53 | 445 |
| Virginia, 11,963—St. Louis Co. | | | | | | | | |
| Lenont Hospital........... | Gen | Indiv | 20 | 10 | 2 | No | 19 | 251 |
| Virginia General Hospital | Gen | Indiv | 18 | 6 | 5 | Yes | 61 | 215 |
| Wabasha, 2,212—Wabasha Co. | | | | | | | | |
| Buena Vista Sanatorium□. | TB | County | 26 | 24 | .. | No | ... | 26 |
| St. Elizabeth's Hospital... | Gen | Church | 45 | 14 | 6 | No | 45 | 400 |
| Wadena, 2,512—Wadena Co. | | | | | | | | |
| Fair Oaks Lodge Sanat.. | TB | County | 38 | 31 | .. | Yes | ... | 67 |
| Wesley Hospital⊙■......... | Gen | Church | 45 | 22 | 5 | No | 76 | 735 |
| Walker, 618—Cass Co. | | | | | | | | |
| Walker Hospital........... | Gen | Indiv | 37 | 32 | 2 | No | 45 | 196 |
| Warren, 1,472—Marshall Co. | | | | | | | | |
| Warren Hospital■ ......... | Gen | Church | 30 | 9 | 6 | No | 48 | 322 |
| Waseca, 3,815—Waseca Co. | | | | | | | | |
| Waseca Memorial Hosp.■. | Gen | City | 23 | 9 | 7 | No | 75 | 345 |
| Watertown, 594—Carver Co. | | | | | | | | |
| Shrader and Lee Hospital. | Gen | Indiv | 11 | 4 | 4 | No | 27 | 127 |
| Wheaton, 1,279—Traverse Co. | | | | | | | | |
| Wheaton Hospital......... | Gen | Indiv | 12 | 5 | 3 | No | 62 | 282 |
| White Earth, 415—Becker Co. | | | | | | | | |
| White Earth Indian Hosp. | Gen | Indian | 23 | 18 | 2 | Yes | 70 | 407 |
| Willmar, 6,173—Kandiyohi Co. | | | | | | | | |
| General Hospital........... | Gen | Part | 20 | 12 | 6 | No | 66 | 1,500 |
| Willmar Hospital........... | Gen | Indep | 34 | 21 | 4 | Yes | 28 | 417 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | City | 13 | 6 | .. | No | 25 | 253 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | Part | 10 | 5 | 4 | No | 33 | 166 |
| ■ | Gen | Indep | 113 | 49 | 16 | Yes | 258 | 2,055 |
| [illegible]). | | | | | | | | |
| berculosis Sanatorium.... | TB | County | 54 | 54 | .. | No | ... | 63 |
| Worthington Clinic Hosp.■ | Gen | Part | 20 | 12 | 5 | No | 80 | 729 |
| Worthington Hospital..... | Gen | Indiv | 10 | 6 | 10 | No | 50 | 125 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aitkin, 1,545—Aitkin Co. | | | | | | | | |
| Beecroft Hospital.......... | Gen | Indiv | 10 | 3 | 4 | No | ... | ..... |
| Anoka, 4,851—Anoka Co. | | | | | | | | |
| Anoka State Asylum...... | N&M | State | 1,000 | 1,030 | .. | No | ... | ..... |
| *Buhl, 1,634—St. Louis Co.* | | | | | | | | |
| St. Louis County Dispensary■ ..................... | Inst | County | 57 | 55 | .. | Yes | ... | ..... |
| Cambridge, 1,183—Isanti Co. | | | | | | | | |
| Minnesota Colony for Epileptics .................... | Epil | State | 460 | 390 | .. | No | ... | 160 |
| Collegeville, —Stearns Co. | | | | | | | | |
| St. John's Univ. Hospital | Inst | Indep | 68 | 15 | .. | No | ... | 545 |
| Detroit Lakes, 3,675—Becker Co. | | | | | | | | |
| Detroit Hospital□.......... | Gen | Indiv | 8 | 2 | 1 | No | ... | 57 |
| Duluth, 101,463—St. Louis Co. | | | | | | | | |
| Contagious Hospital■...... | Iso | City | 30 | 4 | .. | No | ... | 62 |
| St. Louis County Almshouse Dispensary■....... | Inst | County | 65 | 83 | .. | No | ... | 578 |
| Ely, 6,156—St. Louis Co. | | | | | | | | |
| Detention Hospital......... | Iso | City | 16 | 2 | .. | No | ... | ..... |
| Faribault, 12,767—Rice Co. | | | | | | | | |
| Minnesota School for Feebleminded ........... | MenDef | State | 2,100 | 2,005 | .. | No | ... | 266 |
| Minnesota School for Deaf | Inst | State | 30 | 4 | .. | No | ... | 150 |
| Gaylord, 812—Sibley Co. | | | | | | | | |
| Gaylord Hospital.......... | Surg | Indiv | 10 | 2 | .. | No | ... | 35 |
| Glenwood, 2,220—Pope Co. | | | | | | | | |
| Glenwood Hospital■........ | Gen | Part | 8 | 2 | 3 | No | 10 | 90 |
| [illegible]o. | | | | | | | | |
| ■ .... | Gen | Indiv | 6 | 2 | 2 | No | 12 | 58 |
| [illegible]Co. | | | | | | | | |
| [illegible]a.... | N&M | State | 900 | 1,036 | .. | No | ... | ..... |
| [illegible] Co. | | | | | | | | |
| Hibbing Detention Hosp... | Iso | City | 12 | 2 | 2 | No | ... | 35 |
| Minneapolis, 464,356—Hennepin Co. | | | | | | | | |
| Barton-Loring Home for Convalescents ........... | Conv | Indep | 25 | 15 | .. | No | ... | 136 |
| Homewood Hospital........ | N&M | Part | 18 | 15 | .. | No | ... | 72 |
| Minneapolis Sanitarium.... | N&M | Indiv | 12 | 8 | .. | No | ... | ..... |
| Minnesota Sanitarium..... | N&M | Indiv | 20 | 9 | .. | No | ... | ..... |
| Minnesota Soldiers' Home■ | Inst | State | 91 | 75 | .. | No | ... | 200 |
| Parkview Sanatorium■..... | Chron | City | 160 | 143 | .. | ... | ... | 159 |
| | N&M | Indiv | 10 | 7 | .. | ... | ... | ..... |
| | Conv | Indiv | 17 | 14 | .. | No | ... | 14 |
| | N&M | Part | 17 | 14 | .. | No | ... | 122 |
| | N&M | Indiv | 12 | 8 | .. | No | ... | ..... |
| . . | Conv | Indep | 50 | 23 | .. | No | ... | 44 |

Key to symbols and abbreviations is on page 2078

## MINNESOTA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Mudbaden,—Scott Co. | | | | | | | | |
| Mudbaden Sulphur Springs Company | Conv | Indep | 90 | 23 | .. | No | ... | 1,253 |
| Owatonna, 7,654—Steele Co. | | | | | | | | |
| Minnesota State Public School | Inst | State | 40 | 35 | .. | Yes | ... | 1,140 |
| Pelican Rapids, 1,365—Otter Tail Co. | | | | | | | | |
| Dr. Boysen's Hospital | Gen | Indiv | 10 | 3 | 4 | No | 43 | 98 |
| Pelican Rapids Hospital | Gen | Indiv | 7 | 2 | 3 | No | 26 | 69 |
| Pipestone, 3,489—Pipestone Co. | | | | | | | | |
| Pipestone Indian School Hospital | Gen | Indian | 13 | 5 | .. | Yes | ... | 288 |
| Red Wing, 9,629—Goodhue Co. | | | | | | | | |
| Minnesota State Training School for Boys■ | Inst | State | 20 | 5 | .. | Yes | ... | 449 |
| Rochester, 20,621—Olmsted Co. | | | | | | | | |
| Cascade Sanitarium | Conv | Indiv | 16 | 8 | .. | No | 2 | ..... |
| Samaritan Hospital | Conv | Church | 75 | 55 | .. | ... | ... | ..... |
| St. Cloud, 21,000—Stearns Co. | | | | | | | | |
| Minnesota State Reformatory Hospital | Inst | State | 31 | 20 | .. | Yes | ... | 600 |
| St. Paul, 271,606—Ramsey Co. | | | | | | | | |
| Children's Preventorium of Ramsey County■ | TB | Indep | 80 | 67 | .. | No | ... | 96 |
| Junior League Convalescent Home for Women | Conv | Indep | 15 | 9 | .. | No | ... | 159 |
| Mrs. Robbins Rest Home | N&M | Indiv | 13 | 6 | .. | No | ... | 20 |
| Salvation Army Home and Hospital | Mater | Church | 50 | 25 | 40 | No | 80 | 129 |
| Sauk Center, 2,716—Stearns Co. | | | | | | | | |
| Long Hospital | Gen | Indiv | 9 | 3 | 4 | No | 14 | 140 |
| Shakopee, 2,023—Scott Co. | | | | | | | | |
| Mudcura Sanitarium | Conv | Indep | 100 | 32 | .. | No | ... | 1,001 |
| Stillwater, 7,173—Washington Co. | | | | | | | | |
| Minnesota State Prison Hospital■▲ | Inst | State | 35 | 17 | .. | No | ... | 308 |
| Virginia, 11,963—St. Louis Co. | | | | | | | | |
| City Detention Hospital■ | Iso | City | 37 | 5 | .. | No | ... | 13 |
| Watertown, 594—Carver Co. | | | | | | | | |
| Cottage Hospital | Gen | Indiv | 8 | 1 | 1 | No | 5 | 74 |
| Wayzata, 1,100—Hennepin Co. | | | | | | | | |
| Minnetonka Hospital | Gen | Indiv | 9 | 4 | 3 | No | 14 | ..... |
| Willmar, 6,173—Kandiyohi Co. | | | | | | | | |
| Willmar State Asylum | N&M | State | 1,000 | 980 | .. | No | ... | ..... |

Summary for Minnesota:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 177 | 18,558 | 14,557 | 211,608 |
| Related institutions | 47 | 7,110 | 6,269 | 8,625 |
| Totals | 224 | 25,668 | 20,826 | 220,233 |
| Refused registration | 8 | 212 | | |

## MISSISSIPPI

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aberdeen, 3,925—Monroe Co. | | | | | | | | |
| Aberdeen Hospital■ | Gen | Indep | 25 | 4 | 4 | No | 12 | 102 |
| Amory, 3,214—Monroe Co. | | | | | | | | |
| Gilmore Sanitarium◊■ | Gen | Indep | 38 | 12 | 2 | No | 16 | 512 |
| Biloxi, 14,850—Harrison Co. | | | | | | | | |
| Biloxi Hospital◊ | Gen | Indep | 50 | 19 | 8 | Yes | 57 | 760 |
| Booneville, 1,703—Prentiss Co. | | | | | | | | |
| North East Mississippi Hospital◊ | Gen | Indep | 50 | 12 | .. | No | 15 | 618 |
| Brookhaven, 5,288—Lincoln Co. | | | | | | | | |
| King's Daughters Hosp.■ | Gen | Church | 50 | 9 | 6 | No | 32 | 369 |
| Canton, 4,725—Madison Co. | | | | | | | | |
| Madison County King's Daughters Hos[illegible] | Gen | Indep | 21 | 6 | 5 | No | 15 | 235 |
| [illegible] | | | | | | | | |
| [illegible]■ | Gen | Part | 28 | 10 | 4 | No | 20 | 353 |
| [illegible] | Gen | Indiv | 20 | 4 | 2 | No | 24 | 150 |
| [illegible] of Watchmen Hospital (col.) | Gen | Frat | 15 | 6 | .. | No | ... | ..... |
| Clarksdale Hospital | Gen | Indep | 19 | 5 | 5 | No | 51 | 331 |
| Columbia, 4,833—Marion Co. | | | | | | | | |
| Columbia Clinic-Hosp.◊■ | Gen | Indiv | 35 | 12 | 2 | Yes | 13 | 450 |
| Columbus, 10,743—Lowndes Co. | | | | | | | | |
| Columbus Hospital■ | Gen | Indiv | 20 | 10 | 2 | Yes | 8 | 168 |
| Fite Hospital◊■ | Gen | Indiv | 35 | 16 | 3 | No | 29 | 720 |
| Corinth, 6,220—Alcorn Co. | | | | | | | | |
| Corinth Hospital | Gen | Indiv | 12 | 3 | 3 | No | 20 | 174 |
| McRae Hospital◊■ | Gen | Indep | 65 | 11 | 5 | Yes | 12 | 447 |
| Electric Mills, 1,084—Kemper Co. | | | | | | | | |
| George C. Hixon Memorial Hospital◊■ | Gen | Indus | 50 | 10 | 10 | Yes | 38 | 533 |
| Fondren,—Hinds Co. | | | | | | | | |
| Mississippi State Hospital | N&M | State | 1,600 | 2,603 | .. | No | ... | 1,281 |
| Greenville, 14,807—Washington Co. | | | | | | | | |
| King's Daughters Hosp.◊ | Gen | Indep | 100 | 42 | 14 | No | 161 | 1,978 |
| Greenwood, 11,123—Leflore Co. | | | | | | | | |
| Greenwood Leflore Hosp.◊ | Gen | Cy&Co | 35 | 13 | 8 | No | 58 | 416 |
| Grenada, 4,349—Grenada Co. | | | | | | | | |
| Grenada General Hosp.◊■ | Gen | Part | 50 | 12 | 6 | No | 25 | 600 |
| Gulfport, 12,547—Harrison Co. | | | | | | | | |
| King's Daughters Hosp.◊ | Gen | Church | 100 | 35 | 8 | No | 95 | 1,943 |
| Veterans Admin. Hospital | N&M | VetAd | 425 | 433 | .. | Yes | ... | 210 |
| Hattiesburg, 18,601—Forrest Co. | | | | | | | | |
| Methodist Hospital◊■ | Gen | Church | 75 | 30 | 12 | Yes | 143 | 1,589 |
| South Mississippi Infirm.◊■ | Gen | Indiv | 75 | 15 | 15 | Yes | 24 | 539 |
| Houston, 1,477—Chickasaw Co. | | | | | | | | |
| Houston Hospital◊■ | Gen | Indep | 40 | 17 | 3 | No | 12 | 600 |
| Jackson, 48,282—Hinds Co. | | | | | | | | |
| Jackson Infirmary◊ | Gen | Indiv | 55 | 24 | 12 | No | 74 | 1,849 |
| Mississippi Baptist Hosp.◊■ | Gen | Church | 85 | 58 | 10 | No | 225 | 4,800 |
| Mississippi State Charity Hospital◊ | Gen | State | 115 | 102 | 2 | No | 51 | 2,857 |
| Dr. Willis Walley Hosp.◊■ | Gen | Indiv | 65 | 11 | 2 | Yes | 18 | 572 |
| Laurel, 18,017—Jones Co. | | | | | | | | |
| Laurel General Hospital◊■ | Gen | Indiv | 50 | 15 | 6 | No | 70 | 951 |
| South Mississippi Charity Hospital◊ | Gen | State | 125 | 88 | 12 | Yes | 355 | 3,161 |
| Lexington, 2,590—Holmes Co. | | | | | | | | |
| Holmes County Community Hospital■ | Gen | Indep | 25 | 4 | 2 | No | 18 | 293 |
| Macon, 2,198—Noxubee Co. | | | | | | | | |
| Macon Hospital■ | Gen | Indiv | 20 | 5 | 2 | No | 12 | 186 |
| McComb, 10,057—Pike Co. | | | | | | | | |
| McComb City Hospital◊ | Gen | Indiv | 25 | 17 | 2 | No | 41 | 725 |
| McComb Infirmary◊■ | Gen | Indiv | 30 | 9 | 3 | No | 41 | 608 |
| Meridian, 31,954—Lauderdale Co. | | | | | | | | |
| Anderson Infirmary■ | Gen | Indiv | 65 | 30 | 5 | Yes | 64 | ..... |
| East Mississippi State Hospital | N&M | State | 850 | 886 | .. | No | ... | 32 |
| Matty Hersee Hospital◊ | Gen | State | 110 | 80 | 8 | Yes | 105 | 2,320 |
| Meridian Sanitarium■ | Gen | Indiv | 50 | 18 | 12 | Yes | 32 | 1,240 |
| Dr. F. G. Riley's Children, Maternity, General Hospital and Clinic | Gen | Indiv | 25 | 5 | 6 | No | 33 | 267 |
| Rush's Infirmary◊■ | Gen | Part | 48 | 18 | 4 | No | 20 | 1,012 |
| Natchez, 13,422—Adams Co. | | | | | | | | |
| Chamberlain-Rice Hosp.◊■ | Gen | Indep | 65 | 15 | 3 | Yes | 12 | 500 |
| Natchez Charity Hosp.◊■ | Gen | State | 125 | 82 | 8 | Yes | 197 | 2,397 |
| Natchez Sanatorium◊■ | Gen | Indep | 35 | 21 | 7 | No | 63 | 793 |
| New Albany, 3,187—Union Co. | | | | | | | | |
| Mayes Hospital■ | Gen | Indep | 30 | 14 | 4 | No | 14 | 744 |
| New Albany Hospital and Clinic■ | Gen | Indep | 26 | 15 | 2 | No | 8 | 150 |
| Newton, 2,011—Newton Co. | | | | | | | | |
| Newton Infirmary■ | Gen | Indiv | 25 | 11 | 5 | Yes | 23 | 612 |
| Oxford, 2,890—Lafayette Co. | | | | | | | | |
| Bramlett Hospital■ | Gen | Part | 25 | 12 | 4 | Yes | 10 | 210 |
| Oxford Hospital◊■ | Gen | Indiv | 30 | 12 | 3 | No | 25 | 780 |
| Pascagoula, 4,339—Jackson Co. | | | | | | | | |
| Jackson County Hospital■ | Gen | County | 22 | 5 | 5 | No | ... | 259 |
| Philadelphia, 2,560—Neshoba Co. | | | | | | | | |
| Choctaw-Mississippi Hosp. | Gen | Indian | 31 | 16 | 6 | Yes | 21 | 376 |
| Philadelphia Hospital | Gen | Indiv | 14 | 9 | 4 | No | ... | ..... |
| Picayune, 4,698—Pearl River Co. | | | | | | | | |
| Martin Sanatorium■ | Gen | Indiv | 25 | .. | 2 | Yes | ... | ..... |
| Poplarville, 1,498—Pearl River Co. | | | | | | | | |
| Pearl River County Hosp.■ | Gen | Indep | 20 | 3 | 2 | No | 6 | 250 |
| Rosedale, 2,117—Bolivar Co. | | | | | | | | |
| King's Daughters [illegible] | Gen | Church | 10 | 4 | 3 | No | 24 | 172 |
| [illegible] | | | | | | | | |
| [illegible] Sanatorium■ | TB | State | 480 | 363 | .. | Yes | ... | 365 |
| Starkville, 3,612—Oktibbeha Co. | | | | | | | | |
| Oktibbeha Hospital■ | Gen | Indiv | 20 | 5 | 2 | Yes | 12 | 328 |
| Tupelo, 6,361—Lee Co. | | | | | | | | |
| Tupelo Hospital◊■ | Gen | Indep | 35 | 12 | 4 | Yes | 43 | 732 |
| Tylertown, 1,102—Walthall Co. | | | | | | | | |
| Tylertown Hospital | Gen | Indiv | 20 | 8 | 2 | No | ... | ..... |
| Vicksburg, 22,943—Warren Co. | | | | | | | | |
| Mississippi State Charity Hospital◊■ | Gen | State | 110 | 87 | 10 | Yes | 110 | 2,142 |
| Vicksburg Hospital◊■ | Gen | Part | 69 | 23 | 3 | No | 30 | 1,479 |
| Vicksburg Infirmary◊■ | Gen | Indiv | 100 | 40 | 8 | Yes | 18 | 635 |
| Vicksburg Sanitarium and Crawford Street Hosp.◊■ | Gen | Indep | 100 | 45 | 6 | Yes | 48 | 1,589 |
| Water Valley, 3,738—Yalobusha Co. | | | | | | | | |
| Water Valley Hospital■ | Gen | Part | 25 | 8 | 4 | No | 12 | 300 |
| West Point, 4,677—Clay Co. | | | | | | | | |
| Ivy Hospital◊■ | Gen | Indiv | 25 | 12 | 6 | No | 30 | 350 |
| Winona, 2,607—Montgomery Co. | | | | | | | | |
| Winona Infirmary◊■ | Gen | Indep | 38 | 8 | 2 | No | 30 | 300 |
| Yazoo City, 5,579—Yazoo Co. | | | | | | | | |
| King's Daughters Hospital | Gen | Indep | 50 | 4 | 4 | No | 21 | 315 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| A. and M. College, 220—Oktibbeha Co. | | | | | | | | |
| James Z. George Memorial Hospital | Inst | State | 41 | 7 | .. | Yes | ... | 524 |
| Biloxi, 14,850—Harrison Co. | | | | | | | | |
| Jefferson Davis Soldiers' Home | Inst | State | 75 | 65 | .. | No | ... | ..... |
| Cary, 419—Sharkey Co. | | | | | | | | |
| Dr. W. C. Pool's Sanit.■ | Gen | Indiv | 7 | 1 | .. | Yes | ... | 61 |
| Ellisville, 2,127—Jones Co. | | | | | | | | |
| Ellisville State School | MenDef | State | 500 | 300 | .. | No | ... | ..... |
| Greenville, 14,807—Washington Co. | | | | | | | | |
| King's Daughters Hospital (col.) | Gen | Indep | 40 | 12 | .. | No | 7 | 425 |
| Greenwood, 11,123—Leflore Co. | | | | | | | | |
| Greenwood Colored Hosp. | Gen | Indiv | 10 | 5 | .. | No | 3 | ..... |
| Jackson, 48,282—Hinds Co. | | | | | | | | |
| Mississippi Methodist Orphans Home | Inst | Church | 6 | ... | .. | No | ... | ..... |
| Meridian, 31,954—Lauderdale Co. | | | | | | | | |
| King's Daughters Tuberculosis Hospital | TB | Church | 44 | 30 | .. | No | ... | ..... |

Key to symbols and abbreviations is on page 2078

## MISSISSIPPI—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Okolona, 2,235—Chickasaw Co. | | | | | | | | |
| Wicks Hospital | Gen | Indiv | 8 | 3 | 1 | Yes | 6 | ..... |
| University, 15—Lafayette Co. | | | | | | | | |
| University of Mississippi Hospital | Inst | State | 35 | 12 | .. | No | ... | 780 |

Summary for Mississippi:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 67 | 7,241 | 5,562 | 52,141 |
| Related institutions | 10 | 766 | 435 | 1,890 |
| Totals | 77 | 8,007 | 5,997 | 54,031 |
| Refused registration | 2 | 90 | | |

## MISSOURI

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bonne Terre, 4,021—St. Francois Co. | | | | | | | | |
| Bonne Terre Hospital | Gen | Indep | 30 | 17 | 7 | No | 59 | 517 |
| Boonville, 6,435—Cooper Co. | | | | | | | | |
| St. Joseph's Hospital◊ | Gen | Church | 75 | 40 | 14 | No | 51 | 1,165 |
| Butler, 2,706—Bates Co. | | | | | | | | |
| Butler Community Hosp. | Gen | Indiv | 10 | 3 | .. | No | 14 | 156 |
| California, 2,384—Moniteau Co. | | | | | | | | |
| Latham Sanitarium | Gen | Indiv | 35 | 25 | 2 | No | 8 | 1,900 |
| Cape Girardeau, 16,227—Cape Girardeau Co. | | | | | | | | |
| St. Francis Hospital■ | Gen | Church | 50 | 40 | 8 | No | 48 | 747 |
| Southeast Missouri Hosp.◊■ | Gen | Indep | 66 | 30 | 5 | No | 52 | 972 |
| Carrollton, 4,058—Carroll Co. | | | | | | | | |
| Cook's Hospital | Gen | Indiv | 12 | 5 | 2 | No | 5 | 178 |
| Carthage, 9,736—Jasper Co. | | | | | | | | |
| Chapman Hospital | Gen | Indiv | 25 | 6 | 2 | Yes | 14 | ..... |
| McCune-Brooks Hospital■ | Gen | City | 46 | 12 | 6 | No | 46 | 690 |
| Chillicothe, 8,177—Livingston Co. | | | | | | | | |
| Chillicothe Hospital | Gen | Part | 26 | 10 | 2 | ... | 26 | 408 |
| Clayton, 9,613—St. Louis Co. | | | | | | | | |
| St. Louis County Hosp.★+■ | Gen | County | 150 | 100 | 48 | Yes | ... | ..... |
| Clinton, 5,744—Henry Co. | | | | | | | | |
| Dr. N. I. Stebbins Hosp. | Surg | Indiv | 15 | 5 | 2 | Yes | 3 | 90 |
| Columbia, 14,967—Boone Co. | | | | | | | | |
| Boone County Gen. Hosp.■ | Gen | County | 47 | 20 | 3 | Yes | 48 | 773 |
| State Hospital for Crippled Children | (Included in University Hospitals) | | | | | | | |
| University Hospitals◊■ | Gen | State | 92 | 49 | 8 | Yes | 50 | 1,978 |
| Excelsior Springs, 4,565—Clay Co. | | | | | | | | |
| Excelsior Springs Sanitarium and Hospital | Gen | Part | 50 | 18 | .. | No | 12 | 700 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 300 | 280 | .. | No | ... | 2,453 |
| Farmington, 3,001—St. Francois Co. | | | | | | | | |
| Missouri State Hosp. No.4+ | N&M | State | 649 | 1,130 | .. | Yes | ... | 327 |
| Fayette, 2,630—Howard Co. | | | | | | | | |
| Lee Hospital | Gen | Part | 20 | 7 | 5 | No | 60 | 368 |
| Fulton, 6,105—Callaway Co. | | | | | | | | |
| State Hospital No. 1 | N&M | State | 1,300 | 1,644 | .. | No | ... | 274 |
| Glendale (Kirkwood P.O.), 1,451—St. Louis Co. | | | | | | | | |
| Oakland Park Hospital | N&M | Indep | 18 | 10 | .. | No | ... | ..... |
| Hannibal, 22,761—Marion Co. | | | | | | | | |
| Levering Hospital◊■ | Gen | City | 78 | 31 | 18 | No | 105 | 1,517 |
| St. Elizabeth's Hospital■ | Gen | Church | 60 | 41 | 10 | No | 140 | 1,080 |
| Harrisonville, 2,306—Cass Co. | | | | | | | | |
| Harrisonville Hospital | Gen | Indiv | 10 | 3 | 3 | No | 5 | 96 |
| Independence, 15,296—Jackson Co. | | | | | | | | |
| Independence Sanitarium◊ | Gen | Church | 68 | 61 | 12 | No | 243 | 1,846 |
| Ironton, 974—Iron Co. | | | | | | | | |
| Arcadia Valley Hospital | Gen | Indep | 32 | 14 | 5 | No | 30 | 165 |
| Jefferson Barracks, 842—St. Louis Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 114 | 30 | 3 | Yes | 24 | 944 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 372 | 385 | .. | No | ... | 1,453 |
| Jefferson City, 21,596—Cole Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 60 | 39 | 9 | Yes | 120 | 1,407 |
| Joplin, 33,454—Jasper Co. | | | | | | | | |
| Freeman Hospital◊ | Gen | Church | 90 | 50 | 12 | Yes | 93 | 1,484 |
| St. John's Hospital◊■ | Gen | Church | 75 | 42 | 10 | No | 86 | 1,526 |
| Kansas City, 399,746—Jackson Co. | | | | | | | | |
| Children's Mercy Hosp.◊ | Chil | Indep | 149 | 138 | 12 | Yes | ... | 2,479 |
| Evangelical Hospital◊ | Gen | Church | 86 | 30 | 5 | No | 54 | 1,095 |
| Fairmount Maternity Hosp. | Mater | Indiv | 50 | 20 | 50 | No | 140 | 140 |
| Kansas City General Hospital★◊▲ | Gen | City | 375 | 328 | 25 | Yes | 715 | 7,907 |
| Kansas City General Hospital No. 2 (col.)★◊▲ | Gen | City | 250 | 181 | 24 | Yes | 247 | 2,806 |
| Kansas City Industrial Hospital | Gen | Indep | 12 | 4 | 4 | Yes | ... | ..... |
| Kansas City Tuber. Sanat.■ | TB | City | 161 | 149 | .. | No | ... | 218 |
| Menorah Hospital | Gen | Indep | 131 | 61 | 23 | No | 84 | 602 |
| Research Hospital★◊ | Gen | Indep | 205 | 157 | 20 | No | 390 | 5,361 |
| St. Joseph's Hospital★◊ | Gen | Church | 250 | 141 | 26 | No | 388 | 4,507 |
| St. Luke's Hospital★◊ | Gen | Church | 208 | 164 | 36 | No | 781 | 5,809 |
| St. Mary's Hospital★◊ | Gen | Church | 175 | 130 | .. | No | ... | 4,064 |
| St. Vincent's Hospital | Mater | Church | 40 | 25 | 40 | No | 659 | 695 |
| Simpson-Major Sanitarium | N&M | Part | 35 | 14 | .. | No | ... | 128 |
| Trinity Lutheran Hosp.★◊ | Gen | Church | 125 | 90 | 24 | No | 349 | 2,755 |
| Veterans Admin. Hosp.▲ | Gen | VetAd | 200 | 170 | .. | No | ... | 1,358 |
| Vineyard Park Hospital | Gen | Indiv | 30 | 28 | .. | No | 5 | 1,123 |
| Wheatley-Provident Hospital (col.)◊ | Gen | Indep | 67 | 20 | .. | Yes | 13 | 406 |
| Willows Maternity Sanit. | Mater | Indiv | 79 | 62 | 75 | No | 296 | 301 |
| G. Wilse Robinson Sanit. | N&M | Indiv | 50 | 28 | .. | No | ... | 211 |

## MISSOURI—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Kirksville, 8,293—Adair Co. | | | | | | | | |
| Grim-Smith Hospital and Clinic◊◘ | Gen | Indep | 40 | 24 | 3 | No | 12 | 906 |
| Louisiana, 3,549—Pike Co. | | | | | | | | |
| Pike County Hospital◘ | Gen | County | 35 | 11 | 15 | No | 31 | 341 |
| Macon, 3,851—Macon Co. | | | | | | | | |
| Samaritan Hospital■ | Gen | Indiv | 28 | 6 | 6 | Yes | 22 | 195 |
| Marceline, 3,555—Linn Co. | | | | | | | | |
| B. B. Putnam Mem. Hosp.■ | Gen | Indiv | 15 | 12 | 2 | No | 20 | 275 |
| Maryville, 5,217—Nodaway Co. | | | | | | | | |
| St. Francis Hospital◊◘ | Gen | Church | 85 | 20 | 6 | No | 65 | 759 |
| Mexico, 8,290—Audrain Co. | | | | | | | | |
| Audrain Hospital■ | Gen | County | 43 | 24 | 8 | No | 84 | 1,057 |
| Moberly, 13,772—Randolph Co. | | | | | | | | |
| McCormick Hospital■ | Gen | Indiv | 40 | 18 | 5 | No | 47 | 560 |
| Wabash Employees' Hosp.■ | Indus | Indus | 50 | 20 | .. | Yes | ... | 516 |
| Woodland Hospital■ | Gen | Indep | 50 | 19 | 5 | No | 28 | 578 |
| Monett, 4,099—Barry Co. | | | | | | | | |
| Dr. William M. West's Hospital | Gen | Indiv | 18 | 8 | 6 | No | 35 | 200 |
| Mt. Vernon, 1,342—Lawrence Co. | | | | | | | | |
| Missouri State Sanatorium | TB | State | 300 | 356 | .. | Yes | ... | 512 |
| Nevada, 7,448—Vernon Co. | | | | | | | | |
| Nevada Med. & Surg. Sanit. | Gen | Indiv | 14 | 5 | 3 | No | 12 | 13 |
| State Hospital No. 3+ | N&M | State | 1,300 | 1,682 | .. | No | ... | 36 |
| Overland, 830—St. Louis Co. | | | | | | | | |
| Overland Hospital | Gen | Indiv | 10 | 3 | 6 | No | 30 | 69 |
| Ozark, 885—Christian Co. | | | | | | | | |
| Ozark Sanatorium | Gen | Indiv | 12 | 4 | 1 | No | ... | ..... |
| Pine Lawn,—St. Louis Co. | | | | | | | | |
| Tiernon Hosp. and Clinic | Gen | Indiv | 35 | 10 | 8 | Yes | 49 | 351 |
| Poplar Bluff, 7,551—Butler Co. | | | | | | | | |
| Brandon Hospital■ | Gen | Indiv | 40 | 28 | 4 | Yes | 36 | 338 |
| Lucy Lee Hospital | Gen | Indiv | 26 | 18 | 3 | Yes | ... | ..... |
| Poplar Bluff Hospital◘ | Gen | Indep | 35 | 20 | 6 | Yes | 36 | 492 |
| Robertson, 714—St. Louis Co. | | | | | | | | |
| Jewish Sanatorium | TB | Indep | 108 | 70 | .. | Yes | ... | 78 |
| Rolla, 3,670—Phelps Co. | | | | | | | | |
| U. S. Trachoma Hospital | Trach | USPHS | 38 | 33 | .. | Yes | ... | 320 |
| St. Charles, 10,491—St. Charles Co. | | | | | | | | |
| St. Joseph's Hospital■ | Gen | Church | 50 | 35 | 7 | No | 80 | 1,276 |
| St. Joseph, 80,935—Buchanan Co. | | | | | | | | |
| Dr. Byrd's Sanitarium | N&M | Indiv | 30 | 19 | .. | No | ... | ..... |
| Missouri Methodist Hospital★◊◘ | Gen | Church | 200 | 114 | 20 | No | 292 | 4,562 |
| St. Joseph's Hospital★◊■ | Gen | Church | 134 | 68 | 16 | No | 178 | 3,068 |
| State Hospital No. 2+ | N&M | State | 1,700 | 2,224 | .. | Yes | ... | 507 |
| Dr. C. R. Woodson's Sanit. | N&M | Indep | 40 | 21 | .. | No | ... | ..... |
| St. Louis, 821,960—St. Louis City | | | | | | | | |
| Alexian Brothers Hosp.★◊▲ | Gen | Church | 250 | 147 | .. | Yes | ... | 1,602 |
| American Hospital | Gen | Indiv | 35 | 8 | 20 | Yes | 50 | 250 |
| Barnard Free Skin and Cancer Hospital■ | Sk&Ca | Indep | 43 | 36 | .. | Yes | ... | 665 |
| Barnes Hospital★+◊■ | Gen | Church | 270 | 219 | .. | No | ... | 6,315 |
| Bethesda Hospital◊ | Gen | Church | 105 | 66 | 15 | No | 138 | 834 |
| Central Hospital◊ | Gen | Indep | 70 | 50 | 14 | No | ... | ..... |
| Christian Hospital★◊ | Gen | Indep | 108 | 76 | 25 | Yes | 278 | 2,161 |
| City Isolation Hosp.+⊙■ | TB,Iso | City | 300 | 195 | .. | No | 1 | 3,128 |
| City Sanitarium+ | N&M | City | 2,185 | 3,336 | .. | No | ... | 995 |
| De Paul Hospital★◊ | Gen | Church | 185 | 103 | 35 | Yes | 433 | 3,318 |
| Evangelical Deaconess Home and Hospital★◊ | Gen | Church | 150 | 104 | 20 | No | 245 | 3,248 |
| Frisco Employees' Hosp. | Indus | Indus | 93 | 40 | .. | Yes | ... | 1,509 |
| Jewish Hospital★+◊ | Gen | Indep | 268 | 149 | 33 | Yes | 474 | 4,800 |
| Josephine Hospital◊ | Gen | Indep | 48 | 31 | 7 | No | 42 | 672 |
| Lutheran Hospital★◊ | Gen | Church | 170 | 100 | 27 | No | 468 | 3,397 |
| Missouri Baptist Hosp.★◊ | Gen | Church | 359 | 265 | 41 | No | 463 | 6,466 |
| Missouri Pacific Hosp.◘ | Indus | Indus | 300 | 119 | .. | Yes | ... | 3,780 |
| Mt. St. Rose Sanatorium+ | TB | Church | 150 | 130 | .. | No | ... | 381 |
| Peoples Hospital (col.) | Gen | Indep | 50 | 24 | 6 | No | 27 | 500 |
| Robert Koch Hospital■ | TB | City | 495 | 487 | .. | Yes | 5 | 316 |
| St. Ann's Lying-In Hosp. | Mater | Church | 50 | 40 | 14 | ... | ... | ..... |
| St. Anthony's Hospital★◊ | Gen | Church | 200 | 103 | 50 | No | 610 | 2,915 |
| St. John's Hospital★◊ | Gen | Church | 300 | 209 | 31 | Yes | 274 | 5,737 |
| St. Louis Children's Hospital+◊■ | Chil | Indep | 203 | 142 | .. | Yes | ... | 3,054 |
| St. Louis City Hosp.★◊■▲ | Gen | City | 900 | 760 | 56 | Yes | 2,077 | 11,083 |
| St. Louis City Hospital No. 2 (col.)★+◊▲ | Gen | City | 470 | 332 | 30 | Yes | 883 | 8,338 |
| St. Louis Mater. Hosp.+◊■ | Mater | Indep | 104 | 65 | 104 | Yes | 1,589 | 1,873 |
| St. Luke's Hospital★+◊ | Gen | Church | 186 | 130 | 24 | Yes | 276 | 4,054 |
| St. Mary's Hospital★+◊▲ | Gen | Church | 275 | 212 | 45 | Yes | 743 | 4,980 |
| St. Mary's Infirmary★+ | Gen | Church | 135 | 101 | .. | Yes | ... | 2,541 |
| St. Vincent's Sanitarium | N&M | Church | 300 | 300 | .. | No | ... | ..... |
| Shriners Hospital for Crippled Children+■ | Ortho | Frat | 120 | 110 | .. | Yes | ... | 387 |
| U. S. Marine Hospital■ | Gen | USPHS | 100 | 90 | .. | Yes | ... | 575 |
| Sedalia, 20,806—Pettis Co. | | | | | | | | |
| City Hospital No. 2 (col.) | Gen | City | 10 | 2 | 2 | No | 1 | 50 |
| John H. Bothwell Memorial Hospital | Gen | City | 120 | New | 12 | No | 41 | 483 |
| Sikeston, 5,676—Scott Co. | | | | | | | | |
| Sikeston Emergency Hosp. | Gen | Part | 10 | 7 | 3 | No | 30 | 198 |
| Springfield, 57,527—Greene Co. | | | | | | | | |
| Burge Hospital◊ | Gen | Church | 35 | 23 | 5 | No | 91 | 815 |
| St. John's Hospital◊ | Gen | Church | 100 | 72 | 10 | No | 210 | 2,644 |
| Springfield Hospital◊ | Gen | Indep | 88 | 54 | 12 | No | ... | 1,971 |
| Stella, 226—Newton Co. | | | | | | | | |
| C. Cardwell Hospital | Gen | Indiv | 20 | 6 | 2 | No | 10 | 600 |
| Trenton, 6,992—Grundy Co. | | | | | | | | |
| Cullers Hospital■ | Gen | Indiv | 20 | 6 | 2 | No | 20 | 1,803 |
| Wright Hospital | Gen | Indiv | 15 | 4 | 6 | No | 20 | 320 |
| Washington, 5,918—Franklin Co. | | | | | | | | |
| St. Francis Hospital■ | Gen | Church | 36 | 22 | 6 | No | 80 | 610 |
| Webb City, 6,876—Jasper Co. | | | | | | | | |
| Jasper Co. Tuber. Hosp. | TB | County | 103 | 84 | .. | Yes | ... | 131 |

Key to symbols and abbreviations is on page 2078

## MISSOURI—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Webster Groves, 16,487—St. Louis Co. | | | | | | | | |
| Glenwood Sanatorium | N&M | Indep | 35 | 25 | .. | No | ... | 50 |
| Westplains, 3,335—Howell Co. | | | | | | | | |
| Christa Hogan Hospital | Gen | Indiv | 18 | 10 | 2 | No | 18 | 294 |
| **Related Institutions** | | | | | | | | |
| Diamond, 515—Newton Co. | | | | | | | | |
| Dr. Riley F. Cheatham's Hospital | Gen | Indiv | 8 | 3 | .. | No | 15 | 100 |
| Higginsville, 3,339—Lafayette Co. | | | | | | | | |
| Confederate Home Hosp. | Inst | State | 31 | 9 | .. | No | ... | 66 |
| Independence, 15,296—Jackson Co. | | | | | | | | |
| Vaile Sanitarium | Conv | Indep | 27 | 16 | .. | No | ... | 6 |
| Jefferson City, 21,596—Cole Co. | | | | | | | | |
| Missouri State Penitentiary Hospital■ | Inst | State | 70 | 61 | .. | No | ... | 1,070 |
| Kansas City, 399,746—Jackson Co. | | | | | | | | |
| Baptist Hospital | Inst | Indep | 35 | 15 | .. | No | ... | 55 |
| Kansas City Boy's Orphan Home | Inst | Church | 14 | 2 | .. | No | ... | 75 |
| Trowbridge Training School for Nervous & Backward Children | MenDef | Indiv | 25 | 20 | .. | No | ... | 5 |
| Liberty, 3,516—Clay Co. | | | | | | | | |
| Missouri Odd Fellows Home Hospital | Inst | Frat | 80 | 70 | .. | No | ... | 840 |
| Little Blue, 35—Jackson Co. | | | | | | | | |
| Jackson County Home for the Aged and Infirm | Inst | County | 300 | 300 | .. | ... | ... | ..... |
| Marshall, 8,103—Saline Co. | | | | | | | | |
| Missouri State School | MenDef | State | 1,045 | 1,045 | .. | Yes | ... | 921 |
| Marthasville, 304—Warren Co. | | | | | | | | |
| Evangelical Emmaus Home for Epileptics and Feeble-minded | MenDef | Church | 125 | 90 | .. | No | ... | 8 |
| Mountain Grove, 2,229—Wright Co. | | | | | | | | |
| Ryan Hospital | Gen | Indiv | 7 | 2 | 1 | No | 3 | 37 |
| Paris, 1,367—Monroe Co. | | | | | | | | |
| McMurry Hospital | Gen | Indiv | 8 | ... | 1 | Yes | ... | ..... |
| Parkville, 636—Platte Co. | | | | | | | | |
| Waverly Hospital | Inst | Indep | 21 | ... | .. | No | ... | ..... |
| Pomona, 337—Howell Co. | | | | | | | | |
| Pomona Hospital | Gen | Indiv | 10 | New | 3 | No | ... | ..... |
| Rogersville, 461—Webster Co. | | | | | | | | |
| Rogersville Hospital■ | Gen | Indiv | 7 | 2 | 3 | No | 10 | 40 |
| Rolla, 3,670—Phelps Co. | | | | | | | | |
| Missouri School of Mines Hospital | Inst | State | 14 | 2 | .. | No | 1 | 109 |
| St. Charles, 10,491—St. Charles Co. | | | | | | | | |
| Evangelical Emmaus Home for Epileptics and Feeble-minded | MenDef | Church | 141 | 113 | .. | No | ... | 7 |
| St. James, 1,294—Phelps Co. | | | | | | | | |
| State Federal Soldiers Home Hospital | Inst | State | 35 | 25 | .. | Yes | ... | ..... |
| St. Joseph, 80,935—Buchanan Co. | | | | | | | | |
| Sunnyslope Hospital | Iso | City | 20 | ... | .. | No | ... | 94 |
| St. Louis, 821,960—St. Louis City | | | | | | | | |
| City Infirmary■▲ | Inst | City | 93 | 80 | .. | No | ... | 475 |
| Hosp. of Masonic Home | Inst | Frat | 120 | 98 | .. | No | ... | 481 |
| St. Louis Training School | MenDef | City | 540 | 544 | .. | Yes | ... | 113 |
| Salvation Army Women's Home and Hospital | Mater | Church | 16 | 5 | 10 | No | 122 | 146 |
| Shelbina, 1,826—Shelby Co. | | | | | | | | |
| Furnish Hospital■ | Gen | Indiv | 9 | ... | .. | No | ... | ..... |
| Springfield, 57,527—Greene Co. | | | | | | | | |
| Anderson Home Infirmary | EENT | Indep | 14 | ... | .. | No | ... | ..... |
| Warrensburg, 5,146—Johnson Co. | | | | | | | | |
| Oak Hill Sanitarium | Gen | Indiv | 8 | 3 | 1 | No | 7 | 81 |
| Warrensburg Clinic | Gen | Part | 10 | 2 | .. | No | 6 | 57 |
| Webster Groves, 16,487—St. Louis Co. | | | | | | | | |
| Miriam Convalescent Home | Conv | Frat | 30 | 15 | .. | No | ... | 370 |
| Westplains, 3,335—Howell Co. | | | | | | | | |
| Cottage Hospital | Gen | Indiv | 7 | 1 | 2 | No | 4 | 35 |

Summary for Missouri:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 123 | 23,708 | 19,553 | 184,480 |
| Related institutions | 30 | 2,870 | 2,537 | 11,301 |
| Totals | 153 | 26,578 | 22,090 | 195,781 |
| Refused registration | 30 | 1,572 | | |

## MONTANA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Anaconda, 12,494—Deerlodge Co. | | | | | | | | |
| St. Ann's Hospital◊■ | Gen | Church | 65 | 37 | 10 | Yes | 129 | 1,012 |
| Billings, 16,380—Yellowstone Co. | | | | | | | | |
| Billings Deaconess Hosp.◊■ | Gen | Church | 51 | 34 | 12 | No | 210 | 1,151 |
| St. Vincent's Hospital◊ | Gen | Church | 188 | 40 | 12 | No | 119 | 1,459 |
| Bozeman, 6,855—Gallatin Co. | | | | | | | | |
| Bozeman Deaconess Hosp.◊■ | Gen | Church | 50 | 29 | 10 | No | 107 | 950 |
| Browning, 1,172—Glacier Co. | | | | | | | | |
| Blackfeet Hospital | Gen | Indian | 30 | 33 | 9 | Yes | 38 | 393 |
| Butte, 39,532—Silver Bow Co. | | | | | | | | |
| Butte Deaconess Hospital | Gen | Church | 25 | 9 | 5 | No | 57 | 340 |
| Murray Hospital★■ | Gen | Indep | 116 | 77 | 12 | Yes | 126 | 2,517 |
| St. James Hospital★◊■ | Gen | Church | 152 | 79 | 13 | Yes | 238 | 2,203 |

## MONTANA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Choteau, 926—Teton Co. | | | | | | | | |
| Choteau Hospital | Gen | Indiv | 10 | 5 | .. | No | 56 | 206 |
| Conrad, 1,499—Pondera Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 34 | 19 | 10 | ... | 94 | 648 |
| Crow Agency, 113—Big Horn Co. | | | | | | | | |
| Crow Indian Hospital■ | Gen | Indian | 30 | 10 | 6 | Yes | 48 | 446 |
| Deer Lodge, 3,510—Powell Co. | | | | | | | | |
| Montana State Tuberculosis Sanitarium | TB | State | 156 | 142 | .. | No | ... | ..... |
| St. Joseph's Hospital | Gen | Church | 35 | 18 | 6 | No | 49 | 315 |
| Dillon, 2,422—Beaverhead Co. | | | | | | | | |
| Barrett Hospital | Gen | Indep | 22 | 8 | 4 | No | 33 | 364 |
| Forsyth, 1,591—Rosebud Co. | | | | | | | | |
| Rosebud Memorial Hosp.■ | Gen | Indiv | 25 | 10 | 6 | No | 31 | 111 |
| Ft. Benton, 1,109—Chouteau Co. | | | | | | | | |
| St. Clare Hospital | Gen | Church | 40 | 17 | 6 | No | 47 | 652 |
| Ft. Harrison,—Lewis and Clark Co. | | | | | | | | |
| Veterans Admin. Hospital■ | Gen | VetAd | 226 | 222 | .. | No | ... | 1,603 |
| Ft. Missoula (Missoula P.O.),—Missoula Co. | | | | | | | | |
| Station Hospital | Gen | Army | 40 | 9 | .. | Yes | ... | 327 |
| Glasgow, 2,216—Valley Co. | | | | | | | | |
| Frances Mahon Deaconess Hospital | Gen | Church | 25 | 15 | 6 | No | 63 | 308 |
| Glendive, 4,629—Dawson Co. | | | | | | | | |
| Glendive General Hospital | Gen | Indiv | 25 | 9 | 5 | No | 39 | 174 |
| Northern Pacific Hospital. | Gen | Indus | 60 | 46 | 8 | Yes | 60 | 1,532 |
| Great Falls, 28,822—Cascade Co. | | | | | | | | |
| Columbus Hospital◊■ | Gen | Church | 200 | 125 | 50 | No | 456 | 4,135 |
| Montana Deaconess Hosp.◊■ | Gen | Church | 185 | 111 | 26 | No | 356 | 3,119 |
| Hamilton, 1,839—Ravalli Co. | | | | | | | | |
| Marcus Daly Memorial Hospital■ | Gen | Indep | 31 | New | 6 | No | ... | ..... |
| Hardin, 1,169—Big Horn Co. | | | | | | | | |
| Lucy Winn Hospital | Gen | Indiv | 12 | 4 | 5 | No | 18 | 112 |
| Harlem, 708—Blaine Co. | | | | | | | | |
| Ft. Belknap Indian Hosp. | Gen | Indian | 46 | 7 | .. | Yes | 29 | 183 |
| Havre, 6,372—Hill Co. | | | | | | | | |
| Kennedy Deaconess Hosp.◊ | Gen | Church | 40 | 24 | 12 | No | 98 | 1,053 |
| Sacred Heart Hospital◊■. | Gen | Church | 75 | 47 | 9 | No | 134 | 1,413 |
| Helena, 11,803—Lewis and Clark Co. | | | | | | | | |
| St. John's Hospital◊■ | Gen | Church | 65 | 33 | 8 | No | 116 | 1,171 |
| St. Peter's Hospital◊■ | Gen | Church | 40 | 30 | 10 | No | 100 | 803 |
| Kalispell, 6,094—Flathead Co. | | | | | | | | |
| Kalispell General Hosp■. | Gen | Church | 54 | 32 | 6 | No | 64 | 877 |
| Lame Deer, 1,525—Rosebud Co. | | | | | | | | |
| Tongue River Agency Hosp. | Gen | Indian | 47 | 12 | 3 | Yes | 15 | 288 |
| Lewistown, 5,358—Fergus Co. | | | | | | | | |
| Attix Clinic | Gen | Indiv | 16 | 2 | 8 | No | 6 | ..... |
| St. Joseph's Hospital◊■ | Gen | Church | 75 | 31 | 16 | Yes | 164 | 980 |
| Libby, 1,752—Lincoln Co. | | | | | | | | |
| Libby General Hospital | Gen | Indiv | 15 | 8 | 3 | No | 40 | 215 |
| Livingston, 6,391—Park Co. | | | | | | | | |
| Park Hospital | Gen | Indiv | 25 | 12 | 6 | No | 15 | 350 |
| Miles City, 7,175—Custer Co. | | | | | | | | |
| Miles City Hospital◊ | Gen | Church | 85 | 37 | 7 | No | 80 | 1,415 |
| Missoula, 14,657—Missoula Co. | | | | | | | | |
| Northern Pacific Hospital■ | Indus | Indus | 70 | 49 | .. | No | ... | 4,206 |
| St. Patrick's Hospital◊■ | Gen | Church | 113 | 51 | 12 | No | 96 | 1,546 |
| Thornton Hospital | Gen | Part | 38 | 22 | 8 | No | 93 | 1,004 |
| Plentywood, 1,226—Sheridan Co. | | | | | | | | |
| Sheridan Memorial Hosp. | Gen | Indep | 28 | 10 | 5 | No | 65 | 356 |
| Poplar, 1,046—Roosevelt Co. | | | | | | | | |
| Ft. Peck Indian School Hospital | Gen | Indian | 28 | 16 | 6 | Yes | 44 | 815 |
| Red Lodge, 3,026—Carbon Co. | | | | | | | | |
| Mt. Maurice Hosp. & Sanit. | Gen | Indus | 26 | 4 | 4 | Yes | ... | 401 |
| Roundup, 2,577—Musselshell Co. | | | | | | | | |
| Musselshell Valley Hosp. | Gen | Indiv | 25 | 5 | 4 | No | ... | 313 |
| St. Ignatius, 375—Lake Co. | | | | | | | | |
| Holy Family Hospital | Gen | Church | 33 | 19 | 6 | No | 99 | 650 |
| Sidney, 2,010—Richland Co. | | | | | | | | |
| Sidney Deaconess Hosp.■. | Gen | Church | 24 | 13 | 6 | No | 98 | 585 |
| Terry, 779—Prairie Co. | | | | | | | | |
| Terry Hospital■ | Gen | County | 25 | 12 | 9 | No | 25 | 150 |
| Warmsprings, 110—Deerlodge Co. | | | | | | | | |
| Montana State Hospital+. | N&M | State | 1,350 | 1,563 | .. | No | ... | ..... |
| **Related Institutions** | | | | | | | | |
| Bearcreek, 472—Carbon Co. | | | | | | | | |
| Oleinik Hospital | Gen | Indiv | 6 | 5 | .. | Yes | ... | ..... |
| Butte, 39,532—Silver Bow Co. | | | | | | | | |
| Silver Bow County Hosp.■ | Gen | County | 142 | 135 | .. | Yes | 18 | 204 |
| Deer Lodge, 3,510—Powell Co. | | | | | | | | |
| Montana State Penitentiary Hospital | Inst | State | 10 | 3 | .. | Yes | ... | 97 |
| Great Falls, 28,822—Cascade Co. | | | | | | | | |
| Detention Hospital | Iso | Cy&Co | 35 | 5 | .. | No | ... | ..... |
| Harlem, 708—Blaine Co. | | | | | | | | |
| Harlem Hospital | Gen | Indiv | 11 | 5 | .. | No | 30 | ..... |
| Helena, 11,803—Lewis and Clark Co. | | | | | | | | |
| Florence Crittenton Home. | Mater | Indep | 8 | 6 | 8 | No | ... | ..... |
| Lewis and Clark County Hospital■ | Inst | County | 30 | 14 | 1 | Yes | 8 | ..... |
| Lewistown, 5,358—Fergus Co. | | | | | | | | |
| Fergus County Hospital■. | Inst | County | 12 | 6 | 4 | No | 5 | 83 |
| Livingston, 6,391—Park Co. | | | | | | | | |
| Robinson Hospital■ | Gen | Indiv | 7 | 2 | 7 | No | 32 | 96 |
| Malta, 1,342—Phillips Co. | | | | | | | | |
| Malta Hospital | Gen | Indiv | 6 | 6 | 3 | No | 38 | 234 |
| Mammoth,—Madison Co. | | | | | | | | |
| Mammoth Hospital■ | Gen | Indiv | 40 | 7 | 2 | No | 3 | 248 |
| Philipsburg, 1,300—Granite Co. | | | | | | | | |
| Granite County Hospital■. | Gen | County | 8 | 6 | .. | Yes | ... | 11 |
| Polson, 1,455—Lake Co. | | | | | | | | |
| Hotel Dieu Hospital | Gen | Church | 10 | .. | 3 | No | ... | ..... |

Key to symbols and abbreviations is on page 2078

## MONTANA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Stevensville, 692—Ravalli Co. | | | | | | | | |
| Stevensville Hospital....... | Gen | Indiv | 7 | 1 | 2 | Yes | 6 | 42 |
| Twin Bridges, 671—Madison Co. | | | | | | | | |
| State Orphans' Home Hospital■ ...................... | Inst | State | 25 | 3 | 3 | No | ... | 98 |
| White Sulphur Springs, 575—Meagner Co. | | | | | | | | |
| McKay Hospital........... | Gen | Indiv | 10 | 4 | .. | No | 12 | 75 |

| Summary for Montana: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 48 | 4,506 | 3,156 | 43,141 |
| Related institutions.......... | 16 | 367 | 209 | 1,191 |
| Totals...................... | 64 | 4,873 | 3,365 | 44,332 |
| Refused registration.......... | 5 | 81 | | |

## NEBRASKA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ainsworth, 1,378—Brown Co. | | | | | | | | |
| Ainsworth Hospital........ | Gen | Indiv | 28 | 10 | 3 | No | 26 | 363 |
| Alliance, 6,669—Box Butte Co. | | | | | | | | |
| St. Joseph's Hospital◊■... | Gen | Church | 100 | 54 | 9 | Yes | 100 | 2,131 |
| Arnold, 899—Custer Co. | | | | | | | | |
| Arnold Hospital■........... | Gen | Indiv | 17 | 3 | 2 | No | 16 | 159 |
| Auburn, 3,068—Nemaha Co. | | | | | | | | |
| Auburn Hospital.......... | Gen | Indiv | 10 | 3 | 2 | Yes | 6 | 134 |
| Aurora, 2,715—Hamilton Co. | | | | | | | | |
| Aurora Hospital | Gen | Part | 16 | 10 | 8 | No | 37 | 200 |
| B. | | | | | | | | |
| [illegible] ■..... | Gen | Indiv | 25 | 12 | 4 | Yes | 22 | 247 |
| [illegible] | Gen | Church | 60 | 18 | 11 | No | 59 | 639 |
| B | | | | | | | | |
| [illegible] ■ | Gen | Indiv | 15 | 5 | 5 | No | 16 | 163 |
| Broken Bow, 2,715—Custer Co. | | | | | | | | |
| Broken Bow Hospital...... | Gen | Indiv | 35 | 10 | 4 | Yes | ... | ..... |
| Cambridge, 1,203—Furnas Co. | | | | | | | | |
| Republican Valley Hospital | Gen | Indiv | 25 | 9 | 2 | No | 16 | ..... |
| Central City, 2,474—Merrick Co. | | | | | | | | |
| J. E. Benton Hospital..... | Gen | Indiv | 10 | 4 | .. | No | ... | ..... |
| Chadron, 4,606—Dawes Co. | | | | | | | | |
| Chadron Municipal Hosp.. | Gen | City | 26 | 7 | 7 | No | 34 | 266 |
| Columbus, [illegible]—Platte Co. | | | | | | | | |
| [illegible] ■ | Gen | Part | 30 | 17 | 4 | No | 101 | 691 |
| [illegible] | Gen | Church | 115 | 52 | 10 | No | 37 | 1,260 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indep | 13 | 6 | 3 | No | 31 | 283 |
| Fairbury, 6,192—Jefferson Co. | | | | | | | | |
| Taylor Hospital........... | Gen | Indiv | 20 | 6 | 2 | No | 14 | ..... |
| Falls City, 5,787—Richardson Co. | | | | | | | | |
| Falls City Hospital■...... | Gen | Indiv | 30 | 10 | 10 | No | 25 | 407 |
| General Hospital........... | Gen | Indiv | 12 | 5 | 3 | No | 12 | 196 |
| Farnam, 394—Dawson Co. | | | | | | | | |
| Reeves' Memorial Hospital | Gen | Indiv | 12 | 4 | 2 | No | 18 | ..... |
| Ft. Crook, 719—Sarpy Co. | | | | | | | | |
| Station Hospital■.......... | Gen | Army | 30 | 13 | .. | Yes | ... | 440 |
| Ft. Robinson, 613—Dawes Co. | | | | | | | | |
| Station Hospital■.......... | Gen | Army | 25 | 3 | .. | No | 5 | 360 |
| Fremont, 11,407—Dodge Co. | | | | | | | | |
| Military Avenue Hospital■ | Gen | Indiv | 22 | 12 | 6 | No | 60 | 675 |
| Richmond Hospital■....... | Gen | Indiv | 14 | 7 | 2 | No | 20 | 341 |
| Genoa, 1,089—Nance Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 12 | 6 | 4 | No | 26 | 131 |
| C | | | | | | | | |
| [illegible] | Gen | Church | 110 | 69 | 12 | No | 165 | 2,055 |
| Hartington, 1,568—Cedar Co. | | | | | | | | |
| St. John's Hospital........ | Gen | Indiv | 16 | 7 | .. | No | ... | ..... |
| Hastings, 15,490—Adams Co. | | | | | | | | |
| Mary Lanning Mem. Hosp.◊ | Gen | Indep | 85 | 58 | 15 | No | 239 | 1,820 |
| Imperial, 946—Chase Co. | | | | | | | | |
| Imperial Community Hosp. | Gen | Indep | 12 | 5 | 4 | No | 24 | 180 |
| Ingleside, 30—Adams Co. | | | | | | | | |
| Hastings State Hospital.. | N&M | State | 1,488 | 1,461 | .. | No | ... | ..... |
| Kearney, 8,575—Buffalo Co. | | | | | | | | |
| Good Samaritan Hosp.■.. | Gen | Church | 70 | 22 | 10 | No | 79 | 804 |
| Hospital for the Tuberculous■ ...................... | TB | State | 156 | 140 | .. | No | ... | 163 |
| Lincoln, 75,933—Lancaster Co. | | | | | | | | |
| Bryan Memorial Hosp.◊■. | Gen | Church | 100 | 54 | 14 | No | 123 | 1,428 |
| Green Gables, Dr. Benj. F. Bailey Sanatorium◊▲..... | Gen | Indep | 105 | 89 | 6 | No | 24 | 716 |
| Lincoln General Hospital★◊ | Gen | Indep | 132 | 92 | 20 | Yes | 369 | 2,888 |
| Lincoln State Hospital.... | N&M | State | 1,180 | 1,161 | .. | No | ... | 303 |
| Nebraska Orthopedic Hospital■ ..................... | Ortho | State | 120 | 99 | .. | No | ... | 108 |
| St. Elizabeth Hosp.★◊■▲... | Gen | Church | 175 | 127 | 25 | No | 263 | 3,128 |
| Veterans Admin. Hospital | Gen | VetAd | 197 | 107 | .. | Yes | ... | ..... |
| Lynch, 498—Boyd Co. | | | | | | | | |
| Sacred Heart Hospital..... | Gen | Church | 25 | 7 | 3 | No | ... | ..... |
| McCook, 6,688—Redwillow Co. | | | | | | | | |
| St. Catherine of Sienna Hospital■ ................. | Gen | Church | 60 | 16 | 10 | No | 41 | 614 |
| Minden, 1,716—Kearney Co. | | | | | | | | |
| Seeley Hospital............ | Gen | Indiv | 20 | 6 | 6 | No | 45 | 219 |
| Nebraska City, 7,230—Otoe Co. | | | | | | | | |
| St. Mary's Hospital■...... | Gen | Church | 35 | 18 | 10 | No | 49 | 943 |
| Norfolk, 10,717—Madison Co. | | | | | | | | |
| Norfolk State Hospital+.. | N&M | State | 943 | 935 | .. | Yes | ... | 98 |
| Verges Sanitarium▲........ | Gen | Indiv | 30 | 10 | 2 | No | ... | ..... |

## NEBRASKA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| North Platte, 12,061—Lincoln Co. | | | | | | | | |
| Redfield-Dent Hospital■.... | Gen | Indiv | 20 | 12 | 4 | No | 20 | 300 |
| Wurtele Hospital■.......... | Gen | Indiv | 12 | 8 | 3 | No | 34 | 257 |
| Oakland, 1,433—Burt Co. | | | | | | | | |
| Oakland Community Hosp. | Gen | Indiv | 12 | 3 | 4 | No | 39 | 147 |
| Omaha, 214,006—Douglas Co. | | | | | | | | |
| Bishop Clarkson Memorial Hospital★◊ .............. | Gen | Church | 100 | 77 | 6 | Yes | 85 | 2,005 |
| Creighton Memorial, St. Joseph's Hospital★◊■▲... | Gen | Church | 400 | 242 | 31 | No | 529 | 7,643 |
| Douglas County Hosp.★■▲ | Gen | County | 231 | 163 | 3 | Yes | 13 | 1,615 |
| Evangelical Covenant Hospital★◊■▲ ............... | Gen | Church | 125 | 74 | 18 | Yes | 202 | 2,741 |
| Immanuel Deaconess Institute★◊■ .................. | Gen | Church | 122 | 94 | 14 | No | 308 | 3,486 |
| Lord Lister Hospital◊■... | Gen | Indiv | 150 | 84 | 15 | No | 185 | 2,013 |
| Lutheran Hospital■▲...... | Gen | Church | 91 | 61 | 17 | No | 240 | 1,200 |
| Nebraska Methodist Episcopal Hospital★◊■▲......... | Gen | Church | 200 | 131 | 25 | Yes | 514 | 4,599 |
| St. Catherine's Hosp.★◊□. | Gen | Church | 152 | 81 | 25 | No | 355 | 4,163 |
| South Side General Hosp. | Gen | Indiv | 15 | ... | .. | No | ... | ..... |
| Station Hospital■.......... | Gen | Army | 14 | 9 | .. | Yes | ... | 329 |
| University of Nebraska Hospital★◊□ .................. | Gen | State | 205 | 153 | 20 | Yes | 410 | 2,750 |
| Ord, 2,226—Valley Co. | | | | | | | | |
| Ord Hospital............... | Gen | Indiv | 15 | 10 | .. | No | 28 | 243 |
| Oxford, 1,155—Furnas Co. | | | | | | | | |
| Oxford General Hospital.. | Gen | Indep | 14 | 9 | 5 | No | 25 | 237 |
| Pawnee City, 1,573—Pawnee Co. | | | | | | | | |
| Pawnee Hospital........... | Gen | Indiv | 26 | 17 | 4 | No | 52 | 598 |
| Schuyler, 2,588—Colfax Co. | | | | | | | | |
| Kolouch Hospital........... | Surg | Indiv | 13 | 8 | 2 | No | ... | 302 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Church | 60 | 31 | 12 | No | 172 | 1,227 |
| Seward, 2,737—Seward Co. | | | | | | | | |
| Morrow Hospital........... | Gen | Part | 20 | 7 | 5 | No | 19 | 265 |
| Seward Hospital........... | Gen | Indiv | 15 | 4 | 6 | No | 49 | 187 |
| Sidney, 3,306—Cheyenne Co. | | | | | | | | |
| Taylor Hospital■........... | Gen | Indiv | 20 | 9 | 5 | No | 32 | 352 |
| Spencer, 653—Boyd Co. | | | | | | | | |
| Spencer Hospital........... | Gen | Part | 12 | 4 | 3 | No | ... | ..... |
| Stratton, 663—Hitchcock Co. | | | | | | | | |
| Dr. Stewart's Private Hosp. | Gen | Indiv | 14 | 7 | .. | ... | ... | ..... |
| Stuart, 763—Holt Co. | | | | | | | | |
| Wilson Hospital........... | Gen | Indiv | 20 | 10 | 3 | No | 24 | 381 |
| Sutton, 1,540—Clay Co. | | | | | | | | |
| Sutton Hospital........... | Gen | Indiv | 10 | 4 | 3 | ... | ... | 175 |
| Tekamah, 1,804—Burt Co. | | | | | | | | |
| Tekamah General Hospital | Gen | Indiv | 12 | 3 | 3 | No | 18 | 135 |
| Tilden, 1,106—Madison Co. | | | | | | | | |
| Tilden Hospital............ | Gen | Indiv | 10 | 2 | 2 | No | 6 | 190 |
| Valentine, 1,672—Cherry Co. | | | | | | | | |
| Cherry County Hospital■. | Gen | Indiv | 16 | 6 | 3 | No | ... | 285 |
| Walthill, 1,162—Thurston Co. | | | | | | | | |
| Dr. Picotte Mem. Hosp.■. | Gen | Part | 12 | 4 | 4 | No | 28 | 153 |
| Winnebago, 653—Thurston Co. | | | | | | | | |
| Winnebago Indian Hosp... | Gen | Indian | 60 | 32 | 2 | Yes | ... | 815 |
| York, 5,712—York Co. | | | | | | | | |
| Lutheran Hospital◊....... | Gen | Church | 50 | 26 | 6 | No | 87 | 1,061 |
| York Clinic and Clinic Hospital■ ..................... | Gen | Part | 15 | 3 | 6 | No | 14 | 135 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Atkinson, 1,144—Holt Co. | | | | | | | | |
| Atkinson General Hospital | Gen | Indiv | 8 | 3 | 2 | No | 3 | 90 |
| Axtell, 328—Kearney Co. | | | | | | | | |
| Bethphage Inner Mission.. | MenDef | Indep | 142 | 140 | .. | No | ... | ..... |
| Beatrice, 10,297—Gage Co. | | | | | | | | |
| Nebraska Institution for Feebleminded | MenDef | State | 1,115 | 868 | .. | No | ... | 192 |
| Beem | | | | | | | | |
| Pie | | Indiv | 10 | 2 | 2 | No | 4 | 43 |
| Daltc | | | | | | | | |
| Pio ■ | | Indiv | 8 | 4 | 3 | No | 10 | 143 |
| Geno | | | | | | | | |
| Em | | Part | 5 | 2 | 3 | No | 8 | 52 |
| Ger | | Indian | 30 | 3 | .. | Yes | ... | 165 |
| Gran | | | | | | | | |
| Net ors Home—Pershing Hospital■▲ .................. | Inst | State | 125 | 90 | .. | No | ... | 30 |
| Kearney, 8,575—Buffalo Co. | | | | | | | | |
| State Industrial School for Boys■ ..................... | Inst | State | 10 | 2 | .. | No | ... | ..... |
| Lexington, 2,962—Dawson Co. | | | | | | | | |
| City General Hospital■.... | Gen | Part | 10 | 3 | 3 | No | 41 | 1,098 |
| Lincoln, 75,933—Lancaster Co. | | | | | | | | |
| Isolation Hospital......... | Iso | City | 12 | ... | .. | No | ... | 12 |
| Nebraska State Penitentiary Hospital■........... | Inst | State | 20 | 6 | .. | No | ... | 238 |
| Milford, 832—Seward Co. | | | | | | | | |
| Nebraska Industrial Home■ | Inst | State | 5 | ... | 10 | No | 56 | 63 |
| Nebraska Soldiers and Sailors Home Hospital■..... | Inst | State | 60 | 50 | .. | No | ... | 100 |
| Newman Grove, 1,146—Madison Co. | | | | | | | | |
| Community Hospital■..... | Gen | Part | 10 | 2 | 1 | No | 15 | 128 |
| Odell, 472—Gage Co. | | | | | | | | |
| Odell General Hospital■... | Gen | Indiv | 6 | 4 | 3 | Yes | 16 | 132 |
| Omaha, 214,006—Douglas Co. | | | | | | | | |
| [illegible] ■ | Iso | City | 33 | 1 | 11 | No | ... | ..... |
| [illegible] | Gen | Indiv | 8 | 3 | 8 | No | 50 | 160 |
| [illegible] | Inst | County | 7 | ... | ... | No | ... | ..... |
| Home and Hospital■.... | Mater | Church | 8 | 2 | 15 | No | 97 | ..... |
| Women's Detention Hosp. | Vener | City | 21 | ... | .. | Yes | ... | ..... |

## NEBRASKA—Continued

### Related Institutions

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Orchard, 505—Antelope Co. | | | | | | | | |
| Orchard Hospital■ | Gen | Indiv | 7 | 3 | 3 | No | ... | 117 |
| Palmer, 588—Merrick Co. | | | | | | | | |
| Coolidge Hosp. and Sanat. | Gen | Indep | 10 | 1 | 2 | No | 10 | 55 |
| Plainview, 1,216—Pierce Co. | | | | | | | | |
| Plainview General Hosp.■ | Gen | Indep | 8 | 1 | 3 | No | 22 | 178 |
| Plattsmouth, 3,793—Cass Co. | | | | | | | | |
| Nebraska Masonic Home | Inst | Frat | 45 | 45 | .. | No | ... | 16 |
| Table Rock, 673—Pawnee Co. | | | | | | | | |
| McCrea Private Hospital | Gen | Indiv | 10 | 1 | 2 | No | 6 | 18 |
| Wahoo, 2,689—Saunders Co. | | | | | | | | |
| Community Hospital | Gen | Indiv | 25 | 10 | 6 | No | 50 | 412 |
| Wayne, 2,381—Wayne Co. | | | | | | | | |
| Benthack Hospital | Gen | Indiv | 6 | 2 | 2 | No | 4 | 78 |
| Westpoint, 2,225—Cuming Co. | | | | | | | | |
| St. Joseph Home for Aged and Hospital | Inst | Church | 15 | 5 | .. | No | ... | 280 |

Summary for Nebraska:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 78 | 8,001 | 6,148 | 65,757 |
| Related institutions | 29 | 1,779 | 1,263 | 3,917 |
| Totals | 107 | 9,780 | 7,411 | 69,674 |
| Refused registration | 22 | 550 | | |

## NEVADA

### Hospitals and Sanatoriums

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Austin, 1,000—Lander Co. | | | | | | | | |
| Lander County Hospital | Gen | County | 10 | 9 | 1 | No | 2 | 45 |
| East Ely, 1,507—White Pine Co. | | | | | | | | |
| Steptoe Valley Hospital■ | Gen | Indus | 40 | 15 | 10 | No | 88 | 349 |
| Elko, 3,217—Elko Co. | | | | | | | | |
| Elko General Hospital■ | Gen | County | 48 | 15 | 4 | No | 52 | 516 |
| Ely, 3,045—White Pine Co. | | | | | | | | |
| White Pine County and General Hospital■ | Gen | County | 43 | 13 | 4 | No | 36 | 474 |
| Goldfield, 1,558—Esmeralda Co. | | | | | | | | |
| Association Hospital | Indus | Indus | 18 | ... | .. | No | ... | ..... |
| Hawthorne, 328—Mineral Co. | | | | | | | | |
| Mineral County Hospital | Gen | County | 14 | 10 | 1 | No | 12 | 75 |
| Las Vegas, 5,165—Clark Co. | | | | | | | | |
| Las Vegas Hospital■ | Gen | Part | 40 | 30 | 8 | No | 55 | 800 |
| Nixon, 42—Washoe Co. | | | | | | | | |
| Pyramid Lake Indian Sanatorium | TB | Indian | 58 | 30 | .. | Yes | ... | 72 |
| Reno, 18,529—Washoe Co. | | | | | | | | |
| Nevada State Hospital for Mental Diseases | N&M | State | 325 | 286 | .. | No | ... | 70 |
| St. Mary's Hospital■ | Gen | Church | 52 | 37 | 12 | No | 93 | 1,448 |
| Washoe General Hospital■ | Gen | County | 110 | 112 | .. | No | ... | ..... |
| Stewart, 412—Ormsby Co. | | | | | | | | |
| Carson Indian Hospital | Gen | Indian | 28 | 23 | .. | Yes | 7 | 221 |
| Tonopah, 4,144—Nye Co. | | | | | | | | |
| Nye County Hospital■ | Gen | County | 36 | 21 | 2 | No | 8 | ..... |
| Tonopah Mines Hospital■ | Gen | Indus | 20 | 10 | 2 | Yes | 25 | 374 |
| Winnemucca, 1,989—Humboldt Co. | | | | | | | | |
| Humboldt County General Hospital■ | Gen | County | 33 | 18 | 3 | No | 25 | 369 |

### Related Institutions

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Battle Mountain, 1,120—Lander Co. | | | | | | | | |
| Battle Mountain General Hospital | Gen | County | 8 | ... | .. | No | ... | ..... |
| Eureka, 952—Eureka Co. | | | | | | | | |
| Eureka County Hospital■ | Gen | County | 8 | 4 | .. | No | ... | 12 |
| Pioche, 515—Lincoln Co. | | | | | | | | |
| Pioche Hospital | Indus | Indiv | 8 | 3 | .. | No | ... | 18 |
| Stewart, 412—Ormsby Co. | | | | | | | | |
| Carson Indian School Hosp. | Inst | Indian | 40 | 16 | .. | Yes | ... | 487 |
| Virginia City, 1,200—Storey Co. | | | | | | | | |
| Storey County Hospital■ | Inst | County | 12 | 9 | .. | No | ... | ..... |
| Yerington, 1,005—Lyon Co. | | | | | | | | |
| Lyon County Hospital | Gen | County | 14 | 8 | .. | No | ... | 52 |

Summary for Nevada:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 15 | 875 | 643 | 4,813 |
| Related institutions | 6 | 90 | 42 | 569 |
| Totals | 21 | 965 | 685 | 5,382 |
| Refused registration | 1 | 20 | | |

## NEW HAMPSHIRE

### Hospitals and Sanatoriums

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Berlin, 20,018—Coos Co. | | | | | | | | |
| St. Louis Hospital◊■ | Gen | Church | 75 | 38 | 10 | Yes | 89 | 1,222 |
| Claremont, 12,377—Sullivan Co. | | | | | | | | |
| Claremont General Hosp.◊ | Gen | Indep | 59 | 37 | 11 | Yes | 158 | 819 |

## NEW HAMPSHIRE—Continued

### Hospitals and Sanatoriums

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Concord, 25,228—Merrimack Co. | | | | | | | | |
| Margaret Pillsbury General Hospital◊■ | Gen | Indep | 105 | 49 | 18 | Yes | 209 | 1,442 |
| New Hampshire Mem. Hosp. for Women & Children⊙■ | Gen | Indep | 56 | 28 | 20 | No | 138 | 526 |
| New Hampshire State Hospital⊙ | N&M | State | 1,800 | 1,715 | .. | No | ... | 337 |
| Dover, 13,573—Strafford Co. | | | | | | | | |
| Hayes Ho | Gen | Indep | 23 | 14 | 7 | No | 83 | 516 |
| W ■ | Gen | City | 69 | 39 | 15 | No | 116 | 993 |
| Exe | | | | | | | | |
| Ex ■ | Gen | Indep | 40 | 24 | 12 | Yes | 134 | 658 |
| Fran —Merrimack Co. | | | | | | | | |
| Franklin Hospital◊ | Gen | Indep | 37 | 15 | 5 | No | 55 | 289 |
| Glencliff, 55—Grafton Co. | | | | | | | | |
| New Hampshire State Sanatorium for the Treatment of Tuberculosis+■ | TB | State | 110 | 95 | .. | No | ... | 58 |
| Grasmere, 200—Hillsboro Co. | | | | | | | | |
| Hillsborough County General Hospital◊ | Gen | County | 130 | 101 | 6 | Yes | 68 | 1,092 |
| Hanover, 3,043—Grafton Co. | | | | | | | | |
| Mary Hitchcock Memorial Hospital★◊■ | Gen | Indep | 126 | 76 | 14 | Yes | 188 | 2,380 |
| Keene, 13,794—Cheshire Co. | | | | | | | | |
| Elliot Community Hosp.◊ | Gen | Indep | 68 | 53 | 12 | Yes | 231 | 1,527 |
| Laconia, 12,471—Belknap Co. | | | | | | | | |
| Laconia Hospital◊■ | Gen | Indep | 52 | 40 | 10 | Yes | 205 | 1,450 |
| Lancaster, 2,887—Coos Co. | | | | | | | | |
| Lancaster Hospital | Gen | City | 15 | 10 | 5 | No | 39 | ..... |
| Littleton, 4,558—Grafton Co. | | | | | | | | |
| Littleton Hospital◊■ | Gen | Indep | 28 | 22 | 6 | Yes | 79 | 589 |
| Manchester, 76,834—Hillsboro Co. | | | | | | | | |
| Balch Hospital■ | Chil | City | 30 | 20 | .. | Yes | ... | 343 |
| Elliot Hospital◊■ | Gen | Indep | 62 | 58 | 13 | Yes | 227 | 2,638 |
| Hopital Notre-Dame De Lourdes◊■ | Gen | Church | 85 | 60 | 15 | Yes | 198 | 1,553 |
| Lucy Hastings Hospital◊■ | Gen | Indep | 25 | 20 | 6 | No | 22 | 397 |
| Our Lady of Perpetual Help Hospital | Mater | Church | 22 | 8 | 18 | No | 198 | 193 |
| Sacred Heart Hospital◊■ | Gen | Church | 85 | 52 | 6 | No | 61 | 1,297 |
| Nashua, 31,463—Hillsboro Co. | | | | | | | | |
| Nashua Memorial Hosp.◊■ | Gen | Indep | 74 | 52 | 16 | Yes | 171 | 1,556 |
| St. Joseph's Hospital◊■ | Gen | Church | 93 | 70 | 17 | No | 202 | 1,991 |
| New London, 812—Merrimack Co. | | | | | | | | |
| New London Hospital | Gen | Indep | 12 | 4 | 6 | No | 30 | 161 |
| Newport, 4,659—Sullivan Co. | | | | | | | | |
| Carrie F. Wright Memorial Hospital | Gen | Indep | 20 | 10 | 5 | No | 71 | 349 |
| North Conway, 925—Carroll Co. | | | | | | | | |
| Memorial Hospital■ | Gen | Indep | 25 | 15 | 6 | Yes | 74 | 388 |
| Pembroke,—Merrimack Co. | | | | | | | | |
| Pembroke Sanatorium | TB | Indiv | 100 | 65 | .. | No | ... | 152 |
| Peterboro, 2,521—Hillsboro Co. | | | | | | | | |
| Peterboro Hospital■ | Gen | Indep | 19 | 11 | 6 | Yes | 68 | 337 |
| Plymouth, 2,470—Grafton Co. | | | | | | | | |
| Emily Balch Soldiers and Sailors Memorial Hosp.■ | Gen | Indep | 28 | 12 | 3 | Yes | ... | 353 |
| Portsmouth, 14,495—Rockingham Co. | | | | | | | | |
| Portsmouth HospitalϿ | Gen | Indep | 64 | 35 | 16 | No | 186 | 1,223 |
| U. S. Naval Hospital■ | Gen | Navy | 200 | 111 | .. | No | ... | 1,095 |
| Rochester, 10,209—Strafford Co. | | | | | | | | |
| Frisbie Memorial Hosp.■ | Gen | Indep | 24 | 21 | 8 | No | 104 | 930 |
| Whitefield, 1,093—Coos Co. | | | | | | | | |
| Morrison HospitalϿ | Gen | Indep | 50 | 25 | 9 | Yes | 50 | 1,169 |
| Wolfeboro, 2,358—Carroll Co. | | | | | | | | |
| Huggins Hospital■ | Gen | Indep | 30 | 16 | 6 | Yes | 46 | 529 |
| Woodsville, 1,275—Grafton Co. | | | | | | | | |
| Cottage HospitalϿ■ | Gen | Indep | 24 | 18 | 6 | Yes | 100 | 521 |

### Related Institutions

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ashuelot, 475—Cheshire Co. | | | | | | | | |
| Fairlawn Rest Home | Conv | Indiv | 10 | ... | 2 | No | ... | ..... |
| Concord, 25,228—Merrimack Co. | | | | | | | | |
| Armour Mem. Infirmary | Inst | Indep | 65 | 9 | .. | Yes | ... | .... |
| Epping, 1,672—Rockingham Co. | | | | | | | | |
| Rockingham County Hosp. | Gen | County | 50 | 45 | 2 | No | 6 | ..... |
| Exeter, 4,872—Rockingham Co. | | | | | | | | |
| Lamont Infirmary | Inst | Indep | 60 | 10 | .. | Yes | ... | ..... |
| Haverhill, 3,665—Grafton Co. | | | | | | | | |
| Grafton County Hospital■ | Inst | County | 25 | 25 | .. | No | 3 | ..... |
| Laconia, 12,471—Belknap Co. | | | | | | | | |
| Laconia State School | MenDef | State | 550 | 521 | .. | Yes | ... | 66 |
| Lincoln, 1,548—Grafton Co. | | | | | | | | |
| Lincoln Hospital | Indus | Indus | 10 | 6 | .. | No | 4 | 50 |
| Manchester, 76,834—Hillsboro Co. | | | | | | | | |
| Manchester Isolation Hosp. | Iso | City | 61 | 2 | .. | No | ... | 69 |
| State Industrial School■ | Inst | State | 10 | ... | .. | No | ... | ..... |
| Portsmouth, 14,495—Rockingham Co. | | | | | | | | |
| Mark H. Wentworth Home for Chronic Invalids■ | Incur | Indep | 43 | 42 | .. | No | ... | ..... |
| Tilton, 1,712—Belknap Co. | | | | | | | | |
| New Hampshire Soldiers Home■ | Inst | State | 20 | 7 | .. | No | ... | 54 |

Summary for New Hampshire:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 36 | 3,866 | 3,039 | 31,078 |
| Related institutions | 11 | 904 | 670 | 239 |
| Totals | 47 | 4,770 | 3,709 | 31,317 |
| Refused registration | 1 | 25 | | |

**Key to symbols and abbreviations is on page 2078**

## NEW JERSEY

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Allenwood, 166—Monmouth Co. | | | | | | | | |
| Allenwood Sanat. and Monmouth County Hospital■ | TB | County | 90 | 81 | .. | Yes | ... | ..... |
| Atlantic City, 66,198—Atlantic Co. | | | | | | | | |
| Atlantic City Hospital★◊■ | Gen | Indep | 271 | 207 | 45 | Yes | 907 | 5,547 |
| Children's Seashore House | Ortho | Indep | 375 | 240 | .. | No | ... | 1,907 |
| Bayonne, 88,979—Hudson Co. | | | | | | | | |
| Bayonne Hospital and Dispensary★◊■ | Gen | Indep | 170 | 105 | 30 | Yes | 377 | 3,350 |
| | Gen | Indiv | 24 | 11 | 6 | No | 83 | 317 |
| Sanitarium | N&M | Indiv | 72 | 24 | .. | No | ... | 82 |
| Belleville, 26,974—Essex Co. | | | | | | | | |
| Essex County Hospital for Contagious Diseases+⊙■ | Iso | County | 260 | 145 | .. | No | 2 | 2,282 |
| Boundbrook, 7,372—Somerset Co. | | | | | | | | |
| Boundbrook Hospital■ | Gen | Indep | 35 | 4 | 8 | No | 15 | 703 |
| Bridgeton, 15,699—Cumberland Co. | | | | | | | | |
| Bridgeton Hospital◊■ | Gen | Indep | 85 | 42 | 16 | Yes | 160 | 1,389 |
| Browns Mills, 313—Burlington Co. | | | | | | | | |
| Deborah Tuber. Sanat. | TB | Indep | 45 | 43 | .. | No | ... | 90 |
| *Camden, 118,700—Camden Co.* | | | | | | | | |
| Bellevue Private Hospital | Gen | Part | 25 | 16 | 12 | No | 184 | 564 |
| Cooper Hospital★◊■ | Gen | Indep | 282 | 233 | 50 | Yes | 1,000 | 6,030 |
| West Jersey Homeopathic Hospital★◊■ | Gen | Indep | 237 | 136 | 30 | Yes | 510 | 3,988 |
| Cedar Grove, 3,000—Essex Co. | | | | | | | | |
| Essex County Hospital◊ | N&M | County | 1,870 | 2,293 | .. | Yes | ... | 512 |
| Dover, 10,031—Morris Co. | | | | | | | | |
| Dover General Hospital■ | Gen | Indep | 70 | 35 | 11 | Yes | 131 | 1,031 |
| Dumont, 2,861—Bergen Co. | | | | | | | | |
| Dumont Private Hospital | Gen | Indiv | 10 | 4 | 5 | No | 15 | 183 |
| East Orange, 68,020—Essex Co. | | | | | | | | |
| Homeopathic Hospital◊■ | Gen | Indep | 95 | 70 | 25 | Yes | 559 | 2,370 |
| Elizabeth, 114,589—Union Co. | | | | | | | | |
| Alexian Brothers Hosp.★■ | Gen | Church | 166 | 132 | .. | Yes | ... | 1,951 |
| Elizabeth General Hospital and Dispensary★◊■ | Gen | Indep | 196 | 168 | 30 | Yes | 734 | 4,548 |
| St. Elizabeth Hosp.★◊■ | Gen | Church | 220 | 182 | 40 | Yes | 614 | 4,287 |
| Englewood, 17,805—Bergen Co. | | | | | | | | |
| Englewood Hospital★◊■ | Gen | Indep | 211 | 129 | 35 | Yes | 768 | 4,336 |
| Ft. Hancock,—Monmouth Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 50 | 20 | .. | Yes | ... | 1,000 |
| Franklin, 4,176—Sussex Co. | | | | | | | | |
| Franklin Hospital■ | Gen | Indus | 30 | 21 | 7 | Yes | 68 | 646 |
| ). | | | | | | | | |
| | Gen | Indiv | 25 | 6 | 6 | No | 59 | 214 |
| Co. | | | | | | | | |
| New Jersey Sanatorium+ | TB | State | 470 | 450 | .. | Yes | ... | ..... |
| Grenloch, 255—Camden Co. | | | | | | | | |
| Lakeland Sanatorium | TB | County | 250 | 214 | .. | No | ... | 444 |
| Greystone Park,—Morris Co. | | | | | | | | |
| New Jersey State Hosp.◊ | N&M | State | 2,900 | 3,960 | .. | Yes | ... | 940 |
| Hackensack, 24,568—Bergen Co. | | | | | | | | |
| Hackensack Hospital★◊■ | Gen | Indep | 225 | 169 | 30 | Yes | 825 | 5,824 |
| Hoboken, 59,261—Hudson Co. | | | | | | | | |
| St. Mary Hospital★◊■ | Gen | Church | 426 | 258 | 34 | Yes | 251 | 4,495 |
| Irvington, 56,733—Essex Co. | | | | | | | | |
| Irvington General Hosp.■ | Gen | City | 79 | 51 | 17 | Yes | 316 | 1,767 |
| Jersey City, 316,715—Hudson Co. | | | | | | | | |
| Christ Hospital★◊■ | Gen | Church | 187 | 106 | 20 | Yes | 396 | 2,589 |
| Fairmount Surgical Sanat.■ | Gen | Indep | 70 | 40 | 20 | No | 446 | 1,651 |
| Greenville Hospital◊□ | Gen | Indep | 60 | 53 | 16 | Yes | 257 | 1,120 |
| Hilltop Sanitarium | Gen | Part | 20 | 10 | 10 | No | ... | ..... |
| Jersey City Hospital★+◊□▲ | Gen | City | 570 | 601 | 40 | Yes | 1,779 | 14,295 |
| Margaret Hague Maternity Hospital■ | Mater | County | 275 | New | 275 | Yes | ... | ..... |
| St. Francis' Hospital★◊■ | Gen | Church | 238 | 181 | 12 | Yes | 97 | 4,927 |
| Kearny, (Arlington P.O.)—Hudson Co. | | | | | | | | |
| West Hudson Hospital■ | Gen | Indep | 52 | 33 | 14 | No | 245 | 2,075 |
| Lakeland, (Grenloch P.O.)—Camden Co. | | | | | | | | |
| Camden County Hospital for Mental Diseases | N&M | County | 400 | 428 | .. | No | ... | 128 |
| Lakewood, 8,000—Ocean Co. | | | | | | | | |
| Paul Kimball Hospital■ | Gen | Indep | 60 | 40 | 11 | Yes | 150 | 1,471 |
| Long Branch, 18,399—Monmouth Co. | | | | | | | | |
| Dr. E. C. Hazard Hosp.■ | Gen | Indep | 95 | 57 | 30 | Yes | 213 | 1,789 |
| Monmouth Mem. Hosp.★◊■ | Gen | Indep | 194 | 174 | 26 | Yes | 442 | 4,373 |
| Lyons,—Somerset Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 895 | 311 | .. | Yes | ... | 197 |
| *Marlboro, 410—Monmouth Co.* | | | | | | | | |
| New Jersey State Hospital | N&M | State | 2,000 | 1,038 | .. | Yes | ... | ..... |
| Midland Park, 3,638—Bergen Co. | | | | | | | | |
| Christian Sanatorium | N&M | Indep | 120 | ... | .. | Yes | ... | 104 |
| Millville, 14,705—Cumberland Co. | | | | | | | | |
| Millville Hospital | Gen | Indep | 40 | 23 | 5 | Yes | 118 | 1,225 |
| Montclair, 42,017—Essex Co. | | | | | | | | |
| Montclair Community Hospital■ | Gen | Indep | 61 | 29 | 24 | Yes | 166 | 874 |
| Mountainside Hospital★◊■ | Gen | Indep | 250 | 167 | 36 | Yes | 576 | 5,082 |
| St. Vincent's Hospital■ | Gen | Church | 48 | 36 | 12 | Yes | 241 | 1,023 |
| Morristown, 15,197—Morris Co. | | | | | | | | |
| All Souls Hospital◊■ | Gen | Church | 117 | 82 | 25 | Yes | 241 | 1,851 |
| Morristown Mem. Hosp.★◊■ | Gen | Indep | 140 | 100 | 20 | Yes | 320 | 2,673 |
| Physiatric Institute+ | Metab | Indep | 120 | 50 | .. | No | ... | 600 |
| Shongum Sanatorium■ | TB | County | 52 | 49 | .. | No | ... | 56 |
| Mt. Holly, 5,762—Burlington Co. | | | | | | | | |
| Burlington County Hosp.◊■ | Gen | County | 116 | 84 | 19 | Yes | 254 | 2,277 |
| Neptune, 2,258—Monmouth Co. | | | | | | | | |
| Fitkin Memorial Hospital◊ | Gen | Indep | 116 | New | 34 | Yes | ... | ..... |
| Newark, 442,337—Essex Co. | | | | | | | | |
| Babies Hospital⊙■ | Chil | Indep | 55 | 37 | .. | Yes | ... | 862 |
| Hospital and Home for Crippled Children⊙■ | Ortho | Indep | 125 | 68 | .. | Yes | ... | 603 |

## NEW JERSEY—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Hospital for Women and Children◊■ | Gen | Indep | 86 | 55 | 24 | Yes | 380 | 2,174 |
| Hosp. of St. Barnabas★◊■ | Gen | Church | 120 | 103 | 18 | Yes | 355 | 2,483 |
| Kenney Mem. Hosp. (col.) | Gen | Indiv | 26 | 7 | 4 | Yes | 28 | 218 |
| Lincoln Hospital | Gen | Indep | 50 | 15 | 12 | No | ... | ..... |
| Newark Beth Israel Hospital★+◊ | Gen | Indep | 352 | 291 | 90 | Yes | 1,205 | 8,304 |
| Newark City Hosp.★+◊■▲ | Gen | City | 660 | 549 | 40 | No | 1,617 | 15,414 |
| Newark Eye and Ear Infirmary■ | EENT | Indep | 62 | 49 | .. | Yes | ... | 3,141 |
| Newark Memorial Hosp.★◊■ | Gen | Indep | 127 | 80 | 30 | Yes | 522 | 2,217 |
| Presbyterian Hospital★◊ | Gen | Church | 212 | 137 | 53 | Yes | 1,022 | 5,230 |
| St. James Hospital★◊ | Gen | Church | 107 | 85 | 18 | Yes | 324 | 1,879 |
| St. Michael's Hospital★◊■ | Gen | Church | 300 | 201 | .. | Yes | ... | 4,820 |
| Dr. Wright's Sanitarium and Mater. Home (col.) | Gen | Indiv | 18 | 8 | 6 | No | 49 | 368 |
| Ne Co. | | | | | | | | |
| ■ | | Indep | 90 | 61 | 17 | Yes | 259 | 1,701 |
| ■ | | Church | 182 | 133 | 33 | Yes | 457 | 4,084 |
| New Lisbon, 131—Burlington Co. | | | | | | | | |
| Fairview Sanatorium■ | TB | County | 123 | 117 | .. | No | ... | 162 |
| | TB | County | 50 | 42 | .. | Yes | ... | 103 |
| for Mental Diseases | N&M | County | 450 | 267 | .. | Yes | ... | 99 |
| Oceanport, 1,872—Monmouth Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 40 | 23 | .. | No | ... | 620 |
| Orange, 35,399—Essex Co. | | | | | | | | |
| New Jersey Ortho. Hospital and Dispensary■ | Ortho | Indep | 36 | 33 | .. | Yes | ... | 226 |
| Orange Memorial Hosp.★◊■ | Gen | Indep | 313 | 181 | 75 | Yes | 1,124 | 6,019 |
| St. Mary's Hospital◊□ | Gen | Church | 125 | 105 | 25 | Yes | 541 | 1,945 |
| Passaic, 62,959—Passaic Co. | | | | | | | | |
| Beth Israel Hospital | Gen | Indep | 100 | 38 | 10 | Yes | ... | ..... |
| Passaic General Hosp.★◊■ | Gen | Indep | 200 | 131 | 25 | Yes | 642 | 4,246 |
| St. Mary's Hospital★◊■ | Gen | Church | 225 | 97 | 36 | Yes | 509 | 2,927 |
| Paterson, 138,513—Passaic Co. | | | | | | | | |
| Nathan and Miriam Barnert Memorial Hospital★◊□ | Gen | Indep | 98 | 77 | 12 | Yes | 311 | 2,080 |
| Paterson General Hosp.★◊□ | Gen | Indep | 246 | 163 | 60 | Yes | 744 | 4,835 |
| Riverlawn Sanatorium | N&M | Indep | 60 | 47 | .. | No | ... | 41 |
| St. Joseph's Hospital★◊■ | Gen | Church | 355 | 247 | 45 | Yes | 714 | 6,192 |
| Valley View Sanatorium■ | TB | County | 200 | 207 | .. | Yes | ... | 305 |
| Perth Amboy, 43,516—Middlesex Co. | | | | | | | | |
| Perth Amboy General Hospital◊ | Gen | Indep | 136 | 87 | 18 | No | 326 | 2,971 |
| Phillipsburg, 19,255—Warren Co. | | | | | | | | |
| Warren Hospital◊■ | Gen | Indep | 65 | 31 | 10 | Yes | 84 | 959 |
| Plainfield, 34,422—Union Co. | | | | | | | | |
| Muhlenberg Hospital★◊■ | Gen | Indep | 240 | 173 | 35 | Yes | 758 | 4,621 |
| Point Pleasant, 2,058—Ocean Co. | | | | | | | | |
| Point Pleasant Hospital■ | Gen | Indep | 24 | 12 | 4 | No | 40 | 309 |
| Princeton, 6,992—Mercer Co. | | | | | | | | |
| Princeton Hospital | Gen | Indep | 58 | 30 | 12 | Yes | 154 | 1,121 |
| Rahway, 16,011—Union Co. | | | | | | | | |
| Rahway Memorial Hosp.■ | Gen | Indep | 100 | 52 | 20 | No | 155 | 1,360 |
| Red Bank, 11,622—Monmouth Co. | | | | | | | | |
| Riverview Hospital■ | Gen | Indep | 29 | 20 | 7 | Yes | 115 | 649 |
| Ridgewood, 12,188—Bergen Co. | | | | | | | | |
| "Bergen Pines" Bergen County Hospital■ | Iso,TB | County | 380 | 171 | .. | Yes | ... | 647 |
| Riverside, 4,010—Burlington Co. | | | | | | | | |
| Zurbrugg Memorial Hosp. | Gen | Indep | 12 | 3 | 6 | Yes | 24 | 168 |
| Salem, 8,047—Salem Co. | | | | | | | | |
| Salem County Mem. Hosp.■ | Gen | Indep | 40 | 27 | 10 | Yes | 161 | 853 |
| Scotch Plains, 1,010—Union Co. | | | | | | | | |
| Bonnie Burn Sanatorium■ | TB | County | 391 | 359 | .. | No | ... | 487 |
| Secaucus, 8,950—Hudson Co. | | | | | | | | |
| Hudson County Hospital | Gen | County | 200 | 219 | 20 | No | 10 | 609 |
| Hudson County Hospital for Insane | N&M | County | 1,250 | 1,172 | .. | No | ... | 291 |
| Hudson County Tuberculosis Hospital and Sanat.■ | TB | County | 207 | 205 | .. | Yes | ... | 446 |
| Skillman, 23—Somerset Co. | | | | | | | | |
| New Jersey State Village for Epileptics+ | Epil | State | 1,054 | 1,114 | .. | No | ... | 204 |
| Somers Point, 2,073—Atlantic Co. | | | | | | | | |
| Atlantic Shores Hospital■ | Gen | Indep | 70 | 50 | 12 | Yes | 159 | 1,236 |
| Somerville, 8,255—Somerset Co. | | | | | | | | |
| | Gen | Indep | 74 | 54 | 12 | Yes | 223 | 3,053 |
| Sc Co. | | | | | | | | |
| ■ | Gen | Indep | 35 | 20 | 6 | No | 86 | 566 |
| Summit, 14,556—Union Co. | | | | | | | | |
| Fair Oaks Sanatorium | Nerv | Indiv | 44 | 36 | .. | No | ... | 126 |
| Overlook Hospital◊■ | Gen | Indep | 112 | 67 | 31 | Yes | 360 | 2,058 |
| Sussex, 1,415—Sussex Co. | | | | | | | | |
| Alexander Linn Hospital■ | Gen | City | 22 | 9 | 5 | No | 36 | 347 |
| Teaneck, 3,260—Bergen Co. | | | | | | | | |
| Holy Name Hospital★◊■ | Gen | Church | 202 | 120 | 33 | Yes | 669 | 3,286 |
| Trenton, 123,356—Mercer Co. | | | | | | | | |
| Chambersburg Gen. Hosp.■ | Gen | Indep | 27 | 18 | 8 | Yes | 81 | 445 |
| Charles Private Hospital | N&M | Indiv | 45 | 27 | .. | ... | ... | ..... |
| Mercer Hospital★◊■ | Gen | Indep | 213 | 125 | 37 | Yes | 590 | 4,420 |
| New Jersey State Hosp.◊ | N&M | State | 2,500 | 2,661 | .. | Yes | ... | 780 |
| Orthopaedic Hospital and Dispensary | Ortho | Indep | 50 | 22 | .. | Yes | ... | 207 |
| St. Francis' Hospital★◊ | Gen | Church | 282 | 170 | 32 | Yes | 493 | 4,798 |
| Trenton Municipal Hosp.⊙■ | Iso | City | 414 | 232 | .. | No | ... | 566 |
| William McKinley Memorial Hospital★◊■ | Gen | Indep | 116 | 94 | 30 | Yes | 402 | 2,207 |
| Union City, 58,659—Hudson Co. | | | | | | | | |
| Hamilton Sanitarium | Gen | Indep | 30 | 13 | 15 | No | 141 | 501 |
| Verona, 7,161—Essex Co. | | | | | | | | |
| Essex Mountain Sanat.+■ | TB | County | 370 | 287 | .. | No | ... | 478 |

**Key to symbols and abbreviations is on page 2078**

## NEW JERSEY—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Vineland, 7,556—Cumberland Co. | | | | | | | | |
| Newcomb Hospital■ | Gen | Indep | 85 | 47 | 15 | No | ... | 1,231 |
| Weehawken,—Hudson Co. | | | | | | | | |
| North Hudson Hospital*◊ | Gen | Indep | 164 | 109 | 25 | Yes | 531 | 2,840 |
| Woodbury, 8,172—Gloucester Co. | | | | | | | | |
| Brewer Hospital■ | Gen | Indiv | 16 | 10 | 6 | No | ... | ..... |
| Underwood Private Hosp.■ | Gen | Indep | 36 | 26 | 20 | No | 253 | 1,326 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Atlantic City, 66,198—Atlantic Co. | | | | | | | | |
| Atlantic Eye, Ear, Nose, Throat and Chest Hosp. | EENT | Indiv | 8 | 1 | .. | No | ... | 183 |
| Galen Hall | Conv | Indep | 183 | ... | .. | No | ... | ..... |
| Dr. Leonard's Private Sanitarium | Dr&Al | Indiv | 25 | 25 | .. | ... | ... | 167 |
| Municipal Hospital | IsoSk&Ca | City | 62 | 10 | 10 | Yes | ... | ..... |
| Bridgeton, 15,699—Cumberland Co. | | | | | | | | |
| Cumberland County Hospital for Insane | N&M | County | 212 | 187 | .. | No | ... | 43 |
| Ivy Hall Sanitarium | N&M | Indiv | 28 | 20 | .. | No | ... | ..... |
| Ivy Manor | Conv | Indiv | 25 | 17 | .. | ... | ... | ..... |
| Burlington, 10,844—Burlington Co. | | | | | | | | |
| Masonic Home | Inst | Frat | 35 | 32 | .. | No | ... | ..... |
| Caldwell, 5,144—Essex Co. | | | | | | | | |
| Knoll Rest Convalescent Home | TB | Indiv | 14 | 14 | .. | ... | ... | ..... |
| Theresa Grotta Home for Convalescents | Conv | Indep | 42 | 32 | .. | ... | ... | ..... |
| Camden, 118,700—Camden Co. | | | | | | | | |
| Municipal Hospital for Contagious Diseases | Iso | City | 100 | 20 | .. | No | ... | 395 |
| Chatsworth, 962—Burlington Co. | | | | | | | | |
| The Pines Sanatorium | TB | Indiv | 30 | 10 | .. | No | ... | ..... |
| Cranbury, 1,083—Middlesex Co. | | | | | | | | |
| Brainerd Lake Sanitarium | N&M | Indiv | 21 | 12 | .. | No | ... | 10 |
| Farmingdale, 629—Monmouth Co. | | | | | | | | |
| Tuberculosis Preventorium for Children■ | TB | Indep | 247 | 180 | .. | No | ... | 500 |
| Grenloch, 255—Camden Co. | | | | | | | | |
| Camden County General Hospital■ | Inst | County | 150 | 150 | .. | Yes | ... | ..... |
| Haddonfield, 8,857—Camden Co. | | | | | | | | |
| Bancroft School | MenDef | Indep | 105 | 96 | .. | No | ... | 11 |
| Jamesburg, 2,048—Middlesex Co. | | | | | | | | |
| New Jersey State Home for Boys | Inst | State | 16 | 2 | .. | Yes | ... | 593 |
| Jersey City, 316,715—Hudson Co. | | | | | | | | |
| Jersey Eye, Ear, Nose and Throat Hospital■ | EENT | Indiv | 10 | 6 | .. | Yes | ... | 1,427 |
| Salvation Army Door-of-Hope Home and Hosp. | Mater | Church | 9 | 1 | 9 | No | ... | ..... |
| Kearny, (Arlington P.O.)—Hudson Co. | | | | | | | | |
| New Jersey Home for Disabled Soldiers | Inst | State | 50 | 45 | .. | No | ... | ..... |
| Lakewood, 8,000—Ocean Co. | | | | | | | | |
| Lakewood Sanitarium | N&M | Indiv | 15 | 12 | .. | ... | ... | ..... |
| Longport, 228—Atlantic Co. | | | | | | | | |
| Betty Bacharach Home for Afflicted Children■ | Ortho | Frat | 125 | 49 | .. | No | ... | 107 |
| Morristown, 15,197—Morris Co. | | | | | | | | |
| Aurora Health Farm | Conv | Indiv | 90 | 30 | .. | No | ... | 377 |
| Newark, 442,337—Essex Co. | | | | | | | | |
| Home for Incurables and Hospital | Inst | Indep | 60 | 60 | .. | No | ... | ..... |
| Newark City Almshouse■ | Inst | City | 40 | 20 | .. | Yes | ... | ..... |
| Newark Convalescent Hospital■ | Conv | City | 153 | 151 | .. | No | ... | 154 |
| New Brunswick, 34,555—Middlesex Co. | | | | | | | | |
| Francis E. Parker Memorial Home | Incur | Indiv | 28 | ... | .. | No | ... | ..... |
| Newfoundland, 564—Morris Co. | | | | | | | | |
| Idylease Inn | Conv | Indep | 28 | 18 | .. | Yes | ... | 130 |
| New Lisbon, 131—Burlington Co. | | | | | | | | |
| Burlington County Hospital for Insane | N&M | County | 240 | 235 | .. | No | ... | 48 |
| State Colony for Feeble-minded Males | MenDef | State | 550 | 550 | .. | No | ... | ..... |
| Northfield, 2,804—Atlantic Co. | | | | | | | | |
| Atlantic County General Hospital■ | Inst | County | 135 | 95 | 3 | No | ... | ..... |
| North Wildwood, (Wildwood P.O.), 2,049—Cape May Co. | | | | | | | | |
| Margaret Mace's Hosp.■ | Gen | Indiv | 15 | 6 | .. | No | ... | ..... |
| Ocean City, 5,525—Cape May Co. | | | | | | | | |
| Ocean City Seashore Home for Babies | Chil | Indep | 40 | 16 | .. | No | ... | ..... |
| Ocean Grove, 3,050—Monmouth Co. | | | | | | | | |
| Methodist Episcopal Home for Aged | Inst | Church | 10 | 9 | .. | No | ... | ..... |
| Passaic, 62,959—Passaic Co. | | | | | | | | |
| Passaic Eye, Ear, Nose and Throat Private Hospital | EENT | Indiv | 32 | 11 | 5 | Yes | ... | ..... |
| Passaic Municipal Hosp. | Iso | City | 25 | 2 | 2 | No | ... | 79 |
| Paterson, 138,513—Passaic Co. | | | | | | | | |
| Paterson City Hospital | Iso,TB | City | 110 | 64 | .. | No | ... | ..... |
| Princeton, 6,992—Mercer Co. | | | | | | | | |
| Isabella McCosh Infirmary | Inst | Indep | 55 | 19 | .. | Yes | ... | 1,460 |
| Rahway, 16,011—Union Co. | | | | | | | | |
| New Jersey Reformatory Hospital■ | Inst | State | 16 | 4 | .. | No | ... | 185 |
| Roseland, 1,058—Essex Co. | | | | | | | | |
| Mountain View Rest | N&M | Part | 20 | 15 | .. | No | ... | 53 |
| Sea Isle City, 850—Cape May Co. | | | | | | | | |
| Sea Isle City Hospital and Home | N&M | [illegible] | 40 | 18 | .. | No | ... | 85 |

Key to symbols and abbreviations is on page 2078

## NEW JERSEY—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Secaucus, 8,950—Hudson Co. | | | | | | | | |
| Hudson County Smallpox Hospital■ | Iso | County | 50 | ... | .. | No | ... | ..... |
| Summit, 14,556—Union Co. | | | | | | | | |
| Fair View Sanitarium | N&M | Part | 20 | 15 | .. | No | ... | ..... |
| Teaneck, 3,260—Bergen Co. | | | | | | | | |
| "Bright Side" Sanitarium | Incur | Indiv | 28 | 19 | .. | No | ... | ..... |
| Toms River, 1,800—Ocean Co. | | | | | | | | |
| Toms River Home | Conv | Indep | 18 | 14 | .. | No | ... | 88 |
| Totowa (Paterson P.O.), 4,660—Passaic Co. | | | | | | | | |
| State Training School | MenDef | State | 480 | 543 | .. | Yes | ... | ..... |
| Trenton, 123,356—Mercer Co. | | | | | | | | |
| New Jersey School for the Deaf■ | Inst | State | 21 | 5 | .. | No | ... | 468 |
| New Jersey State Prison Hospital■ | Inst | State | 45 | 20 | .. | Yes | ... | 833 |
| State Home for Girls■ | Inst | State | 50 | 32 | 3 | No | 19 | 417 |
| Vineland, 7,556—Cumberland Co. | | | | | | | | |
| New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives and Widows■ | Inst | State | 64 | 50 | .. | No | ... | 212 |
| Training School at Vineland | MenDef | Indep | 500 | 532 | .. | No | ... | 55 |
| Vineland State School | MenDef | State | 1,200 | 1,352 | .. | No | ... | 69 |
| West Englewood, 2,207—Bergen Co. | | | | | | | | |
| Englewood Sanit. (Lynwood Lodge) | N&M | Indiv | 40 | 22 | .. | ... | ... | ..... |
| Woodbine, 2,164—Cape May Co. | | | | | | | | |
| Woodbine Colony for Feeble-minded Males | MenDef | State | 480 | 472 | .. | No | ... | 94 |

Summary for New Jersey:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 117 | 29,481 | 22,439 | 241,833 |
| Related institutions | 52 | 7,709 | 6,774 | 8,710 |
| Totals | 169 | 37,190 | 29,213 | 250,543 |
| Refused registration | 4 | 131 | | |

## NEW MEXICO

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albuquerque, 26,570—Bernalillo Co. | | | | | | | | |
| A. T. & S. F. Hospital■ | Indus | Indus | 67 | 16 | .. | Yes | ... | 300 |
| Children's Home & Hosp. | Chil | Indep | 30 | 14 | 8 | No | ... | ..... |
| Hillcrest Sanatorium | TB | Indiv | 85 | 85 | .. | No | ... | ..... |
| Methodist Deaconess Sanat. | TB | Church | 65 | 50 | .. | No | ... | 90 |
| National Lutheran Sanat. | TB | Church | 75 | 60 | .. | No | ... | ..... |
| St. Joseph's Sanatorium and Hospital◊■ | Gen | Church | 196 | 108 | 12 | No | 168 | 2,044 |
| Southwestern Presbyterian Sanatorium■ | TB,Gen | Church | 150 | 77 | 6 | No | 55 | 898 |
| U. S. Indian School Hosp. | Gen | Indian | 57 | 48 | 4 | Yes | 23 | 1,279 |
| Carlsbad, 3,708—Eddy Co. | | | | | | | | |
| St. Francis Hospital | Gen | Church | 34 | 16 | 7 | No | 72 | 726 |
| Clayton, 2,518—Union Co. | | | | | | | | |
| St. Joseph's Hospital | Gen | Church | 25 | 11 | 8 | No | 43 | 488 |
| Clovis, 8,027—Curry Co. | | | | | | | | |
| A. T. & S. F. Hospital■ | Indus | Indus | 36 | 16 | .. | Yes | ... | 333 |
| Baptist Hospital■ | Gen | Church | 30 | 10 | 7 | Yes | 8 | 601 |
| Crownpoint, 52—McKinley Co. | | | | | | | | |
| Eastern Navajo Agency Hospital■ | Gen | Indian | 32 | 19 | 7 | Yes | 17 | 563 |
| Dawson, 2,662—Colfax Co. | | | | | | | | |
| Phelps Dodge Corporation Hospital■ | Gen | Indus | 30 | 3 | 4 | Yes | 11 | 111 |
| Deming, 3,377—Luna Co. | | | | | | | | |
| Deming Ladies' Hospital■ | Gen | Indep | 24 | 9 | 3 | No | 19 | 208 |
| Holy Cross Sanatorium■ | TB | Church | 200 | 60 | .. | No | ... | 81 |
| Dulce, 101—Rio Arriba Co. | | | | | | | | |
| Jicarilla Agency Hospital | Gen | Indian | 24 | 17 | 5 | Yes | 1 | 160 |
| Jicarilla Southern Mountain Sanatorium | TB | Indian | 82 | 82 | .. | No | ... | 82 |
| Farmington, 1,350—San Juan Co. | | | | | | | | |
| San Juan Episcopal Mission Hospital (Indians) | Gen | Church | 12 | 8 | 1 | Yes | 5 | 190 |
| San Juan Hospital | Gen | Indep | 15 | 5 | 3 | No | 9 | 187 |
| Ft. Bayard, 509—Grant Co. | | | | | | | | |
| Veterans Admin. Hospital■ | TB,Gen | VetAd | 450 | 334 | .. | No | ... | 589 |
| Ft. Stanton, 218—Lincoln Co. | | | | | | | | |
| U. S. Marine Hospital■ | TB | USPHS | 270 | 248 | .. | No | ... | 136 |
| Gallup, 5,992—McKinley Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 75 | 54 | 10 | No | 30 | 1,200 |
| Gardiner, 1,000—Colfax Co. | | | | | | | | |
| Gardiner Hospital | Indus | Indus | 40 | 8 | .. | Yes | ... | 153 |
| Laguna, 1,091—Valencia Co. | | | | | | | | |
| Laguna Sanat. for Tuber. | TB | Indian | 66 | 45 | .. | No | ... | ..... |
| Las Vegas, 4,719—San Miguel Co. | | | | | | | | |
| Las Vegas Hospital (Carpenter Memorial Hosp.)■ | Gen | Indep | 20 | 7 | 4 | No | 30 | 328 |
| New Mexico State Hosp. | N&M | State | 750 | 619 | .. | No | ... | 239 |
| St. Anthony's Sanitarium and Hospital■ | Gen | Church | 48 | 20 | .. | No | 21 | 227 |
| Lordsburg, 2,069—Hidalgo Co. | | | | | | | | |
| De Moss Hospital | Gen | Indiv | 13 | 4 | 2 | Yes | ... | ..... |
| Lordsburg Hospital■ | Gen | Indep | 20 | 6 | 4 | No | 30 | 322 |
| Mescalero, 175—Otero Co. | | | | | | | | |
| Mescalero Indian Hospital | Gen,TB | Indian | 33 | 9 | 3 | Yes | 22 | 480 |
| Raton, 6,090—Colfax Co. | | | | | | | | |
| New Mexico Miners Hosp.■ | Gen | State | 30 | 14 | 5 | No | 59 | 455 |

## NEW MEXICO—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Rehoboth, 170—McKinley Co. | | | | | | | | |
| Rehoboth Mission Hosp... | Gen | Church | 34 | 30 | 5 | Yes | 64 | 596 |
| Roswell, 11,173—Chaves Co. | | | | | | | | |
| St. Mary's Hospital....... | Gen | Church | 60 | 18 | 8 | No | 111 | 754 |
| Roy, 713—Harding Co. | | | | | | | | |
| Plumlee Hospital.......... | Gen | Indiv | 10 | 3 | .. | No | 15 | 110 |
| Santa Fe, 11,176—Santa Fe Co. | | | | | | | | |
| St. Vincent's Sanatorium and Hospital◊■.......... | Gen,TB | Church | 85 | 42 | 9 | No | 112 | 732 |
| Sunmount Sanatorium..... | TB | Indep | 50 | 44 | .. | No | ... | ..... |
| Santa Rita, 1,890—Grant Co. | | | | | | | | |
| Nevada Consolidated Copper Company Hospital■ | Gen | Indus | 48 | 12 | 6 | No | 72 | 419 |
| Shiprock, 161—San Juan Co. | | | | | | | | |
| San Juan Indian Hospital | Gen | Indian | 75 | 27 | 5 | Yes | 25 | 976 |
| Silver City, 3,519—Grant Co. | | | | | | | | |
| Grant County Hospital■.. | Gen | Indep | 20 | 8 | 5 | No | 50 | 425 |
| Valmora,—Mora Co. | | | | | | | | |
| Valmora Sanatorium....... | TB | Indep | 75 | 67 | .. | No | ... | 175 |
| Zuni,—McKinley Co. | | | | | | | | |
| Black Rock Sanatorium... | TB | Indian | 80 | 75 | .. | Yes | 3 | 130 |
| **Related Institutions** | | | | | | | | |
| Alamogordo, 3,096—Otero Co. | | | | | | | | |
| Rousseau Hospital........ | Gen | Indiv | 8 | 3 | .. | No | ... | 150 |
| Carlsbad, 3,708—Eddy Co. | | | | | | | | |
| Eddy County Hospital.... | Gen | County | 17 | ... | .. | ... | ... | ..... |
| Los Lunas, 513—Valencia Co. | | | | | | | | |
| New Mexico Home and Training School for Mental Defectives.......... | MenDef | State | 48 | 41 | .. | No | ... | 18 |
| Santa Fe, 11,176—Santa Fe Co. | | | | | | | | |
| Lewis C. Cramton Hospital | Gen | Indian | 70 | 20 | .. | Yes | ... | ..... |
| New Mexico Penit. Hosp... | Inst | State | 100 | 10 | .. | No | ... | ..... |
| Springer, 957—Colfax Co. | | | | | | | | |
| Springer Hospital......... | Gen | Indiv | 10 | 2 | 3 | No | 15 | 90 |

Summary for New Mexico:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 42 | 3,617 | 2,408 | 16,787 |
| Related institutions......... | 6 | 253 | 84 | 258 |
| Totals.................... | 48 | 3,870 | 2,492 | 17,045 |
| Refused registration......... | 1 | 20 | | |

## NEW YORK

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albany, 127,412—Albany Co. | | | | | | | | |
| Albany Hospital★+◊■▲..... | Gen | Indep | 500 | 353 | 40 | Yes | 698 | 8,580 |
| Anthony N. Brady Maternity Hospital⊙■ | Mater | Church | 60 | 40 | 60 | Yes | 1,040 | 1,163 |
| Child's Hospital.......... | Chil | Church | 50 | 33 | .. | No | ... | 351 |
| Memorial Hospital★◊■........ | Gen | Indep | 125 | 104 | 15 | Yes | 279 | 2,526 |
| St. Peter's Hospital★◊■... | Gen | Church | 149 | 95 | .. | Yes | 4 | 2,425 |
| Albion, 4,878—Orleans Co. | | | | | | | | |
| Arnold Gregory Memorial Hospital■ .............. | Gen | Indep | 24 | 14 | 12 | No | 91 | 401 |
| Amityville, 4,437—Suffolk Co. | | | | | | | | |
| Long Island Home......... | N&M | Indep | 206 | 142 | .. | No | ... | 62 |
| Louden-Knickerbocker Hall | N&M | Part | 140 | 112 | .. | No | ... | 161 |
| Dr. Reed Private Hospital■ | Gen | Indiv | 17 | 13 | 4 | No | 31 | 316 |
| Amsterdam, 34,817—Montgomery Co. | | | | | | | | |
| Amsterdam City Hospital◊ | Gen | Indep | 71 | 54 | 15 | No | 249 | 1,513 |
| Montgomery Sanatorium■ | TB | County | 62 | 72 | .. | Yes | ... | 143 |
| St. Mary's Hospital◊■..... | Gen | Church | 100 | 65 | 18 | No | 249 | 1,953 |
| Auburn, 36,652—Cayuga Co. | | | | | | | | |
| Auburn City Hospital★◊■. | Gen | Indep | 133 | 93 | 22 | Yes | 421 | 2,924 |
| Mercy Hospital■........... | Gen | Church | 22 | 15 | .. | No | ... | 435 |
| Ballston Spa, 4,591—Saratoga Co. | | | | | | | | |
| Benedict Memorial Hosp.■. | Gen | Indep | 15 | 9 | 6 | Yes | 96 | 327 |
| Batavia, 17,375—Genesee Co. | | | | | | | | |
| St. Jerome's Hospital■..... | Gen | Church | 59 | 50 | 13 | No | 254 | 1,533 |
| Woman's Hospital■......... | Gen | Indep | 51 | 20 | 8 | No | 126 | 886 |
| Bath, 4,015—Steuben Co. | | | | | | | | |
| Bath Hospital■............ | Gen | Part | 50 | 32 | 8 | No | 88 | 946 |
| Pleasant Valley Sanat.■... | TB | County | 45 | 40 | .. | No | ... | 72 |
| Bay Shore, 4,080—Suffolk Co. | | | | | | | | |
| Dr. King's Private Hosp.. | Gen | Indiv | 30 | 11 | 8 | Yes | 118 | 661 |
| Southside Hospital■........ | Gen | Indep | 78 | 45 | 26 | Yes | 368 | 1,517 |
| Beacon, 11,933—Dutchess Co. | | | | | | | | |
| Craig House............... | N&M | Indep | 77 | 67 | .. | No | ... | 35 |
| Highland Hospital■........ | Gen | Indep | 48 | 26 | 10 | No | 86 | 623 |
| Matteawan State Hospital | N&M | State | 1,113 | 1,174 | .. | No | ... | 148 |
| Bedford Hills, 1,000—Westchester Co. | | | | | | | | |
| Montefiore Hospital, Bedford Sanatorium+........ | TB | Indep | 220 | 223 | .. | No | ... | 401 |
| Binghamton, 76,662—Broome Co. | | | | | | | | |
| Binghamton City Hosp.★◊■ | Gen | City | 412 | 236 | 38 | Yes | 727 | 6,219 |
| Binghamton State Hosp.+◊ | N&M | State | 2,391 | 3,021 | .. | Yes | ... | 366 |
| Moore-Overton Hospital... | Gen | Part | 25 | 15 | 2 | No | 5 | 510 |
| Brentwood, 534—Suffolk Co. | | | | | | | | |
| Pilgrim State Hospital■.. | N&M | State | 4,000 | 603 | .. | No | ... | 480 |
| Ross Sanitarium........... | Gen | Indep | 35 | 18 | .. | No | ... | 93 |
| Bronxville, 6,387—Westchester Co. | | | | | | | | |
| Lawrence Hospital■........ | Gen | Indep | 85 | 67 | 18 | Yes | 335 | 1,866 |
| Brooklyn, 2,560,401—Kings Co. | | | | | | | | |
| Bay Ridge Sanitarium..... | Gen | Indep | 70 | 47 | 30 | Yes | 616 | 2,412 |
| Bedford Maternity......... | Mater | Indep | 20 | 9 | 20 | No | 217 | 253 |

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bensonhurst Maternity..... | Mater | Indep | 25 | 18 | 25 | No | 622 | 615 |
| Bethany Deaconess Hosp.■ | Gen | Church | 80 | 60 | 20 | No | 291 | 1,560 |
| Beth-El Hospital★■......... | Gen | Indep | 193 | 146 | 48 | Yes | 1,386 | 5,091 |
| Beth Moses Hospital★■... | Gen | Indep | 196 | 155 | 30 | Yes | 697 | 4,405 |
| Borough Park Mater. Hosp. | Mater | Indiv | 107 | 38 | 100 | Yes | 1,382 | ..... |
| Brooklyn Eye and Ear Hospital■ ................ | EENT | Indep | 178 | 105 | .. | Yes | ... | ..... |
| Brooklyn Home for Consumptives■ .............. | TB | Indep | 117 | 103 | .. | No | ... | 96 |
| Brooklyn Hospital★◊■..... | Gen | Indep | 200 | 187 | 34 | Yes | 925 | 7,024 |
| Brooklyn State Hosp+◊.. | N&M | State | 2,760 | 4,347 | .. | Yes | ... | 1,580 |
| Brooklyn Women's Hosp.■ | Mater | Indep | 48 | .. | 44 | Yes | ... | ..... |
| Bushwick Hospital◊■...... | Gen | Indep | 100 | 78 | 16 | Yes | 551 | 2,681 |
| Caledonian Hospital★■..... | Gen | Indep | 100 | 48 | 30 | No | 365 | 1,732 |
| Carson C. Peck Memorial Hospital◊ ............... | Gen | Indep | 80 | 76 | 30 | Yes | 419 | 1,920 |
| Coney Island Hospital★■. | Gen | City | 270 | 194 | 30 | Yes | 324 | 6,375 |
| Crown Heights Hospital■.. | Gen | Indep | 131 | 94 | 32 | No | 568 | 3,980 |
| Cumberland Hospital★◊.... | Gen | City | 290 | 288 | 31 | Yes | 831 | 6,178 |
| Evangelical Deaconess Hospital■ ................ | Gen | Church | 60 | 9 | 24 | No | 129 | 437 |
| Greenpoint Hospital★■....... | Gen | City | 236 | 198 | 64 | Yes | 920 | 5,755 |
| Harbor Hospital■........... | Gen | Indep | 50 | 27 | 10 | Yes | 108 | 1,221 |
| Hosp. of the Holy Family■ | Gen | Church | 62 | 49 | .. | Yes | ... | 1,205 |
| House of St. Giles the Cripple■ ............... | Ortho | Church | 43 | 36 | .. | Yes | ... | 178 |
| Israel-Zion Hospital★■....... | Gen | Indep | 335 | 238 | 97 | Yes | 1,884 | 7,617 |
| Jewish Hospital★+◊■....... | Gen | Indep | 434 | 364 | 123 | Yes | 2,500 | 13,219 |
| Kings County Hosp.★+◊■▲ | Gen | City | 1,620 | 1,657 | 40 | Yes | 1,520 | 27,542 |
| Kingston Avenue Hosp.+.. | Iso | City | 452 | 203 | .. | No | ... | 3,241 |
| Liberty Maternity Hosp.. | Gen | Indiv | 60 | 33 | 36 | No | 940 | 1,326 |
| Long Island College Hospital★+◊■ ............... | Gen | Indep | 438 | 353 | 42 | Yes | 967 | 9,274 |
| Lutheran Hospital■......... | Gen | Church | 92 | 51 | 18 | Yes | 452 | 2,129 |
| Mayflower Hospital■........ | Gen | Indep | 22 | 15 | 10 | No | 200 | 557 |
| Methodist Episcopal Hospital★+◊■ ............... | Gen | Church | 320 | 362 | 80 | Yes | 1,986 | 8,969 |
| Midwood Sanitarium■...... | Gen | Indep | 55 | 38 | 27 | No | 484 | 1,439 |
| Norwegian Lutheran Deaconesses Home & Hospital★◊■ ............... | Gen | Church | 169 | 143 | 32 | Yes | 809 | 3,685 |
| Prospect Heights Hosp. and Brooklyn Maternity◊..... | Gen | Indep | 151 | 71 | 39 | No | 673 | 2,609 |
| Ridgewood Sanitarium..... | Gen | Indep | 15 | 8 | 12 | No | 110 | 431 |
| Riverdale Hospital......... | Gen | Indiv | 50 | 20 | 36 | No | 652 | 911 |
| St. Catherine's Hosp.★◊■. | Gen | Church | 252 | 210 | 44 | Yes | 1,605 | 6,193 |
| St. Cecilia Hospital for Women ................ | Mater | Church | 56 | 27 | 50 | No | 739 | 1,003 |
| St. Charles Hospital Orthopedic Clinic.......... | EENT-Ortho | Church | 50 | 35 | .. | Yes | ... | 330 |
| St. John's Hospital★◊■... | Gen | Church | 194 | 143 | 40 | No | 594 | 3,198 |
| St. Mary's Hospital★◊■... | Gen | Church | 265 | 183 | 42 | Yes | 847 | 5,225 |
| St. Peter's Hospital★■..... | Gen | Church | 250 | 97 | .. | No | ... | 3,379 |
| Samaritan Hospital■....... | Gen | Church | 35 | 25 | 12 | Yes | 279 | 1,209 |
| Samaritan Hospital, Skene Division ............... | Gen | Church | 60 | 38 | 12 | No | 392 | 1,703 |
| Shore Road Hospital........ | Gen | Indep | 60 | ... | 18 | No | ... | ..... |
| Station Hospital........... | Gen | Army | 50 | 23 | .. | No | ... | ..... |
| Swedish Hospital■.......... | Gen | Church | 64 | 49 | 16 | No | 200 | 1,588 |
| Trinity Hospital■......... | Gen | Indep | 90 | 60 | 15 | Yes | 135 | 2,331 |
| U. S. Naval Hospital★■▲.. | Gen | Navy | 1,115 | 862 | .. | No | ... | 7,181 |
| Unity Hospital■........... | Gen | Indep | 176 | 101 | 31 | Yes | 831 | 3,112 |
| Victory Memorial Hosp... | Gen | Indep | 23 | 14 | 15 | No | 340 | 533 |
| Dr. Wade's Private Hosp.■ | Gen | Indiv | 50 | 40 | 14 | No | 132 | 827 |
| Williamsburgh Maternity Hospital■ ............... | Mater | Indep | 75 | 43 | 62 | No | 1,482 | 1,532 |
| Wyckoff Heights Hosp.★◊■ | Gen | Indep | 170 | 145 | 30 | Yes | 442 | 4,193 |
| Buffalo, 573,076—Erie Co. | | | | | | | | |
| Buffalo City Hosp.★+◊■▲. | Gen | City | 863 | 1,041 | 38 | Yes | 667 | 12,142 |
| Buffalo Columbus Hosp■ | Gen | Indep | 79 | 76 | 6 | Yes | 79 | 1,612 |
| Buffalo General Hosp.★+◊■ | Gen | Indep | 345 | 285 | 26 | Yes | 571 | 7,830 |
| Buffalo Hosp. of the Sisters of Charity (Affil.)★■ | Gen | Church | 215 | 144 | 20 | No | 330 | 3,379 |
| Buffalo State Hospital+◊. | N&M | State | 1,927 | 2,400 | .. | Yes | ... | 725 |
| Central Park Clinic■...... | Gen | Indep | 65 | 48 | 6 | Yes | 61 | 2,124 |
| Children's Hospital+◊■..... | Chil | Indep | 211 | 150 | 29 | Yes | 469 | 4,372 |
| Deaconess Hospital★◊■..... | Gen | Indep | 190 | 143 | 35 | No | 848 | 4,274 |
| Emergency Hosp. of the Sisters of Charity (Affil.)★■ | Gen | Church | 100 | 84 | .. | Yes | ... | 2,568 |
| Lafayette General Hosp... | Gen | Indep | 54 | 33 | 6 | Yes | ... | ..... |
| Memorial Hospital■......... | Gen | Indep | 55 | 36 | 10 | Yes | 135 | 1,043 |
| Mercy Hospital★◊■........ | Gen | Church | 161 | 110 | 38 | Yes | 502 | 2,851 |
| Millard Fillmore Hosp.★+◊■ | Gen | Indep | 230 | 169 | 70 | Yes | 1,284 | 5,253 |
| Providence Retreat......... | N&M | Church | 200 | ... | .. | No | ... | ..... |
| St. Mary's Hospital■...... | Mater | Church | 85 | 44 | 65 | Yes | 976 | 1,098 |
| State Institute for the Study of Malignant Disease■ ............... | SK&Ca | State | 20 | 24 | .. | Yes | ... | 1,428 |
| U. S. Marine Hospital■.... | Gen | USPHS | 85 | 81 | .. | Yes | ... | 895 |
| Cambridge, 1,762—Washington Co. | | | | | | | | |
| Mary McClellan Hosp.◊■.. | Gen | Indep | 97 | 46 | 15 | Yes | 114 | 828 |
| Canandaigua, 7,541—Ontario Co. | | | | | | | | |
| Brigham Hall Hospital.... | N&M | Indep | 70 | 46 | .. | No | ... | 36 |
| Frederick Ferris Thompson Hospital ............... | Gen | Indep | 113 | 67 | 17 | No | ... | 1,464 |
| Canastota, 4,235—Madison Co. | | | | | | | | |
| Canastota Memorial Hosp.■ | Gen | City | 13 | 7 | 5 | No | 51 | 215 |
| Cassadaga, 480—Chautauqua Co. | | | | | | | | |
| Newton Memorial Hosp.■ | TB | County | 180 | 161 | .. | Yes | ... | 143 |
| Castle Point, 23—Dutchess Co. | | | | | | | | |
| Veterans Admin. Hospital■ | TB | VetAd | 425 | 403 | .. | No | ... | 557 |
| Central Islip, 675—Suffolk Co. | | | | | | | | |
| Central Islip State Hosp.◊ | N&M | State | 4,710 | 6,685 | .. | Yes | ... | 2,170 |
| Central Valley, 850—Orange Co. | | | | | | | | |
| Dr. MacDonald's House... | N&M | Indiv | 40 | 38 | .. | No | ... | 12 |

Key to symbols and abbreviations is on page 2078

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Chenango Bridge, 260—Broome Co. | | | | | | | | |
| Broome County Tuberculosis Hospital■ | TB | County | 78 | 62 | .. | No | ... | 98 |
| Clifton Springs, 1,819—Ontario Co. | | | | | | | | |
| Clifton Springs Sanitarium and Clinic★+◊ | Gen | Indep | 450 | 300 | 8 | No | 86 | 4,304 |
| Cohoes, 23,226—Albany Co. | | | | | | | | |
| Cohoes Hospital◊ | Gen | Indep | 60 | 44 | 6 | No | 159 | 1,179 |
| Cold Spring, 1,784—Putnam Co. | | | | | | | | |
| Julia L. Butterfield Memorial Hospital■ | Gen | Indep | 22 | 13 | 5 | No | 49 | 342 |
| Cooperstown, 2,909—Otsego Co. | | | | | | | | |
| Mary Imogene Bassett Hospital■ | Gen | Indep | 70 | 45 | 10 | No | 104 | 1,034 |
| Corning, 15,777—Steuben Co. | | | | | | | | |
| Corning Hospital◊■ | Gen | Indep | 85 | 51 | 25 | No | 230 | 1,666 |
| Cornwall, 1,910—Orange Co. | | | | | | | | |
| Cornwall Hospital | Gen | Indep | 60 | 31 | 11 | No | 79 | ..... |
| Corona,—Queens Co. | | | | | | | | |
| Dr. Combes' Sanitarium | N&M | Indep | 66 | 46 | .. | No | ... | 35 |
| Cortland, 15,043—Cortland Co. | | | | | | | | |
| Cortland County Hosp.◊ | Gen | Indep | 114 | 85 | 21 | ... | 296 | 2,573 |
| Cuba, 1,422—Allegany Co. | | | | | | | | |
| Cuba Memorial Hospital | Gen | Indep | 15 | 8 | 6 | No | 44 | 318 |
| Dannemora, 3,348—Clinton Co. | | | | | | | | |
| Dannemora State Hospital | N&M | State | 678 | 735 | .. | No | ... | 82 |
| Dansville, 4,928—Livingston Co. | | | | | | | | |
| Dansville General Hosp. | Gen | City | 22 | 16 | 3 | No | 86 | 564 |
| Delhi, 1,840—Delaware Co. | | | | | | | | |
| Delaware County Tuberculosis Sanatorium■ | TB | County | 28 | 26 | .. | Yes | ... | 59 |
| Dobbs Ferry, 5,741—Westchester Co. | | | | | | | | |
| Dobbs Ferry Hospital■ | Gen | Indep | 41 | 22 | 10 | Yes | 135 | 744 |
| Dunkirk, 17,802—Chautauqua Co. | | | | | | | | |
| Brook's Memorial Hospital | Gen | Indep | 51 | 25 | 10 | Yes | 160 | 1,349 |
| Elizabethtown, 636—Essex Co. | | | | | | | | |
| Elizabethtown Community House, The Infirmary■ | Gen | Indep | 10 | 4 | 2 | No | 17 | 130 |
| Ellenville, 3,280—Ulster Co | | | | | | | | |
| Veterans Memorial Hosp.◘ | Gen | Indep | 14 | 6 | 5 | No | 45 | 282 |
| Elmira, 47,397—Chemung Co. | | | | | | | | |
| Arnot-Ogden Memorial Hospital★◊■ | Gen | Indep | 180 | 119 | 30 | No | 490 | 4,135 |
| Chemung County Sanat.■ | TB | County | 35 | 32 | .. | No | ... | 47 |
| St. Joseph's Hospital★◊◘ | Gen | Church | 165 | 113 | 27 | No | 392 | 3,397 |
| Endicott, 16,231—Broome Co. | | | | | | | | |
| Ideal Hospital★◘ | Gen | City | 106 | 83 | 30 | No | 447 | 2,542 |
| Farmingdale, 3,373—Nassau Co. | | | | | | | | |
| Nassau County Sanat.■ | TB | County | 249 | 195 | .. | Yes | ... | 661 |
| Far Rockaway,—Queens Co. | | | | | | | | |
| Natalie and Louis Heinsheimer Memorial | (Included in Hosp. for Joint Diseases, N.Y.C.) | | | | | | | |
| St. Joseph Hospital◘ | Gen | Church | 88 | 60 | 18 | Yes | 361 | 2,320 |
| Fillmore, 488—Allegany Co. | | | | | | | | |
| Genesee Co. Mem. Hosp.■ | Gen | Indep | 16 | 8 | 4 | No | 54 | 250 |
| Fishers Island, 324—Suffolk Co. | | | | | | | | |
| Station Hospital | Gen | Army | 29 | 10 | .. | Yes | 2 | 322 |
| Flushing,—Queens Co. | | | | | | | | |
| Flushing Hosp. & Disp.★◊◘ | Gen | Indep | 168 | 129 | 75 | Yes | 1,294 | 4,289 |
| Station Hospital■ | Gen | Army | 80 | 54 | 4 | Yes | 56 | 1,234 |
| Ft. Niagara, (Youngstown P.O.)—Niagara Co. | | | | | | | | |
| Station Hospital | Gen | Army | 15 | 12 | .. | Yes | ... | 350 |
| Ft Slocum,—Westchester Co. | | | | | | | | |
| Station Hospital■▲ | Gen | Army | 157 | 46 | 4 | Yes | 5 | 1,655 |
| Ft. Wadsworth, (Staten Island P.O.)—Richmond Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 14 | 12 | .. | Yes | ... | 190 |
| Fulton, 12,462—Oswego Co. | | | | | | | | |
| Albert Lindley Lee Memorial Hospital■ | Gen | City | 39 | 26 | 11 | No | 133 | 888 |
| Gabriels, 200—Franklin Co. | | | | | | | | |
| Sanatorium Gabriels | TB | Church | 140 | 120 | .. | No | ... | 208 |
| Geneva, 16,053—Ontario Co. | | | | | | | | |
| Geneva General Hospital◊■ | Gen | Indep | 58 | 39 | 11 | No | 182 | 1,411 |
| Glen Cove, 11,430—Nassau Co. | | | | | | | | |
| North County Community Hospital■ | Gen | Indep | 100 | 62 | 20 | No | 304 | 1,965 |
| Parkside Hospital■ | Gen | Part | 13 | 7 | 5 | No | 68 | 300 |
| Glens Falls, 18,531—Warren Co. | | | | | | | | |
| Glens Falls Hospital◊■ | Gen | Indep | 80 | 71 | 15 | No | 242 | 1,938 |
| Westmount Sanatorium■ | TB | County | 52 | 49 | .. | Yes | ... | 60 |
| Gloversville, 23,099—Fulton Co. | | | | | | | | |
| Nathan Littauer Hospital◊ | Gen | Indep | 97 | 62 | 16 | No | 227 | 1,620 |
| Goshen, 2,891—Orange Co. | | | | | | | | |
| Goshen Hospital■ | Gen | Indep | 36 | 13 | 8 | No | 89 | 511 |
| Interpines | N&M | Indiv | 75 | 46 | .. | No | ... | 26 |
| Gouverneur, 4,015—St. Lawrence Co. | | | | | | | | |
| Stephen B. Van Duzee Hospital■ | Gen | Indep | 17 | 9 | 6 | No | 61 | 225 |
| Governors Island,—New York Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 45 | 36 | .. | No | ... | 1,003 |
| Gowanda, 3,042—Cattaraugus Co. | | | | | | | | |
| Townsend Hospital | Gen | Part | 18 | 9 | 6 | No | 71 | ..... |
| Granville, 3,483—Washington Co. | | | | | | | | |
| Emma Laing Stevens Hospital■ | Gen | Indep | 15 | 9 | 6 | No | 53 | 488 |
| Greenport, 3,062—Suffolk Co. | | | | | | | | |
| Eastern Long Island Hospital■ | Gen | Indep | 21 | 14 | 8 | No | 108 | 546 |
| Harmon-on-Hudson, 110—Westchester Co. | | | | | | | | |
| Crichton House | N&M | Indiv | 20 | 18 | ... | ... | ... | ..... |
| Harrison, 1,485—Westchester Co. | | | | | | | | |
| St. Vincent's Retreat | N&M | Church | 200 | 180 | .. | No | ... | 67 |
| Hastings-upon-Hudson, 7,097—Westchester Co. | | | | | | | | |
| Hastings Hillside Hospital | N&M | Indiv | 40 | 37 | .. | Yes | ... | 80 |

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Helmuth,—Erie Co. | | | | | | | | |
| Gowanda State Homeopathic Hospital◊ | N&M | State | 910 | 1,205 | .. | Yes | ... | 348 |
| Hempstead, 12,650—Nassau Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 19 | 10 | 10 | No | 233 | 421 |
| Station Hospital■ | Gen | Army | 50 | 14 | .. | Yes | ... | 659 |
| Herkimer, 10,446—Herkimer Co. | | | | | | | | |
| Herkimer Memorial Hosp.■ | Gen | Indep | 30 | 26 | 8 | No | 91 | 810 |
| Holcomb, 294—Ontario Co. | | | | | | | | |
| Oak Mount Sanatorium◘ | TB | County | 45 | 38 | .. | No | ... | 45 |
| Hollis,—Queens Co. | | | | | | | | |
| Roseville Hospital | Gen | Indiv | 30 | 3 | 5 | No | ... | 1,000 |
| Holtsville, 260—Suffolk Co. | | | | | | | | |
| Suffolk Sanatorium | TB | County | 96 | 94 | .. | No | ... | 102 |
| Hornell, 16,250—Steuben Co. | | | | | | | | |
| Bethesda Hospital■ | Gen | Indep | 47 | 24 | 10 | No | 154 | 871 |
| St. James' Mercy Hosp.■ | Gen | Church | 80 | 66 | 8 | No | 264 | 1,770 |
| Hudson, 12,337—Columbia Co. | | | | | | | | |
| Hudson City Hospital◊ | Gen | Indep | 91 | 71 | 15 | No | 309 | 1,920 |
| Huntington, 6,200—Suffolk Co. | | | | | | | | |
| Huntington Hospital◘ | Gen | Indep | 35 | 32 | 10 | Yes | 194 | 1,689 |
| Ilion, 9,890—Herkimer Co. | | | | | | | | |
| Ilion Hospital | Gen | Indep | 25 | 16 | 6 | No | 82 | 627 |
| Irvington, 3,067—Westchester Co. | | | | | | | | |
| Irvington House+ | Cardiac | Indep | 22 | 30 | .. | No | ... | ..... |
| Ithaca, 20,708—Tompkins Co. | | | | | | | | |
| Ithaca Memorial Hosp.◊■ | Gen | Indep | 106 | 84 | 20 | No | 294 | 2,632 |
| Jamaica,—Queens Co. | | | | | | | | |
| Mary Immaculate Hosp.★◊■ | Gen | Church | 240 | 140 | 60 | Yes | 644 | 3,683 |
| Queensboro Hospital■ | Iso | City | 56 | 27 | .. | No | ... | 448 |
| Jamestown, 45,155—Chautauqua Co. | | | | | | | | |
| Jamestown Gen. Hosp.◊■ | Gen | City | 100 | 68 | 15 | No | 364 | 2,333 |
| Woman's Christian Association Hospital◊◘ | Gen | Indep | 95 | 80 | 31 | Yes | 633 | 2,897 |
| Johnson City, 13,567—Broome Co. | | | | | | | | |
| Charles S. Wilson Memorial Hospital★◊■ | Gen | Indep | 169 | 137 | 24 | No | 413 | 3,002 |
| Kings Park, 1,067—Suffolk Co. | | | | | | | | |
| Kings Park State Hosp.+◊ | N&M | State | 3,742 | 5,581 | .. | Yes | ... | 1,150 |
| Kingston, 28,088—Ulster Co. | | | | | | | | |
| Benedictine Hospital◊■ | Gen | Church | 84 | 66 | 16 | No | 150 | 2,121 |
| Kingston Hospital◊◘ | Gen | Indep | 118 | 91 | 15 | Yes | 219 | 2,746 |
| Dr. C. O. Sahler Sanit. | N&M | Indep | 120 | 48 | .. | No | ... | 120 |
| Ulster County Tuberculosis Hospital | TB | County | 22 | 20 | .. | No | ... | 29 |
| Lackawanna, 23,948—Erie Co. | | | | | | | | |
| Moses Taylor Hospital■ | Indus | Indiv | 28 | 17 | .. | Yes | ... | 311 |
| Our Lady of Victory Hospital◊◘ | Gen | Church | 118 | 80 | 16 | Yes | 272 | 1,851 |
| Lake Kushaqua, 10—Franklin Co. | | | | | | | | |
| Stony Wold Sanatorium | TB | Indep | 145 | 144 | .. | No | ... | 162 |
| Lake Placid, 2,930—Essex Co. | | | | | | | | |
| Lake Placid Gen. Hosp.◘ | Gen | City | 20 | 10 | 6 | Yes | 30 | 212 |
| Liberty, 3,427—Sullivan Co. | | | | | | | | |
| Maimonides Hospital■ | Gen | Frat | 25 | 18 | 6 | No | 25 | 450 |
| Workmen's Circle Sanat.+ | TB | Frat | 100 | 55 | .. | Yes | ... | 157 |
| Little Falls, 11,105—Herkimer Co. | | | | | | | | |
| Little Falls Hospital■ | Gen | Indep | 36 | 24 | 9 | No | 101 | 736 |
| Livingston, 249—Columbia Co. | | | | | | | | |
| Potts Memorial Hospital | TB | Indep | 53 | 49 | .. | No | ... | 29 |
| Lockport, 23,160—Niagara Co. | | | | | | | | |
| Lockport City Hospital■ | Gen | City | 72 | 59 | 14 | No | 278 | 1,800 |
| Niagara County Sanat.■ | TB | County | 144 | 141 | .. | Yes | ... | 86 |
| Long Beach, 5,817—Nassau Co. | | | | | | | | |
| Long Beach Hospital■ | Gen | Indep | 35 | 11 | 10 | Yes | 88 | 485 |
| Long Island City,—Queens Co. | | | | | | | | |
| Astoria Sanatorium | Gen | Indiv | 33 | 20 | 30 | No | 378 | 793 |
| Boulevard Hospital | Gen | Indep | 68 | 48 | 28 | No | 681 | 2,021 |
| River Crest Sanitarium | N&M | Indiv | 132 | 110 | .. | No | ... | 150 |
| St. John's Long Island City Hospital★◊◘ | Gen | Church | 239 | 218 | 41 | Yes | 1,005 | 5,798 |
| Loomis, 200—Sullivan Co. | | | | | | | | |
| Loomis Sanatorium+ | TB | Indep | 225 | 210 | .. | No | ... | 261 |
| Lyons, 3,956—Wayne Co. | | | | | | | | |
| Edward J. Barber Hosp.■ | Gen | Indiv | 22 | 17 | 3 | No | 52 | 536 |
| Towlerton-Simpson Hosp.■ | Gen | Indep | 26 | 9 | 4 | No | ... | 239 |
| Malone, 8,657—Franklin Co. | | | | | | | | |
| Alice Hyde Mem. Hosp.◊■ | Gen | Indep | 73 | 33 | 15 | No | 106 | 920 |
| Mamaroneck, 11,766—Westchester Co. | | | | | | | | |
| Dr. Wellington's House | N&M | Indiv | 21 | 10 | .. | No | ... | ..... |
| Marcy, 112—Oneida Co. | | | | | | | | |
| Marcy Division of Utica State Hospital | (Included in Utica State Hosp., Utica, N. Y.) | | | | | | | |
| Medford Station, 259—Suffolk Co. | | | | | | | | |
| Medford Tuber. Sanat.◘ | TB | Indep | 55 | 25 | .. | Yes | ... | ..... |
| Medina, 6,071—Orleans Co. | | | | | | | | |
| Medina Memorial Hosp.■ | Gen | Indep | 28 | 13 | 7 | No | 64 | 395 |
| Middle Grove, 200—Saratoga Co. | | | | | | | | |
| Saratoga County Tuberculosis Hospital■ | TB | County | 99 | 86 | .. | Yes | ... | 203 |
| Middletown, 21,276—Orange Co. | | | | | | | | |
| Elizabeth A. Horton Memorial Hospital◊■ | Gen | Indep | 94 | 52 | 14 | Yes | 152 | 1,781 |
| Middletown Sanit. & Hosp. | Gen | Indiv | 50 | 33 | 8 | No | ... | ..... |
| Middletown State Homeopathic Hospital◊ | N&M | State | 2,800 | 3,021 | .. | Yes | ... | 391 |
| Mineola, 8,155—Nassau Co. | | | | | | | | |
| Nassau Hospital★◊■ | Gen | Indep | 175 | 132 | 30 | No | 770 | 4,692 |
| Monticello, 3,450—Sullivan Co. | | | | | | | | |
| Hamilton Avenue Hospital | Gen | Indiv | 12 | New | 4 | ... | ... | ..... |
| Monticello Hospital■ | Gen | Indep | 24 | 12 | 5 | No | 67 | 558 |
| Montour Falls, 1,489—Schuyler Co. | | | | | | | | |
| Shepard Relief Hospital■ | Gen | County | 14 | 9 | 8 | No | 45 | 261 |
| Mt. Kisco, 5,127—Westchester Co. | | | | | | | | |
| Northern Westchester Hospital■ | Gen | Indep | 85 | 57 | 16 | No | 370 | 1,921 |

Key to symbols and abbreviations is on page 2078

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Mt. McGregor,—Saratoga Co. | | | | | | | | |
| Metropolitan Life Insurance Company Sanatorium+.. | TB,Gen | Indep | 385 | 252 | .. | No | ... | 367 |
| Mt. Vernon, 61,499—Westchester Co. | | | | | | | | |
| Mt. Vernon Hospital★◊■.. | Gen | Indep | 180 | 90 | 34 | Yes | 826 | 2,996 |
| Mt. Vision, 258—Otsego Co. | | | | | | | | |
| Otsego County Sanat.■.... | TB | County | 28 | 18 | .. | No | ... | 18 |
| Newburgh, 31,275—Orange Co. | | | | | | | | |
| Estelle and Walter C. Odell Memorial Sanatorium■... | TB | County | 54 | 46 | .. | No | ... | 57 |
| St. Luke's Hospital◊...... | Gen | Indep | 114 | 89 | 30 | Yes | 294 | 3,061 |
| New Rochelle, 54,000—Westchester Co. | | | | | | | | |
| New Rochelle Hospital★◊■ | Gen | Indep | 121 | 111 | 26 | Yes | 605 | 3,842 |
| New York City, 4,211,699—New York Co. | | | | | | | | |
| Babies Hospital+⊙■ ...... | Chil | Indep | 204 | 108 | .. | Yes | ... | 2,320 |
| Beekman Street Hospital■ | Gen | Indep | 100 | 68 | .. | Yes | ... | 2,377 |
| Bellevue Hospital★+◊■▲.... | Gen | City | 1,967 | 1,979 | 102 | Yes | 2,349 | 58,026 |
| Beth David Hospital★■.... | Gen | Indep | 104 | 76 | 24 | Yes | 199 | 2,854 |
| Beth Israel Hospital★+◊■.. | Gen | Indep | 314 | 214 | 36 | Yes | 600 | 6,391 |
| Broad Street Hospital■... | Gen | Indep | 120 | 87 | 6 | Yes | 93 | 3,177 |
| Bronx Eye and Ear Infirmary■ .................. | EENT | Indep | 30 | 16 | .. | Yes | ... | 3,409 |
| Bronx Hospital■........... | Gen | Indep | 86 | 68 | 24 | Yes | 686 | 2,070 |
| Bronx Maternity Hospital. | Mater | Indep | 36 | 25 | 36 | Yes | 927 | 947 |
| Central Neurological Hospital+ ................ | N&M | City | 470 | 470 | .. | No | ... | 821 |
| Central Park West and Towns Hospitals........ | Gen | Indiv | 50 | 25 | .. | No | ... | 742 |
| Columbus Hospital★....... | Gen | Church | 300 | 140 | 40 | Yes | 240 | 2,293 |
| Columbus Hosp. Extension | Gen | Church | 100 | 43 | 12 | Yes | 145 | 1,727 |
| Community Hospital■..... | Gen | Indep | 109 | 69 | 17 | Yes | 331 | 2,241 |
| Concourse Sanitarium..... | Gen | Indep | 45 | ... | 25 | No | ... | ..... |
| Crotona Park Sanitarium. | Gen | Indep | 40 | 23 | 24 | No | 575 | 2,008 |
| Doctors Hospital.......... | Gen | Indep | 264 | 64 | 50 | No | 247 | 2,275 |
| Druskin Hospital.......... | Gen | Indiv | 18 | 10 | 18 | No | 314 | 400 |
| Echo Hill Sanitarium...... | Gen | Indep | 15 | 8 | 10 | No | 191 | 349 |
| Edith Gibbs Kimball Memorial .................... | TB | Indep | 22 | 20 | .. | No | ... | 56 |
| Fifth Avenue Hosp.★+◊■.. | Gen | Indep | 301 | 141 | 40 | Yes | 799 | 5,951 |
| Fifty-Seven West 57th Street Sanitarium ............. | Gen | Indep | 85 | ... | 15 | ... | ... | ..... |
| Fitch Sanitarium........... | Gen | Indep | 70 | 41 | 40 | No | 700 | ..... |
| Fordham Hospital★⊙■..... | Gen | City | 410 | 279 | 42 | Yes | 868 | 7,769 |
| Franklin Maternity Sanit. | Mater | Indiv | 10 | 5 | 10 | No | ... | ..... |
| French Hospital★◊........ | Gen | Frat | 203 | 148 | .. | Yes | ... | 3,776 |
| Gelber Hospital............ | EENT | Indiv | 21 | 4 | .. | No | ... | 1,335 |
| Gouverneur Hospital★⊙■... | Gen | City | 188 | 139 | 22 | Yes | 255 | 3,307 |
| Harlem Eye & Ear Hosp.+ | EENT | Indep | 45 | 10 | .. | Yes | ... | 1,952 |
| Harlem Hospital★+◊■...... | Gen | Cy&Co | 285 | 265 | 40 | Yes | 1,481 | 9,987 |
| Herman Knapp Memorial Eye Hospital+■.......... | Eye | Indep | 50 | 37 | .. | Yes | ... | 907 |
| Hospital for Joint Diseases★+■ ............... | GenOrtho | Indep | 355 | 243 | .. | Yes | ... | 5,614 |
| Hunts Point Hospital..... | Gen | Indep | 85 | 50 | 45 | No | ... | ..... |
| Jewish Maternity Hospital | Mater | Indep | 52 | 33 | 52 | Yes | 1,241 | 1,316 |
| Jewish Memorial Hospital■ | Gen | Indep | 105 | 83 | 12 | Yes | 130 | 3,239 |
| Knickerbocker Hospital★■.. | Gen | Indep | 170 | 103 | 30 | Yes | 473 | 3,631 |
| Lebanon Hospital★◊■..... | Gen | Indep | 162 | 113 | 20 | Yes | 514 | 3,391 |
| Dr. Leff's Maternity Hosp. | Mater | Indiv | 51 | 24 | 51 | No | 823 | 920 |
| Lempert Hospital.......... | ENT | Indiv | 25 | 15 | .. | No | ... | 1,381 |
| Lenox Hill Hospital★+◊■.. | Gen | Indep | 345 | 269 | 16 | Yes | 223 | 7,051 |
| Lincoln Hospital★◊■...... | Gen | City | 385 | 285 | 44 | Yes | 910 | 5,959 |
| Lutheran Hospital......... | Gen | Church | 46 | 47 | 13 | No | 289 | ..... |
| Lying-in Hospital⊙......... | Mater | Indep | 156 | 123 | 127 | Yes | 3,608 | 4,149 |
| Madison Hospital.......... | Gen | Part | 100 | 33 | 12 | No | 78 | 1,383 |
| Manhattan Eye Ear and Throat Hospital+....... | EENT | Indep | 216 | 141 | .. | Yes | ... | 17,576 |
| Manhattan Maternity and Dispensary+⊙■ .......... | Mater | Indep | 48 | 37 | 50 | Yes | 1,119 | 1,263 |
| Manhattan State Hosp.+◊ | N&M | State | 4,599 | 6,959 | 2 | Yes | ... | 2,223 |
| Memorial Hospital for the Treatment of Cancer and Allied Diseases+■......... | Cancer | Indep | 104 | 97 | .. | Yes | ... | 2,180 |
| Metropolitan Hospital★+◊■ | Gen | City | 1,580 | 1,453 | 40 | Yes | 951 | 8,631 |
| Midtown Hospital■........ | Gen | Indep | 61 | 37 | .. | Yes | ... | 3,079 |
| Misericordia Hospital★◊■... | Gen | Church | 245 | 228 | 77 | Yes | 1,369 | 3,369 |
| Montefiore Hospital for Chronic Diseases★+■... | GenChron | Indep | 691 | 602 | .. | Yes | ... | 1,242 |
| Morrisania City Hosp.★■. | Gen | City | 469 | 346 | 68 | Yes | 1,222 | 8,716 |
| Mount Morris Park Sanit. | Gen | Indiv | 65 | 30 | 30 | No | 400 | 1,600 |
| Mt. Sinai Hospital★+◊■... | Gen | Indep | 676 | 530 | .. | Yes | ... | 11,650 |
| Murray Hill Sanitarium... | Gen | Indep | 69 | 45 | 12 | No | ... | ..... |
| Neurological Institute of New York+⊙........... | N&M | Indep | 211 | 166 | .. | Yes | ... | 3,164 |
| New York City Cancer Institute Hospital+■....... | Cancer | City | 202 | 184 | .. | Yes | ... | 897 |
| New York City Children's Hospital ............... | MenDef | City | 1,400 | 742 | .. | No | ... | 687 |
| New York City Hosp.★◊■. | Gen | City | 1,030 | 998 | 30 | Yes | 720 | 6,716 |
| New York Eye and Ear Infirmary+■ ........... | EENT | Indep | 175 | 105 | .. | Yes | ... | 6,327 |
| New York Foundling Hospital⊙■ ................ | MatChil | Church | 225 | 176 | 60 | No | 657 | 3,529 |
| New York Homeopathic Medical College and Flower Hospital★◊■ ........... | Gen | Indep | 220 | 176 | 31 | Yes | 477 | 6,443 |
| New York Hospital★+◊■.. | Gen | Indep | 296 | 255 | .. | Yes | ... | 6,482 |
| New York Infirmary for Women and Children★■.. | Gen | Indep | 121 | 75 | 37 | Yes | 529 | 2,586 |
| New York Nursery and Child's Hospital+⊙■ .... | MatChil | Indep | 164 | 111 | 92 | Yes | 1,823 | 3,151 |
| New York Orthopaedic Dispensary and Hospital+■. | Ortho | Indep | 132 | 103 | .. | Yes | ... | 905 |
| New York Polyclinic Medical School and Hosp.★■ | Gen | Indep | 300 | 207 | 37 | Yes | 648 | 7,104 |

Key to symbols and abbreviations is on page 2078

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| New York Postgraduate Medical School and Hospital★+◊■ ............... | Gen | Indep | 418 | 203 | .. | Yes | ... | 9,852 |
| New York Society for the Relief of the Ruptured and Crippled+........... | Ortho | Indep | 275 | 202 | .. | Yes | ... | 4,115 |
| New York State Psychiatric Institute and Hospital+. | N&M | State | 210 | 165 | .. | Yes | ... | 392 |
| Park East Hospital....... | Gen | Indep | 106 | 48 | 16 | No | 273 | 1,931 |
| Parkway Hospital......... | Gen | Indep | 65 | 23 | 10 | No | 213 | 784 |
| Park West Hospital....... | Gen | Indep | 68 | 39 | 10 | No | 156 | 2,035 |
| People's Hospital■........ | Gen | Indep | 53 | 40 | 5 | No | 99 | 1,598 |
| Presbyterian Hosp.★+◊■... | Gen | Church | 722 | 450 | .. | Yes | ... | 12,623 |
| Reconstruction Hospital■.. | Ortho | Indep | 65 | 45 | .. | Yes | ... | 921 |
| Riverside Hospital......... | TB,Iso | City | 332 | 284 | .. | No | ... | 924 |
| Rockefeller Institute for Medical Research......... | Gen | Indep | 60 | 45 | .. | No | ... | ..... |
| Dr. Rogers' Hospital...... | N&M | Indiv | 25 | 17 | .. | No | ... | ..... |
| Roosevelt Hospital★◊...... | Gen | Indep | 391 | 179 | .. | Yes | ... | 6,089 |
| Royal Hospital............ | Gen | Indiv | 100 | 55 | 36 | No | 800 | 2,200 |
| St. Ann's Maternity Hosp. (Included in New York Foundling Hospital) | | | | | | | | |
| St. Elizabeth's Hospital... | Gen | Church | 110 | 50 | 32 | No | 287 | 1,562 |
| St. Francis' Hospital★■... | Gen | Church | 400 | 292 | .. | No | ..., | 5,405 |
| St. Joseph's Hospital for Consumptives■ ........... | TB | Church | 350 | 307 | .. | No | ... | 730 |
| St. Luke's Hospital★+◊... | Gen | Church | 526 | 369 | .. | Yes | ... | 8,786 |
| St. Mary's Hospital for Children+◊■ ............... | Chil | Church | 134 | 81 | .. | Yes | ... | 2,142 |
| St. Vincent's Hospital★◊■. | Gen | Church | 360 | 300 | .. | Yes | ... | 7,191 |
| Seton Hospital■............ | TB | Church | 235 | 226 | .. | No | ... | 227 |
| Sherman Square Hospital■ | Gen | Indep | 43 | 37 | 6 | No | 74 | 1,313 |
| Sloane Hosp. for Women+⊙■ | GynOb | Indep | 178 | 125 | 149 | Yes | 2,188 | 4,021 |
| Stuyvesant Square Hosp.+■ | Sk&Ca | Indep | 94 | 37 | .. | Yes | ... | 988 |
| Sydenham Hospital★◊■.... | Gen | Indep | 176 | 149 | 24 | Yes | 524 | 4,448 |
| Union Hospital■........... | Gen | Indep | 55 | 37 | 18 | No | 302 | 1,260 |
| U. S. Marine Hospital★■▲. | Gen | USPHS | 540 | 448 | .. | No | ... | 5,448 |
| Veterans Admin. Hospital■ | Gen | VetAd | 950 | 939 | .. | Yes | ... | 207 |
| West Hill................. | N&M | Indiv | 40 | 20 | .. | No | ... | 54 |
| West Side Hosp. and Disp. | Gen | Indep | 27 | 16 | .. | Yes | ... | 6,062 |
| Willard Parker Hosp.+⊙■. | Iso | City | 448 | 206 | .. | No | 1 | 5,003 |
| William Booth Mem. Hosp.■ | Gen | Church | 49 | 34 | 25 | Yes | 336 | 1,022 |
| Woman's Hospital+⊙...... | GynOb | Indep | 217 | 159 | 71 | Yes | 1,395 | 3,759 |
| Niagara Falls, 75,460—Niagara Co. | | | | | | | | |
| Mt. St. Mary's Hospital◊■ | Gen | Church | 144 | 67 | 16 | Yes | 393 | 2,214 |
| Niagara Falls Mem. Hosp.◊■ | Gen | Indep | 175 | 83 | 25 | No | 402 | 3,020 |
| Northport, 2,528—Suffolk Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 1,392 | 912 | .. | No | ... | 78 |
| North Tonawanda, 19,019—Niagara Co. | | | | | | | | |
| De Graff Memorial Hosp. | Gen | City | 48 | 22 | 18 | No | 176 | 8,128 |
| Norwich, 8,378—Chenango Co. | | | | | | | | |
| Chenango Mem. Hosp.■.. | Gen | Indep | 61 | 31 | 15 | No | 93 | 888 |
| Nyack, 5,392—Rockland Co. | | | | | | | | |
| Nyack Hospital■.......... | Gen | Indep | 84 | 70 | 16 | No | 308 | 2,195 |
| Ogdensburg, 16,915—St. Lawrence Co. | | | | | | | | |
| A. Barton Hepburn Hosp.◊ | Gen | Church | 160 | 137 | 20 | Yes | 287 | 3,871 |
| St. Lawrence State Hosp.◊ | N&M | State | 1,721 | 2,367 | .. | Yes | ... | 386 |
| Olean, 21,790—Cattaraugus Co. | | | | | | | | |
| Mountain Clinic.......... | Gen | Indiv | 35 | 24 | 9 | Yes | 107 | 871 |
| Olean General Hospital■.. | Gen | Indep | 81 | 41 | 22 | No | 248 | 1,721 |
| Rocky Crest Sanatorium. | TB | County | 50 | 38 | .. | No | ... | 61 |
| Oneida, 10,558—Madison Co. | | | | | | | | |
| Broad Street Hospital◊■.. | Gen | Indep | 55 | 38 | 11 | No | 114 | 892 |
| Oneida City Hospital■.... | Gen | City | 10 | 7 | 4 | No | 50 | 146 |
| Oneonta, 12,536—Otsego Co. | | | | | | | | |
| Aurelia Osborn Fox Memorial Hospital■........ | Gen | Indep | 54 | 35 | 6 | Yes | 112 | 1,000 |
| Parshall Private Hosp.■.. | Gen | Indiv | 31 | 12 | 10 | No | 52 | 591 |
| Orangeburg, 360—Rockland Co. | | | | | | | | |
| Rockland State Hospital.. | N&M | State | 3,750 | 3,344 | .. | No | ... | 2,389 |
| Ossining, 15,241—Westchester Co. | | | | | | | | |
| Greenmont-on-the-Hudson... | N&M | Indiv | 19 | 10 | .. | No | ... | 6 |
| Ossining Hospital■........ | Gen | Indep | 50 | 35 | 10 | No | 196 | 1,341 |
| Stony Lodge.............. | N&M | Indiv | 16 | 11 | .. | No | ... | 37 |
| Oswego, 22,652—Oswego Co. | | | | | | | | |
| Oswego Hospital■......... | Gen | Indep | 89 | 43 | 10 | No | 199 | 1,524 |
| Station Hospital■......... | Gen | Army | 25 | 9 | .. | Yes | ... | 201 |
| Otisville, 809—Orange Co. | | | | | | | | |
| Municipal Sanatorium■.... | TB | City | 396 | 346 | .. | No | ... | 541 |
| Owego, 4,742—Tioga Co. | | | | | | | | |
| Glenmary Sanitarium...... | N&M | Indep | 50 | 14 | .. | No | ... | 8 |
| Pawling, 1,204—Dutchess Co. | | | | | | | | |
| White Oak Farm.......... | N&M | Indiv | 19 | 12 | .. | No | ... | 2 |
| Peekskill, 17,125—Westchester Co. | | | | | | | | |
| Peekskill Hospital■........ | Gen | Indep | 75 | 41 | 10 | No | 230 | 1,324 |
| Penn Yan, 5,329—Yates Co. | | | | | | | | |
| Soldiers and Sailors Memorial Hospital■........ | Gen | Indep | 40 | 25 | 10 | No | 106 | 904 |
| Perrysburg, 317—Cattaraugus Co. | | | | | | | | |
| J. N. Adam Mem. Hosp.■ | TB | City | 500 | 479 | .. | No | ... | 409 |
| Philmont, 1,868—Columbia Co. | | | | | | | | |
| Columbia County Tuberculosis Sanatorium......... | TB | County | 75 | 48 | .. | Yes | ... | 43 |
| Plattsburg, 13,349—Clinton Co. | | | | | | | | |
| Champlain Valley Hosp.◊■ | Gen | Church | 100 | 84 | 13 | Yes | 249 | 2,436 |
| Physicians' Hospital◊■..... | Gen | Indep | 115 | 61 | 18 | Yes | 150 | 1,816 |
| Station Hospital■......... | Gen | Army | 85 | 16 | .. | Yes | ... | 691 |
| Pt. Chester, 22,662—Westchester Co. | | | | | | | | |
| St. Luke's Convalescent Hospital ................ | Conv | Church | 88 | 72 | .. | No | ... | ..... |
| United Hospital★◊■........ | Gen | Indep | 164 | 84 | 36 | Yes | 542 | 3,117 |
| Pt. Jefferson, 2,200—Suffolk Co. | | | | | | | | |
| John T. Mather Memorial Hospital■ ............... | Gen | Indep | 58 | 29 | 12 | No | 74 | 729 |

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Charles Hosp. for Crippled Children & Brooklyn Home for Blind and Defective Children■▲ | Ortho | Church | 250 | 222 | .. | No | ... | 73 |
| Pt. Jervis, 10,243—Orange Co. | | | | | | | | |
| St. Francis Hospital | Gen | Church | 60 | 25 | 5 | Yes | ... | ..... |
| Potsdam, 4,136—St. Lawrence Co. | | | | | | | | |
| Potsdam Hospital | Gen | Indep | 16 | 12 | 4 | No | 76 | 467 |
| Poughkeepsie, 40,288—Dutchess Co. | | | | | | | | |
| Hudson River State Hosp.◊ | N&M | State | 3,460 | 4,530 | .. | Yes | ... | 907 |
| Sadlier Hospital | Surg | Indiv | 10 | 9 | .. | No | ... | 175 |
| St. Francis' Hospital◊■ | Gen | Church | 85 | 61 | 25 | No | 259 | 1,665 |
| Samuel and Nettie Bowne Hospital | TB | Indep | 50 | 43 | .. | No | ... | 72 |
| Samuel W. Bowne Memorial Hospital+■ | TB | Cy&Co | 135 | 141 | .. | No | ... | 89 |
| Vassar Brothers Hosp.★◊■ | Gen | Indep | 176 | 130 | 28 | Yes | 477 | 3,695 |
| Queens Village,—Queens Co. | | | | | | | | |
| Creedmoor Division, Brooklyn State Hospital | (Included in Brooklyn State Hospital) | | | | | | | |
| Ray Brook, 40—Essex Co. | | | | | | | | |
| New York State Hospital | TB | State | 300 | 293 | .. | Yes | ... | 477 |
| Rhinebeck, 1,569—Dutchess Co. | | | | | | | | |
| Northern Dutchess Health Service Center■ | Gen | Indep | 30 | 15 | 8 | Yes | 53 | 691 |
| Richland, 404—Oswego Co. | | | | | | | | |
| Oswego County Sanat.■ | TB | County | 115 | 105 | .. | Yes | ... | 127 |
| Richmond Hill,—Queens Co. | | | | | | | | |
| Jamaica Hospital◊■ | Gen | Indep | 134 | 97 | 33 | Yes | 852 | 4,018 |
| Rochester, 328,132—Monroe Co. | | | | | | | | |
| Belvidere Private Hosp. | Gen | Indiv | 16 | 6 | 12 | No | 132 | 264 |
| Genesee Hospital★+◊■ | Gen | Indep | 184 | 135 | 30 | Yes | ... | 4,150 |
| Highland Hospital★◊■ | Gen | Indep | 200 | 121 | 58 | Yes | 800 | 4,155 |
| Iola Sanatorium+■ | TB | County | 400 | 377 | .. | Yes | ... | 802 |
| Monroe County Hosp.■▲ | Gen | County | 249 | 243 | 1 | Yes | 27 | 1,426 |
| Park Avenue Hospital◊■ | Gen | Indep | 81 | 52 | 22 | No | 352 | 1,766 |
| Rochester Gen. Hosp.★+◊ | Gen | Indep | 265 | 232 | 40 | Yes | 953 | 6,271 |
| Rochester Municipal Hospital (Affil.)★+■▲ | Gen | City | 235 | 200 | 24 | No | 308 | 4,159 |
| Rochester State Hospital◊ | N&M | State | 2,093 | 2,155 | .. | Yes | ... | 771 |
| St. Mary's Hospital★◊■ | Gen | Church | 174 | 135 | 25 | Yes | 564 | 4,331 |
| Strong Mem. Hosp.★+◊■▲ | Gen | Indep | 260 | 145 | 36 | Yes | 180 | 4,713 |
| Rockaway Beach,—Queens Co. | | | | | | | | |
| Neponsit Beach Hospital for Children | Chil | City | 120 | 120 | .. | No | ... | 35 |
| Rockaway Beach Hospital and Dispensary■ | Gen | Indep | 100 | 64 | 10 | No | 267 | 1,831 |
| Rockville Center, 13,718—Nassau Co. | | | | | | | | |
| South Nassau Communities Hospital■ | Gen | Indep | 54 | 46 | 18 | No | 689 | 1,964 |
| Rome, 32,338—Oneida Co. | | | | | | | | |
| Oneida County Hospital■ | Gen | County | 172 | 184 | 8 | Yes | 43 | 1,221 |
| Rome and Murphy Memorial Hospital■ | Gen | City | 65 | 49 | 16 | No | 283 | 1,820 |
| Rome Infirmary | Gen | Indiv | 50 | 30 | 18 | Yes | 8 | 1,095 |
| Sackets Harbor, 742—Jefferson Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 25 | 20 | .. | Yes | ... | 480 |
| Salamanca, 9,577—Cattaraugus Co. | | | | | | | | |
| City Hospital | Gen | City | 45 | 23 | 10 | No | 108 | 841 |
| Salisbury Center, 331—Herkimer Co. | | | | | | | | |
| Pine Crest Sanatorium | TB | County | 90 | 90 | .. | No | ... | 57 |
| Saranac Lake, 8,020—Franklin Co. | | | | | | | | |
| General Hospital■ | Gen | Indep | 35 | 20 | 9 | No | 84 | 812 |
| National Variety Artists Sanatorium | TB | Indep | 125 | 60 | .. | No | ... | 27 |
| Northwoods Sanatorium | TB | Indep | 30 | 30 | .. | No | ... | 101 |
| Reception Hospital■ | TB | Indiv | 20 | 20 | .. | No | ... | 80 |
| St. Mary's of the Lake | TB | Church | 30 | 20 | .. | No | ... | 56 |
| Saratoga Springs, 13,169—Saratoga Co. | | | | | | | | |
| Saratoga Hospital◊■ | Gen | Indep | 89 | 48 | 18 | Yes | 108 | 1,362 |
| Schenectady, 95,692—Schenectady Co. | | | | | | | | |
| Eastern New York Orthopedic Hospital-School■ | Ortho | Indep | 13 | 12 | .. | Yes | ... | 38 |
| Ellis Hospital★◊■ | Gen | Indep | 246 | 217 | 39 | Yes | 933 | 6,660 |
| Glenridge Sanatorium■ | TB | County | 142 | 98 | .. | Yes | ... | 265 |
| Seneca Falls, 6,443—Seneca Co. | | | | | | | | |
| Seneca Falls Hospital | Gen | City | 26 | 12 | 7 | No | 84 | 374 |
| Sherburne, 1,077—Chenango Co. | | | | | | | | |
| Brookside Crest Sanit.■ | TB | County | 33 | 35 | .. | No | ... | 33 |
| Sodus, 1,444—Wayne Co. | | | | | | | | |
| Myers Hospital■ | Gen | Indiv | 35 | 14 | 7 | No | 52 | 388 |
| Sonyea,—Livingston Co. | | | | | | | | |
| Craig Colony◊ | Epil | State | 1,666 | 1,722 | .. | No | ... | 317 |
| Southampton, 3,737—Suffolk Co. | | | | | | | | |
| Southampton Hospital◊■ | Gen | Indep | 94 | 49 | 12 | Yes | 215 | 1,403 |
| Staten Island, 158,346—Richmond Co. | | | | | | | | |
| Richmond Memorial Hosp.■ | Gen | Indep | 64 | 30 | 18 | Yes | 141 | 1,122 |
| St. Vincent's Hospital★■ | Gen | Church | 200 | 105 | 36 | Yes | 401 | 3,349 |
| Sea View Hospital■ | TB | City | 1,041 | 1,021 | 29 | No | 10 | 2,335 |
| Staten Island Hospital★◊■ | Gen | Indep | 231 | 135 | 44 | Yes | 912 | 4,775 |
| U. S. Marine Hospital★■ | Gen | USPHS | 288 | 288 | .. | Yes | ... | 3,517 |
| Suffern, 3,757—Rockland Co. | | | | | | | | |
| Good Samaritan Hospital■ | Gen | Church | 35 | 23 | 10 | No | 105 | 1,011 |
| Summit Park (Pomona P.O.),—Rockland Co. | | | | | | | | |
| Summit Park Sanatorium | TB | County | 46 | 52 | .. | No | ... | 58 |
| Sunmount,—Franklin Co. | | | | | | | | |
| Veterans Admin. Hospital■ | TB | VetAd | 380 | 362 | .. | No | ... | 371 |
| Syracuse, 209,326—Onondaga Co. | | | | | | | | |
| City Hospital⊙ | Iso | City | 100 | 45 | .. | No | ... | 634 |
| Crouse-Irving Hospital◊■ | Gen | Indep | 204 | 130 | 30 | No | 626 | 4,186 |
| General Hospital★◊■ | Gen | Indep | 85 | 68 | 25 | Yes | 452 | 2,131 |
| Hospital of the Good Shepherd★+◊■ | Gen | Indep | 240 | 168 | 30 | No | 475 | 5,106 |
| Onondaga General Hosp.■ | Gen | City | 52 | 26 | 24 | No | 97 | 790 |
| Onondaga Sanatorium■ | TB | County | 245 | 203 | .. | Yes | ... | 232 |

## NEW YORK—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Peoples Hospital | Gen | Indep | 33 | 14 | 10 | No | 249 | 491 |
| St. Joseph's Hospital★◊■ | Gen | Church | 200 | 133 | 31 | No | 421 | 4,935 |
| St. Mary's Maternity Hosp. | Mater | Church | 40 | 27 | 22 | No | 374 | 514 |
| Syracuse Mem. Hosp.★◊■ | Gen | Indep | 210 | 170 | 40 | Yes | 763 | 4,532 |
| Syracuse Psychopathic Hospital | N&M | State | 60 | 50 | .. | Yes | ... | 550 |
| Tarrytown, 6,841—Westchester Co. | | | | | | | | |
| Tarrytown Hospital | Gen | Indep | 48 | 36 | 12 | Yes | 231 | 1,232 |
| Ticonderoga, 3,680—Essex Co. | | | | | | | | |
| Moses-Ludington Hospital■ | Gen | Indep | 43 | 25 | 6 | No | 55 | 882 |
| Troy, 72,763—Rensselaer Co. | | | | | | | | |
| Leonard Hospital◊■ | Gen | Indep | 53 | 44 | 9 | No | 239 | 1,549 |
| Marshall Sanitarium | N&M | Indep | 60 | 37 | .. | No | ... | 149 |
| St. Joseph's Maternity Hospital | Mater | Church | 35 | 11 | 25 | No | ... | ..... |
| Samaritan Hospital★◊■ | Gen | Indep | 165 | 84 | 16 | Yes | 229 | 1,500 |
| Troy Hospital★◊■ | Gen | Church | 250 | 173 | 12 | Yes | 117 | 2,762 |
| Trudeau, 230—Essex Co. | | | | | | | | |
| Trudeau Sanatorium◊ | TB | Indep | 162 | 190 | .. | No | ... | 293 |
| Trumansburg, 1,077—Tompkins Co. | | | | | | | | |
| Tompkins County Tuberculosis Hospital | TB | County | 30 | 28 | .. | Yes | ... | 53 |
| Tupper Lake, 5,271—Franklin Co. | | | | | | | | |
| Mercy General Hospital■ | Gen | Church | 32 | 20 | 2 | No | 1 | 612 |
| Tuxedo Park, 2,000—Orange Co. | | | | | | | | |
| Tuxedo Memorial Hosp.■ | Gen | Indep | 31 | 23 | 10 | No | 42 | 584 |
| Utica, 101,740—Oneida Co. | | | | | | | | |
| Broadacres Sanatorium■ | TB | County | 120 | 112 | .. | Yes | ... | 216 |
| Faxton Hospital◊■ | Gen | Indep | 161 | 110 | 40 | No | 193 | 4,291 |
| Masonic Soldiers and Sailors Memorial Hospital | Gen | Frat | 200 | 115 | .. | No | ... | 427 |
| St. Elizabeth Hospital◊■ | Gen | Church | 125 | 67 | 20 | No | 337 | 2,024 |
| St. Luke's Home & Hosp.◊■ | Gen | Church | 123 | 78 | 28 | No | 375 | 2,170 |
| Utica General Hospital | Gen | City | 127 | 56 | 8 | No | 137 | 1,668 |
| Utica Memorial Hosp.◊■ | Gen | Indep | 63 | 41 | 12 | No | 194 | 1,762 |
| Utica State Hospital◊ | N&M | State | 1,334 | 1,619 | .. | Yes | ... | 563 |
| Valhalla, 620—Westchester Co. | | | | | | | | |
| Grasslands Hospital★+◊■▲ | Gen | County | 652 | 413 | 16 | Yes | 193 | 3,565 |
| Warsaw, 3,477—Wyoming Co. | | | | | | | | |
| Wyoming County Community Hospital■ | Gen | Indep | 60 | 35 | 11 | No | 76 | 1,043 |
| Warwick, 2,443—Orange Co. | | | | | | | | |
| Warwick Hosp. and Clinic■ | Gen | Indiv | 21 | 13 | 4 | No | 28 | 342 |
| Waterloo, 4,047—Seneca Co. | | | | | | | | |
| Waterloo Memorial Hosp.■ | Gen | Indep | 15 | 9 | 5 | No | 56 | 337 |
| Watertown, 32,205—Jefferson Co. | | | | | | | | |
| House of the Good Samaritan◊■ | Gen | Indep | 122 | 94 | 13 | No | 181 | 2,364 |
| Jefferson Co. Tuber. Sanat. | TB | County | 78 | 35 | .. | No | ... | 12 |
| Mercy Hospital◊ | Gen | Church | 104 | 74 | 14 | No | 251 | 1,933 |
| Waverly, 5,662—Tioga Co. | | | | | | | | |
| Tioga County General Hospital | Gen | County | 52 | 39 | 12 | Yes | 65 | ..... |
| Wellsville, 5,674—Allegany Co. | | | | | | | | |
| Jones' Memorial Hospital■ | Gen | City | 45 | 27 | 10 | No | 152 | 1,157 |
| Westchester,—Bronx Co. | | | | | | | | |
| Station Hospital | Gen | Army | 20 | 2 | .. | Yes | ... | 181 |
| West Haverstraw, 2,834—Rockland Co. | | | | | | | | |
| New York State Reconstruction Home+ | Ortho | State | 170 | 155 | .. | Yes | ... | 89 |
| West Point, 1,250—Orange Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 118 | 55 | .. | Yes | ... | 3,876 |
| White Plains, 35,830—Westchester Co. | | | | | | | | |
| Bloomingdale Hospital+◊ | N&M | Indep | 300 | 251 | .. | Yes | ... | 151 |
| New York Orthopedic Dispensary and Hospital■ | Ortho | Indep | 170 | 155 | .. | No | ... | 546 |
| St. Agnes' Hospital■ | Gen | Church | 299 | 107 | 34 | Yes | 210 | 795 |
| White Plains Hospital◊■ | Gen | Indep | 122 | 66 | 22 | No | 443 | 2,623 |
| Willard, 200—Seneca Co. | | | | | | | | |
| Willard State Hospital◊ | N&M | State | 2,243 | 2,777 | 1 | Yes | ... | 463 |
| Wingdale, 156—Dutchess Co. | | | | | | | | |
| Harlem Valley State Hosp. | N&M | State | 1,370 | 1,736 | .. | No | ... | 246 |
| Woodhaven,—Queens Co. | | | | | | | | |
| St. Anthony's H[illegible]■ | TB | Church | 400 | 363 | .. | No | ... | 731 |
| Wynant[illegible] Co. | | | | | | | | |
| [illegible] | TB | County | 152 | 130 | .. | No | ... | 204 |
| Yo[illegible] Co. | | | | | | | | |
| C[illegible] | TB | City | 55 | 42 | .. | No | ... | 99 |
| H[illegible] of Rest at Sprain Ridge | TB | Indep | 100 | 29 | .. | No | ... | 61 |
| St. John's Riverside Hospital★◊■ | Gen | Church | 165 | 90 | 24 | Yes | ... | 2,928 |
| St. Joseph's Hospital★■ | Gen | Church | 100 | 77 | 20 | Yes | 203 | 2,263 |
| Yonkers General Hospital◊ | Gen | Indep | 150 | 84 | 50 | Yes | 736 | 2,586 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albany, 127,412—Albany Co. | | | | | | | | |
| Albany County Hospital | Inst | County | 98 | ... | .. | Yes | ... | ..... |
| Albany's Hospital for Incurables | Incur | Indep | 91 | 91 | .. | No | ... | 26 |
| Evergreens Sanat. School | MenDef | Indiv | 12 | 6 | .. | No | ... | 9 |
| St. Margaret's House and Hospital | Inst | Indep | 38 | 36 | .. | No | ... | 80 |
| Albion, 4,878—Orleans Co. | | | | | | | | |
| Institution for Mentally Defective Delinquent Women | Inst | State | 15 | 6 | 3 | No | 14 | 95 |
| Orleans County Hospital and Home■ | Gen | County | 31 | 17 | 2 | No | 1 | 65 |
| Auburn, 36,652—Cayuga Co. | | | | | | | | |
| Auburn State Prison Hosp.■ | Inst | State | 50 | 12 | .. | Yes | ... | 219 |
| The Pines | N&M | Indiv | 12 | 3 | .. | ... | ... | ..... |
| Women's Prison Hosp.■ | Inst | State | 20 | 3 | 2 | Yes | ... | 23 |
| Bath, 4,015—Steuben Co. | | | | | | | | |
| Veterans Adm'n. Home■▲ | Inst | VetAd | 391 | 331 | .. | Yes | ... | 1,026 |

Key to symbols and abbreviations is on page 2078

## NEW YORK—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bedford Hills, 1,000—Westchester Co. | | | | | | | | |
| New York State Reformatory for Women■ | Inst | State | 64 | 30 | 8 | Yes | ... | 270 |
| Binghamton, 76,662—Broome Co. | | | | | | | | |
| Binghamton Private Hosp. | Gen | Indiv | 14 | 7 | 4 | No | 8 | 50 |
| Binghamton Train. School for Nervous, Backward and Mental Defectives | MenDef | Indiv | 50 | 32 | .. | No | ... | 6 |
| Dr. Lyon's Sanitarium | N&M | Indiv | 10 | 8 | .. | No | ... | ..... |
| Breesport, 498—Chemung Co. | | | | | | | | |
| Chemung County Almshouse | Inst | County | 20 | 18 | .. | No | ... | ..... |
| Brewster, 1,664—Putnam Co. | | | | | | | | |
| Mountainbrook Farm Sanitarium | Conv | Indiv | 25 | 18 | .. | No | ... | 40 |
| Brooklyn, 2,560,401—Kings Co. | | | | | | | | |
| Adelphi Sanitarium | Gen | Indep | 84 | New | 16 | No | ... | ..... |
| Brooklyn Hebrew Home and Hospital for Aged▲ | Inst | Indep | 237 | 235 | .. | No | ... | 100 |
| Brooklyn Hebrew Orphan Asylum | Inst | Indiv | 30 | 14 | .. | No | ... | 500 |
| Brooklyn Home for Children | Inst | Indep | 20 | ... | .. | No | ... | ..... |
| Churchill Sanitarium | Gen | Indiv | 12 | 6 | 3 | No | ... | ..... |
| Faith Home for Incurables | Incur | Indep | 60 | 60 | .. | No | ... | 8 |
| Hamilton Private Hospital | Gen | Indiv | 23 | 23 | 7 | No | 55 | 735 |
| Jewish Sanitarium for Incurables | Incur | Indep | 250 | 200 | .. | No | ... | 204 |
| Buffalo, 573,076—Erie Co. | | | | | | | | |
| Buffalo Eye and Ear Infirmary | EENT | Indep | 8 | ... | 2 | Yes | ... | ..... |
| Charity Eye, Ear & Throat Hosp. of Erie County■ | EENT | Cy&Co | 7 | 1 | .. | Yes | ... | 16 |
| German Roman Catholic Orphan Asylum■ | Inst | Church | 24 | 7 | .. | No | ... | 263 |
| Parkside Sanit. and Hosp. | Conv | Indiv | 40 | ... | .. | No | ... | ..... |
| Salvation Army Maternity Hospital and Home■ | Mater | Church | 7 | 4 | 14 | No | 52 | ..... |
| Calcium, 111—Jefferson Co. | | | | | | | | |
| Jefferson County Contagious Hospital | Iso | County | 18 | 1 | .. | No | ... | 30 |
| Camden, 1,912—Oneida Co. | | | | | | | | |
| Healthforte—Dr. Bell's Private Rest Home | N&M | Indiv | 25 | 5 | .. | No | ... | 7 |
| [illegible] | | | | | | | | |
| [illegible] | Conv | Indiv | 20 | 14 | .. | No | ... | 56 |
| [illegible] | Conv | Indiv | 75 | 25 | .. | No | ... | ..... |
| [illegible] Conv. Children | Conv | Indep | 125 | 100 | .. | No | ... | 885 |
| Cortland, 15,043—Cortland Co. | | | | | | | | |
| Cortland Sanitarium | Conv | Indiv | 12 | 10 | .. | No | ... | ..... |
| Dannemora, 3,348—Clinton Co. | | | | | | | | |
| Clinton Prison General and Tuberculosis Hospital■ | Inst | State | 219 | 112 | .. | Yes | ... | 453 |
| Delhi, 1,840—Delaware Co. | | | | | | | | |
| Delhi Hospital■ | Gen | Cy&Co | 11 | 4 | 2 | No | 12 | 173 |
| Dewittville, 153—Chautauqua Co. | | | | | | | | |
| Chautauqua County Almshouse and Hospital | Inst | County | 110 | 103 | .. | No | ... | ..... |
| Eastview, 161—Westchester Co. | | | | | | | | |
| Solomon and Betty Loeb Mem. Home for Conv. | Conv | Indep | 104 | 108 | .. | No | ... | 1,401 |
| Elmira, 47,397—Chemung Co. | | | | | | | | |
| Federation Farm | TB | County | 22 | 21 | .. | No | ... | 26 |
| Gleason Health Resort | Conv | Part | 50 | 22 | .. | No | ... | ..... |
| New York State Reformatory■▲ | Inst | State | 90 | 45 | .. | No | ... | 2,280 |
| Far Rockaway,—Queens Co. | | | | | | | | |
| Jacob D. Posner-Brooklyn Jewish Home for Conv. | Conv | Indep | 44 | 44 | .. | ... | ... | 927 |
| Wave Crest Conv. Home & Seaside Hospital■ | Conv | Indep | 120 | 38 | .. | No | ... | 358 |
| Freeport, 15,467—Nassau Co. | | | | | | | | |
| Freeport Nursing Home | Gen | Indiv | 9 | 4 | 4 | No | 12 | 160 |
| Freeport Private Sanit.■ | Gen | Indiv | 5 | 3 | 6 | No | 44 | 105 |
| Green Ridge, (Staten Island P.O.)—Richmond Co. | | | | | | | | |
| St. Michael's Home for Destitute Children | Inst | Church | 35 | 5 | .. | Yes | ... | ..... |
| Harrison, 1,485—Westchester Co. | | | | | | | | |
| Miriam Osborn Memorial Home | Inst | Indep | 30 | 18 | .. | No | ... | ..... |
| Herkimer, 10,446—Herkimer Co. | | | | | | | | |
| Herkimer County Hosp.■ | Inst | County | 18 | 7 | .. | No | ... | 88 |
| Hudson, 12,337—Columbia Co. | | | | | | | | |
| New York State Training School for Girls■ | Inst | State | 52 | 7 | 23 | Yes | 14 | ..... |
| Industry,—Monroe Co. | | | | | | | | |
| State Agricultural and Industrial School■ | Inst | State | 40 | 27 | .. | Yes | ... | 885 |
| Ithaca, 20,708—Tompkins Co. | | | | | | | | |
| Conklin Sanitarium | Gen | Indiv | 9 | 6 | .. | No | ... | 225 |
| Reconstruction Home | Ortho | Indep | 60 | 48 | .. | Yes | ... | 90 |
| Katonah, 1,400—Westchester Co. | | | | | | | | |
| Hillbourne Farms | Nerv | Indep | 15 | 8 | .. | No | ... | 18 |
| Lake Ronkonkoma, 49—Suffolk Co. | | | | | | | | |
| Gary de Vabre Academy | N&M | Part | 18 | 12 | .. | No | ... | ..... |
| Lockport, 23,160—Niagara Co. | | | | | | | | |
| Odd Fellows' Home | Inst | Frat | 32 | 32 | .. | No | ... | ..... |
| Machias, 627—Cattaraugus Co. | | | | | | | | |
| Cattaraugus County Hospital■ | Inst | County | 40 | 15 | .. | No | ... | ..... |
| Marcy, 112—Oneida Co. | | | | | | | | |
| Camp Healthmore | TB | City | 50 | 42 | .. | No | ... | 57 |

## NEW YORK—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Margaretville, 771—Delaware Co. | | | | | | | | |
| Margaretville Hospital■ | Gen | Indep | 12 | 5 | 2 | No | 19 | 161 |
| Millgrove, 110—Erie Co. | | | | | | | | |
| Erie County Home & Infirmary■ | Inst | County | 585 | 318 | .. | No | ... | 100 |
| Erie Co. Penit. Hospital | Inst | County | 30 | ... | .. | No | ... | ..... |
| Mineville, 837—Essex Co. | | | | | | | | |
| Mineville Hospital | Indus | Indus | 14 | 10 | 1 | Yes | ... | 321 |
| Mohegan Lake, 105—Westchester Co. | | | | | | | | |
| Josephine Home | Conv | Indep | 50 | ... | .. | No | ... | ..... |
| Mt. Vernon, 61,499—Westchester Co. | | | | | | | | |
| Bikur Cholin Conv. Home for Greater New York | Conv | Indep | 40 | 22 | .. | ... | ... | 800 |
| Napanoch, 633—Ulster Co. | | | | | | | | |
| Institution for Male Defective Delinquents | MenDef | State | 850 | 915 | .. | No | ... | 330 |
| Newark, 7,649—Wayne Co. | | | | | | | | |
| Newark State School | MenDef | State | 892 | 1,239 | .. | No | ... | 179 |
| New Hartford, 1,885—Oneida Co. | | | | | | | | |
| Children's Hospital Home of Utica | Ortho | Cy&Co | 22 | 2 | .. | Yes | ... | 46 |
| New York City, 4,211,699—New York Co. | | | | | | | | |
| Beth Abraham Home for Incurables | Incur | Indep | 234 | 230 | .. | No | ... | 105 |
| Branch New York City Reformatory | Inst | City | 70 | ... | .. | No | ... | ..... |
| Colored Orphan Asylum | Inst | Indep | 20 | ... | .. | No | ... | 239 |
| Correction Hospital■ | Inst | City | 329 | 200 | .. | No | ... | 5,053 |
| Floating Hospital | Chil | Indep | 32 | 26 | .. | ... | ... | ..... |
| Hebrew Conv. Home■ | Conv | Indep | 85 | 75 | .. | No | ... | 350 |
| Home for Aged and Infirm Hebrews | Inst | Indep | 150 | 120 | .. | No | ... | ..... |
| Home for Hebrew Infants■ | Inst | Indep | 61 | 29 | .. | No | ... | 725 |
| Home for Incurables | Incur | Church | 302 | 296 | .. | No | ... | 136 |
| House of Calvary | Cancer | Church | 100 | 81 | .. | No | ... | ..... |
| House of the Holy Comforter | Incur | Church | 100 | 62 | .. | No | ... | 13 |
| Isabella Home | Inst | Indep | 92 | 92 | .. | No | ... | 500 |
| Jewish Home for Conv. | Conv | Indep | 100 | 50 | .. | No | ... | ..... |
| New York County Penitentiary■▲ | Inst | County | 50 | 35 | .. | No | ... | 851 |
| St. Andrew's Conv. Hosp. | Conv | Church | 30 | ... | .. | ... | ... | 330 |
| St. Rose's Free Home for Incurable Cancer | Cancer | Church | 89 | 75 | .. | No | ... | 320 |
| Tonsil Hospital■ | N&T | Indep | 36 | ... | .. | No | ... | ..... |
| Dr. Wiley Wilson's Private Hospital (col.) | Gen | Indiv | 8 | 5 | 2 | No | 40 | 199 |
| Niagara Falls, 75,460—Niagara Co. | | | | | | | | |
| Niagara Falls Municipal Hospital | Iso | City | 38 | 4 | .. | No | ... | 131 |
| Onondaga, 260—Onondaga Co. | | | | | | | | |
| Onondaga County Hosp.■ | Inst | County | 143 | 125 | 7 | No | 39 | 425 |
| Oriskany, 1,142—Oneida Co. | | | | | | | | |
| Eastern Star Home and Infirmary | Inst | Frat | 33 | 26 | .. | No | ... | ..... |
| Ossining, 15,241—Westchester Co. | | | | | | | | |
| Sing Sing Prison Hosp.■ | Inst | State | 75 | 52 | .. | Yes | ... | 1,452 |
| Otisville, 809—Orange Co. | | | | | | | | |
| Sunnyside Private Sanat. | TB | Indiv | 12 | 9 | .. | No | ... | 48 |
| Oxford, 1,601—Chenango Co. | | | | | | | | |
| New York State Woman's Relief Corps [illegible]■ | Inst | State | 57 | 44 | .. | No | ... | 129 |
| Patch[illegible] | | | | | | | | |
| P[illegible]■ | Gen | Indiv | 14 | 4 | 3 | No | 75 | 100 |
| [illegible] Co. | | | | | | | | |
| [illegible]morial Home | Conv | Church | 30 | 22 | .. | No | ... | 66 |
| Pelham Manor, 4,908—Westchester Co. | | | | | | | | |
| Pelham Home for Children | Conv | Indep | 30 | 29 | .. | No | ... | 67 |
| Plattsburg, 13,319—Clinton Co. | | | | | | | | |
| Children's Home of Northern New York | Inst | Church | 12 | 1 | .. | No | ... | ..... |
| Pleasantville, 4,540—Westchester Co. | | | | | | | | |
| Hebrew Sheltering Guardian Orphan Asylum | Inst | Indep | 31 | 5 | .. | Yes | ... | 376 |
| Pt. Jervis, 10,243—Orange Co. | | | | | | | | |
| Deer Park Hospital | Gen | Indep | 16 | 6 | 4 | No | ... | ..... |
| Poughkeepsie, 40,288—Dutchess Co. | | | | | | | | |
| Poughkeepsie City Home and Infirmary■ | Inst | City | 20 | 18 | .. | Yes | ... | 5 |
| Swift Infirmary-Vassar College | Gen | Indep | 30 | 11 | .. | Yes | ... | 387 |
| Remsen, 437—Oneida Co. | | | | | | | | |
| Whitesboro Sanitarium and Adirondack Annex | N&M | Indiv | 15 | 5 | .. | No | ... | 7 |
| Rhinebeck, 1,569—Dutchess Co. | | | | | | | | |
| Holiday Farm, Home for Convalescent Children | Conv | Indiv | 50 | 48 | .. | No | ... | 344 |
| Rochester, 328,132—Monroe Co. | | | | | | | | |
| Convalescent Hospital for Children■ | Conv | Indep | 48 | 38 | .. | No | ... | 200 |
| Knorr Sanitarium Convalescent Home | Conv | Indiv | 35 | 30 | .. | No | ... | ..... |
| Rest Haven | Conv | Indiv | 12 | 8 | .. | No | ... | ..... |
| Rockaway Park, (Rockaway Beach P.O.)—Queens Co. | | | | | | | | |
| Convalescent Home for Hebrew Children | Conv | Indep | 100 | 116 | .. | No | ... | 582 |
| Rome, 32,338—Oneida Co. | | | | | | | | |
| Rome State School+ | MenDef | State | 1,537 | 3,562 | 20 | Yes | ... | 452 |
| Schenectady, 95,692—Schenectady Co. | | | | | | | | |
| General Electric Company Industrial Hospital | Indus | Indus | 14 | 6 | .. | No | ... | ..... |
| Schenectady City Hosp.⊙ | Iso | City | 36 | 21 | .. | ... | ... | 493 |
| Schenectady County Almshouse and Hospital | Inst | County | 40 | 30 | .. | No | ... | 360 |

Key to symbols and abbreviations is on page 2078

## NEW YORK—Continued

### Related Institutions

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Sea Cliff, 3,456—Nassau Co. | | | | | | | | |
| Country Home for Convalescent Babies | Conv | Indep | 75 | 55 | .. | No | ... | ..... |
| Staten Island, 158,346—Richmond Co. | | | | | | | | |
| New York City Farm Colony | Inst | City | 60 | 33 | .. | No | ... | 695 |
| Sailors' Snug Harbor Hospital■ | Inst | Indep | 200 | 157 | .. | Yes | ... | 480 |
| Seaside Hospital⊙■ | Chil | Indep | 190 | 181 | .. | No | ... | 868 |
| Syracuse, 209,326—Onondaga Co. | | | | | | | | |
| Syracuse State School | MenDef | State | 1,028 | 1,007 | .. | No | ... | 105 |
| Thiells, 320—Rockland Co. | | | | | | | | |
| Letchworth Village+ | MenDef | State | 2,100 | 2,786 | .. | No | ... | 453 |
| Troy, 72,763—Rensselaer Co. | | | | | | | | |
| Rensselaer County Hosp.■ | Chron | County | 75 | 63 | .. | No | ... | 218 |
| Troy Orphan Asylum■ | Inst | Indep | 31 | 2 | .. | No | ... | 521 |
| Tupper Lake, 5,271—Franklin Co. | | | | | | | | |
| Veterans Mountain Camp■ | Conv | Indep | 52 | 45 | .. | No | ... | 210 |
| Valhalla, 620—Westchester Co. | | | | | | | | |
| Blythedale Home for Convalescent Crippled Child.■ | Conv | Indep | 72 | 60 | .. | No | ... | 83 |
| Milbank Mem. and Martha Home for Conv. Boys | Conv | Indep | 70 | 65 | .. | No | ... | 594 |
| Valley Cottage, 212—Rockland Co. | | | | | | | | |
| Reed Farm and Nichols Cottage Convalescent Home | Conv | Indiv | 25 | ... | .. | No | ... | ..... |
| Wassaic, 260—Dutchess Co. | | | | | | | | |
| Wassaic State School | MenDef | State | 2,900 | 1,500 | .. | No | ... | 524 |
| Watertown, 32,205—Jefferson Co. | | | | | | | | |
| Jefferson County Home | Gen | County | 31 | 30 | .. | ... | ... | ..... |
| Wellsville, 5,674—Allegany Co. | | | | | | | | |
| Wellsville Sanitarium | Conv | Indiv | 30 | 7 | .. | No | ... | ..... |
| White Plains, 35,830—Westchester Co. | | | | | | | | |
| Campbell Cottages for Convalescent Children■ | Conv | Indep | 80 | 72 | .. | Yes | ... | 785 |
| Martine Farm Children's Cardiac Conv. Home | Conv | Indiv | 25 | 25 | .. | No | ... | 77 |
| Winifred Masterson Burke Relief Foundation | Conv | Indep | 310 | 295 | .. | No | ... | 6,147 |
| Williamsville, 3,119—Erie Co. | | | | | | | | |
| Josephine Goodyear Convalescent Home■ | Conv | Indiv | 60 | 46 | .. | ... | ... | 207 |
| Yonkers, 134,646—Westchester Co. | | | | | | | | |
| Hebrew National Orphan Home | Inst | Indep | 9 | 1 | .. | Yes | ... | 74 |
| Leake and Watts Orphan House | Inst | Indep | 36 | 5 | .. | No | ... | 163 |
| Sunny Rest Sanitarium | Conv | Indiv | 15 | 10 | .. | No | ... | ..... |
| Yonkers City Hospital for Communicable Diseases■ | Iso | City | 97 | 13 | .. | No | ... | 179 |

Summary for New York:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 468 | 126,486 | 106,432 | 970,308 |
| Related institutions | 131 | 16,539 | 12,389 | 39,196 |
| Totals | 599 | 143,025 | 118,821 | 1,009,504 |
| Refused registration | 23 | 640 | | |

## NORTH CAROLINA

### Hospitals and Sanatoriums

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albemarle, 3,493—Stanly Co. | | | | | | | | |
| Yadkin Hospital■ | Gen | Indep | 30 | 12 | 4 | No | 30 | 480 |
| Asheville, 50,193—Buncombe Co. | | | | | | | | |
| Ambler Heights Sanitarium | TB | Indiv | 35 | 20 | .. | No | ... | 36 |
| Appalachian Hall◊ | N&M | Indep | 175 | 40 | .. | No | ... | 147 |
| Asheville Mission Hosp.◊ | Gen | Indep | 107 | 59 | 17 | Yes | 231 | 2,133 |
| Asheville Physiatric Institute | Metab | Indiv | 16 | 7 | .. | No | ... | 104 |
| Aston Park Hospital◊■ | Gen | Indep | 68 | 43 | 8 | Yes | 73 | 1,542 |
| Fairview Cottage Sanit. | TB | Indiv | 130 | 55 | .. | No | ... | ..... |
| Norburn Hospital | Surg | Part | 35 | 16 | 1 | Yes | 11 | 641 |
| St. Joseph's Sanatorium | TB | Church | 95 | 86 | .. | No | ... | 114 |
| Sunset Heights | TB | Indep | 34 | 20 | .. | No | ... | 53 |
| Violet Hill Sanatorium | TB | Indiv | 40 | 30 | .. | ... | ... | 20 |
| Zephyr Hill Sanatorium | TB | Indiv | 25 | 19 | .. | No | ... | ..... |
| Badin, 3,040—Stanly Co. | | | | | | | | |
| Badin Hospital■ | Gen | Indus | 25 | 9 | 4 | No | 30 | 401 |
| Banners Elk, 340—Avery Co. | | | | | | | | |
| Grace Hospital◊■ | Gen | Church | 26 | 26 | 1 | Yes | 65 | 838 |
| Beaufort, 2,957—Carteret Co. | | | | | | | | |
| Potter Emergency Hosp.■ | Gen | Indep | 12 | 7 | 3 | No | 13 | 241 |
| Biltmore, 172—Buncombe Co. | | | | | | | | |
| Biltmore Hospital◊ | Gen | Indep | 53 | 25 | 10 | Yes | 107 | 837 |
| Hillcroft Sanatorium | TB | Part | 60 | 30 | .. | No | ... | 30 |
| Black Mountain, 737—Buncombe Co. | | | | | | | | |
| Beallmont Park Sanat. | N&M | Indep | 20 | 12 | .. | No | ... | ..... |
| Cragmont Sanatorium | TB | Indep | 30 | 18 | .. | No | ... | 30 |
| Fellowship Sanatorium | TB | Frat | 25 | 15 | .. | No | ... | 18 |
| Burlington, 9,737—Alamance Co. | | | | | | | | |
| Rainey Hospital■ | Gen | Part | 42 | 24 | 2 | No | 32 | 819 |
| Charlotte, 82,675—Mecklenburg Co. | | | | | | | | |
| Charlotte Eye, Ear and Throat Hospital | EENT | Part | 20 | 11 | .. | No | ... | 1,778 |
| Good Samaritan Hospital (col.)◊ | Gen | Church | 54 | 22 | 6 | No | 29 | 896 |
| Mercy Hospital◊ | Gen | Church | 58 | 39 | 17 | Yes | 152 | 1,331 |
| New Charlotte Sanat.◊ | Gen | Indep | 95 | 69 | 10 | No | ... | ..... |

Key to symbols and abbreviations is on page 2078

## NORTH CAROLINA—Continued

### Hospitals and Sanatoriums

| | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Presbyterian Hospital◊ | Gen | Church | 100 | 82 | 20 | No | 329 | 2,832 |
| St. Peter's Hospital◊ | Gen | Church | 66 | 47 | 12 | No | 250 | 1,669 |
| Cherokee, 35—Swain Co. | | | | | | | | |
| Eastern Cherokee Indian Hospital | Gen | Indian | 22 | 12 | 2 | Yes | ... | ..... |
| Concord, 11,820—Cabarrus Co. | | | | | | | | |
| Concord Hospital | Gen | Indep | 20 | 16 | 5 | No | ... | ..... |
| Crossnore, 181—Avery Co. | | | | | | | | |
| Garrett Memorial Hosp. | Gen | Indep | 18 | 5 | 3 | Yes | 36 | 174 |
| Durham, 52,037—Durham Co. | | | | | | | | |
| Duke Hospital★+◊■ | Gen | Indep | 406 | 114 | 50 | Yes | 88 | 3,142 |
| Lincoln Hospital (col.)★◊ | Gen | Indep | 99 | 64 | 9 | Yes | 89 | 1,495 |
| McPherson Hospital | EENT | Indiv | 25 | 6 | .. | No | ... | 1,000 |
| Watts Hospital★◊ | Gen | Indep | 186 | 93 | 24 | Yes | 271 | 3,051 |
| Elizabeth City, 10,037—Pasquotank Co. | | | | | | | | |
| Albemarle Hospital■ | Gen | Indep | 35 | 11 | 6 | Yes | 24 | 405 |
| Elkin, 2,357—Surry Co. | | | | | | | | |
| Hugh Chatham Mem. Hospital■ | Gen | Church | 40 | 16 | 4 | No | ... | 367 |
| Erwin, 4,000—Harnett Co. | | | | | | | | |
| Good Hope Hospital | Gen | Indus | 34 | 10 | 7 | Yes | ... | ..... |
| Fayetteville, 13,049—Cumberland Co. | | | | | | | | |
| Highsmith Hospital★◊ | Gen | Indep | 96 | 56 | 6 | Yes | 64 | 1,935 |
| Pittman Hospital◊■ | Gen | Indep | 76 | 48 | 10 | No | 41 | 1,320 |
| Fletcher, 60—Henderson Co. | | | | | | | | |
| Mountain Sanit. & Hosp.■ | Gen | Indep | 30 | 15 | .. | Yes | 2 | 210 |
| Ft. Bragg,—Cumberland Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 150 | 70 | 10 | Yes | ... | 1,494 |
| Franklin, 1,094—Macon Co. | | | | | | | | |
| Angel Brothers Hosp.■ | Gen | Indiv | 50 | 40 | 2 | Yes | 54 | 3,364 |
| Gastonia, 17,093—Gaston Co. | | | | | | | | |
| City Hospital | Gen | Indep | 50 | 20 | 8 | No | 50 | 500 |
| Gaston Sanatorium◊ | Gen | Indep | 40 | 20 | 8 | Yes | ... | ..... |
| North Carolina Orthopedic Hosp. for Crippled Chil. | Ortho | State | 160 | 137 | .. | Yes | ... | 327 |
| Goldsboro, 14,985—Wayne Co. | | | | | | | | |
| Goldsboro City Hospital■ | Gen | Indep | 109 | 27 | 8 | Yes | 33 | |
| Spicer's Sanatorium◊■ | Gen | Indiv | 21 | 9 | 5 | Yes | 17 | |
| State Hospital (col.) | N&M | State | 1,919 | 1,761 | .. | No | ... | .. |
| Greensboro, 53,569—Guilford Co. | | | | | | | | |
| Clinic Hospital◊ | Gen | Indep | 45 | 35 | 5 | Yes | 78 | 1,4 |
| Glenwood Park Sanitarium | N&M | Indiv | 30 | 17 | .. | No | ... | .... |
| Reaves Eye, Ear, Nose and Throat Infirmary | EENT | Indiv | 15 | 7 | .. | No | ... | ..... |
| L. Richardson Memorial Hospital (col.)★◊ | Gen | Indep | 60 | 25 | 4 | Yes | 50 | 884 |
| St. Leo's Hospital◊■ | Gen | Church | 95 | 49 | 8 | No | 80 | 1,743 |
| Sternberger Children's Hospital | Gen | Indep | 32 | 20 | 8 | No | 147 | 545 |
| Wesley Long Hospital◊ | Gen | Indep | 50 | 29 | 9 | No | 49 | 1,184 |
| Greenville, 9,194—Pitt Co. | | | | | | | | |
| Pitt Community Hospital■ | Gen | Indep | 32 | 14 | 4 | No | 48 | 753 |
| Halifax, 321—Halifax Co. | | | | | | | | |
| Halifax County Tuberculosis Sanitarium■ | TB | County | 24 | 20 | .. | No | ... | 35 |
| Hamlet, 4,801—Richmond Co. | | | | | | | | |
| Hamlet Hospital | Gen | Indep | 50 | 20 | 6 | Yes | ... | ..... |
| Henderson, 6,345—Vance Co. | | | | | | | | |
| Jubilee Hospital (col.) | Gen | Church | 33 | 17 | 2 | No | 21 | 351 |
| Maria Parham Hospital | Gen | Indep | 46 | 10 | 4 | No | ... | 733 |
| Scott Parker Sanatorium | TB | County | 14 | 11 | .. | Yes | ... | ..... |
| Vance County Hospital | Gen | County | 20 | 15 | 5 | Yes | 7 | ..... |
| Hendersonville, 5,070—Henderson Co. | | | | | | | | |
| Edgemont Sanatorium | TB | Indiv | 24 | 6 | .. | No | ... | ..... |
| Patton Memorial Hosp.■ | Gen | Indep | 50 | 13 | 6 | Yes | 40 | 614 |
| Hickory, 7,363—Catawba Co. | | | | | | | | |
| Richard Baker Hospital◊■ | Gen | Indiv | 35 | 13 | 5 | Yes | 30 | 594 |
| High Point, 36,745—Guilford Co. | | | | | | | | |
| Guilford General Hosp.◊ | Gen | Part | 85 | 22 | 6 | No | 101 | 1,043 |
| High Point Hospital◊ | Gen | Indiv | 75 | 54 | 6 | Yes | 112 | 2,051 |
| Huntersville, 800—Mecklenburg Co. | | | | | | | | |
| Mecklenburg Sanatorium■ | TB | County | 162 | 149 | .. | Yes | ... | 326 |
| Jamestown, 157—Guilford Co. | | | | | | | | |
| Guilford County Sanat.■ | TB | County | 106 | 93 | .. | Yes | ... | 147 |
| Kinston, 11,362—Lenoir Co. | | | | | | | | |
| Memorial General Hosp.■ | Gen | Indep | 32 | 15 | 3 | No | 32 | 815 |
| Parrott Memorial Hosp.◊■ | Gen | Indep | 55 | 23 | 10 | No | 139 | 576 |
| Leaksville, 1,814—Rockingham Co. | | | | | | | | |
| Leaksville Hospital◊■ | Gen | Indep | 35 | 19 | 4 | No | 30 | 780 |
| Lenoir, 6,532—Caldwell Co. | | | | | | | | |
| Caldwell Hospital■ | Gen | Indep | 25 | 10 | 3 | Yes | 35 | 953 |
| Lexington, 9,652—Davidson Co. | | | | | | | | |
| Davidson Hospital | Gen | Indiv | 24 | 11 | 6 | No | 32 | 406 |
| Lincolnton, 3,781—Lincoln Co. | | | | | | | | |
| Gamble Clinic | Gen | Indep | 12 | 8 | 1 | No | 12 | 360 |
| Lincoln Hospital◊■ | Gen | Indiv | 45 | 16 | 2 | Yes | 45 | 575 |
| Lumberton, 4,140—Robeson Co. | | | | | | | | |
| Baker Sanatorium◊ | Gen | Indiv | 60 | 39 | 5 | Yes | 61 | 1,124 |
| Thompson Memorial Hospital◊■ | Gen | Indep | 35 | 24 | 6 | Yes | 45 | 977 |
| Marion, 2,467—McDowell Co. | | | | | | | | |
| Marion General Hospital■ | Gen | Indep | 32 | New | 4 | Yes | 6 | 33 |
| Monroe, 6,100—Union Co. | | | | | | | | |
| Ellen Fitzgerald Hospital | Gen | Indiv | 45 | 19 | 6 | Yes | 33 | 740 |
| Quality Hill Sanat. (col.) | Gen | Indep | 12 | 4 | 2 | Yes | 6 | 140 |
| Mooresville, 5,619—Iredell Co. | | | | | | | | |
| Lowrance Hospital | Gen | Indep | 35 | 10 | 4 | No | 37 | 607 |
| Morehead City, 3,483—Carteret Co. | | | | | | | | |
| Morehead City Hospital■ | Gen | City | 34 | 13 | 3 | Yes | 31 | 287 |
| Morganton, 6,001—Burke Co. | | | | | | | | |
| Broadoaks Sanatorium | N&M | Indiv | 80 | 42 | .. | No | ... | ..... |
| Grace Hospital◊■ | Gen | Church | 54 | 20 | 10 | Yes | 90 | 842 |
| State Hospital | N&M | State | 2,059 | 1,870 | .. | No | ... | ..... |
| Mt. Airy, 6,045—Surry Co. | | | | | | | | |
| Martin Memorial Hosp.◊■ | Gen | Indiv | 44 | 27 | 6 | Yes | 34 | 596 |

## NORTH CAROLINA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| New Bern, 11,981—Craven Co. | | | | | | | | |
| St. Luke's Hospital◊ | Gen | Part | 30 | 18 | 5 | Yes | ... | 995 |
| North Wi[illegible] Co. | | | | | | | | |
| Wilk[illegible] | [illegible]en | Indiv | 25 | 16 | 3 | No | 27 | 577 |
| Oteen, [illegible] | | | | | | | | |
| Veterans Admin. Hospital■ | Gen | VetAd | 612 | 580 | .. | Yes | ... | 1,204 |
| Oxford, 4,101—Granville Co. | | | | | | | | |
| Brantwood Hospital........ | Gen | Part | 30 | 15 | 6 | No | 18 | 375 |
| Susie Clay Cheatham Memorial Hospital (col.)... | Gen | Indep | 14 | 6 | .. | No | ... | 198 |
| Pinehurst, 55—Moore Co. | | | | | | | | |
| Moore County Hospital■.. | Gen | Indep | 33 | 26 | 6 | Yes | 38 | 734 |
| Raleigh, 37,379—Wake Co. | | | | | | | | |
| Mary Elizabeth Hospital◊ | Gen | Indiv | 30 | 15 | 7 | No | 71 | 648 |
| McCauley Private Hospital (col.) .................... | Gen | Indiv | 12 | 4 | 2 | No | 9 | 116 |
| Rex Hospital★◊.................. | Gen | Cy&Co | 109 | 72 | 16 | Yes | 244 | 2,557 |
| St. Agnes Hospital (col.)★◊ | Gen | Church | 90 | 60 | 10 | Yes | 87 | 871 |
| State Hospital◊............ | N&M | State | 2,150 | 1,843 | .. | No | ... | 711 |
| Reidsville, 6,851—Rockingham Co. | | | | | | | | |
| Annie Penn Mem. Hospital | Gen | Indiv | 50 | 25 | 6 | ... | ... | ..... |
| Roanoke Rapids, 3,404—Halifax Co. | | | | | | | | |
| Roanoke Rapids Hosp.◊■. | Gen | Indep | 78 | 62 | 13 | Yes | 224 | 1,824 |
| Rocky Mount, 21,412—Edgecombe Co. | | | | | | | | |
| Atlantic Coast Line Hosp.■ | Indus | Indus | 50 | 28 | .. | Yes | ... | 787 |
| Park View Hospital★◊■... | Gen | Indep | 92 | 58 | 8 | Yes | 92 | 1,512 |
| Rocky Mount Sanit.◊■ | [illegible]n | Indep | 42 | 26 | 5 | Yes | 41 | 697 |
| Ruther[illegible] Co. | | | | | | | | |
| [illegible]■ | [illegible] | Indep | 62 | 37 | 2 | Yes | 22 | 1,437 |
| Sa[illegible] Rowan Co. | | | | | | | | |
| Rowan General [illegible] | Gen | Indep | 50 | 35 | 10 | No | ... | ..... |
| Sanat[illegible] | | | | | | | | |
| St[illegible]■ | TB | State | 400 | 383 | .. | Yes | ... | ..... |
| [illegible] Co. | | | | | | | | |
| Lee County Hospital■.... | Gen | County | 47 | 11 | 8 | Yes | 5 | 209 |
| Shelby, 10,789—Cleveland Co. | | | | | | | | |
| Shelby Hospital◊■........ | Gen | County | 44 | 24 | 6 | Yes | 72 | 910 |
| Smithfield, 2,543—Johnston Co. | | | | | | | | |
| Johnston County Hosp.■ | Gen | Indep | 40 | 20 | 6 | No | 78 | 780 |
| Southern Pines, 2,524—Moore Co. | | | | | | | | |
| Pine-Crest Manor Sanat... | TB | Indep | 60 | 42 | .. | No | ... | 99 |
| Southport, 1,760—Brunswick Co. | | | | | | | | |
| Brunswick County Hosp.■ | Gen | Cy&Co | 35 | 11 | 5 | Yes | 25 | 332 |
| Statesville, 10,490—Iredell Co. | | | | | | | | |
| Davis Hospital★+◊■........ | Gen | Indep | 120 | 65 | 12 | Yes | 32 | 891 |
| Long's Sanatorium◊■...... | Gen | Indiv | 50 | 38 | 6 | Yes | 75 | 1,443 |
| Sylva, 1,340—Jackson Co. | | | | | | | | |
| C. J. Harris Community Hospital■ .................. | Gen | Indep | 25 | 9 | 1 | Yes | 11 | 133 |
| Tarboro, 6,379—[illegible] | | | | | | | | |
| [illegible]o. | | | | | | | | |
| F[illegible] | TB | County | 25 | ... | 1 | No | ... | ..... |
| [illegible]p.■ | Gen | Indep | 49 | 12 | 6 | Yes | 27 | 691 |
| Th[illegible], 10,090—Davidson Co. | | | | | | | | |
| City Memorial Hospital■. | Gen | City | 31 | 10 | 3 | No | 12 | 233 |
| Tryon, 1,670—Polk Co. | | | | | | | | |
| St. Luke's Hospital■...... | Gen | Indep | 28 | 9 | 3 | Yes | 21 | 334 |
| Wadesboro, 3,124—Anson Co. | | | | | | | | |
| Anson Sanatorium◊■....... | Gen | Indep | 40 | 22 | 7 | No | 53 | 697 |
| Washington, 7,035—Beaufort Co. | | | | | | | | |
| River View Hospital....... | Gen | Indep | 12 | 10 | 5 | Yes | ... | ..... |
| Tayloe Hospital◊■ ........ | Gen | Indep | 35 | 19 | 6 | Yes | 38 | 875 |
| Waynesville, 2,414—Haywood Co. | | | | | | | | |
| Haywood County H[illegible]■. | Gen | County | 50 | 21 | 4 | Yes | 29 | 693 |
| Wilm[illegible]over Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 35 | 10 | 3 | Yes | 26 | 366 |
| [illegible] (col.) | Gen | Indep | 25 | 15 | 4 | Yes | 53 | 458 |
| [illegible]alker Memorial Hospital★◊■ .............. | Gen | Indep | 130 | 99 | 20 | Yes | 480 | 3,052 |
| Wilmington Tuberculosis Sanatorium■ ............ | TB | Indep | 34 | 30 | .. | Yes | ... | 49 |
| Wilson, 12,613—Wilson Co. | | | | | | | | |
| Mercy Hospital (col.)..... | Gen | Cy&Co | 18 | 5 | 2 | No | 8 | 280 |
| Moore-Herring Hospital.... | Gen | Indep | 33 | 20 | 2 | Yes | 38 | 784 |
| Winston-Salem, 75,274—Forsyth Co. | | | | | | | | |
| City Memorial Hosp.★◊■.. | Gen | City | 213 | 77 | 23 | Yes | 270 | 3,132 |
| Forsyth County Tuberculosis Sanatorium■........ | TB | County | 150 | 133 | .. | Yes | ... | 217 |
| North Carolina Baptist Hospital◊ ............... | Gen | Church | 90 | 66 | 16 | No | 326 | 2,725 |
| Wrightsville Sound,—New Hanover Co. | | | | | | | | |
| Babies Hospital........... | Chil | Indep | 35 | 10 | 5 | Yes | ... | 160 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Asheville, 50,193—Buncombe Co. | | | | | | | | |
| Elmhurst Cottage Sanit... | TB | Indiv | 25 | 20 | .. | No | ... | 21 |
| Mary Smith Sanit. (col.).. | TB | Indiv | 10 | 4 | .. | ... | ... | ..... |
| Oakland Sanitarium....... | TB | Part | 28 | 25 | .. | No | ... | 25 |
| Roye Cottage Sanitarium. | TB | Indiv | 30 | 20 | .. | No | ... | ..... |
| Sherwood Sanatorium...... | TB | Indiv | 20 | 15 | .. | No | ... | 21 |
| Candler, 50—Buncombe Co. | | | | | | | | |
| Pisgah Sanitarium......... | Conv | Church | 25 | 10 | .. | Yes | ... | ..... |
| Charlotte, 82,675—Mecklenburg Co. | | | | | | | | |
| Florence Crittenton Industrial Home............... | Mater | Indep | 6 | 1 | 6 | No | 34 | 80 |
| Junior League Baby Hosp. | Chil | Indep | 22 | 3 | .. | No | ... | 52 |
| Thompson Orphanage and Training Institution...... | Inst | Church | 14 | 2 | .. | ... | ... | 160 |
| Davidson, 1,445—Mecklenburg Co. | | | | | | | | |
| Davidson College Infirm.. | Inst | Indep | 17 | ... | .. | No | ... | ..... |
| Fayetteville, 13,049—Cumberland Co. | | | | | | | | |
| Fayetteville Eye, Ear, Nose and Throat Hospital■... | EENT | Part | 12 | 1 | .. | Yes | ... | 309 |
| Franklin, 1,094—Macon Co. | | | | | | | | |
| Lyle Hospital ............. | Gen | Indiv | 10 | 4 | .. | ... | 26 | ..... |

Key to symbols and abbreviations is on page 2078

## NORTH CAROLINA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Gastonia, 17,093—Gaston Co. | | | | | | | | |
| Gaston Colored Hospital. | Gen | Cy&Co | 12 | 2 | .. | No | ... | ..... |
| Greensboro, 53,569—Guilford Co. | | | | | | | | |
| Penmar [illegible] | [illegible]Al | Part | 8 | 6 | .. | No | ... | ..... |
| Hend[illegible] | | | | | | | | |
| Dix[illegible] | [illegible] | Indiv | 20 | 5 | .. | No | ... | ..... |
| Kinst[illegible] | | | | | | | | |
| Cas[illegible] Training School... | MenDef | State | 500 | 633 | .. | No | ... | 25 |
| North Wilkesboro, 3,668—Wilkes Co. | | | | | | | | |
| Wilkes County Tuber. Hut | TB | County | 14 | New | .. | No | ... | ..... |
| Oxford, 4,101—Granville Co. | | | | | | | | |
| William J. Hicks Memorial Hospital ............... | Inst | Frat | 72 | 10 | 6 | No | ... | ..... |
| Raleigh, 37,379—Wake Co. | | | | | | | | |
| North Carolina State School for the Blind and Deaf. | Inst | State | 18 | 5 | .. | No | ... | 270 |
| Wake County Home Hosp.■ | Inst | County | 110 | 105 | .. | No | ... | 29 |
| Saluda, 558—Polk Co. | | | | | | | | |
| Infants & Children's Sanit. | Chil | Indiv | 55 | 32 | .. | Yes | ... | 230 |
| Spartanburg Baby Hosp.. | Chil | Indep | 56 | 33 | .. | No | ... | ..... |
| Tarboro, 6,379—Edgecombe Co. | | | | | | | | |
| Bass Memorial Hospital.. | Gen | Indiv | 7 | 4 | 5 | No | 10 | 217 |
| Thomasville, 10,090—Davidson Co. | | | | | | | | |
| Mills Home Infirmary...... | Inst | Church | 30 | ... | .. | No | ... | 385 |
| Wake Forest, 1,536—Wake Co. | | | | | | | | |
| Wake Forest College Hosp. | Inst | Indep | 16 | ... | .. | No | ... | ..... |
| Winston-Salem, 75,274—Forsyth Co. | | | | | | | | |
| Heath Memorial Infirmary of the Children's Home. | Inst | Church | 48 | 7 | .. | No | ... | 190 |

Summary for North Carolina:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 132 | 14,231 | 10,324 | 92,612 |
| Related institutions.......... | 26 | 1,185 | 953 | 2,023 |
| Totals...................... | 158 | 15,416 | 11,277 | 94,635 |
| Refused registration.......... | 6 | 183 | | |

## NORTH DAKOTA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Belcourt, 205—Rolette Co. | | | | | | | | |
| Belcourt Hospital......... | Gen | Indian | 50 | 20 | 5 | Yes | 32 | 352 |
| Bismarck, 11,090—Burleigh Co. | | | | | | | | |
| Bismarck Hospital★◊....... | Gen | Church | 128 | 102 | 12 | No | 211 | 2,654 |
| St. Alexius Hospital◊..... | Gen | Church | 150 | 85 | 10 | No | 215 | 2,518 |
| Bottineau, 1,322—Bottineau Co. | | | | | | | | |
| St. Andrew's Hospital◊■.. | Gen | Church | 50 | 32 | 8 | No | 118 | 1,051 |
| Bowman, 888—Bowman Co. | | | | | | | | |
| Bowman Hospital.......... | Gen | Indiv | 10 | 3 | 6 | No | 37 | 151 |
| Carrington, 1,717—Foster Co. | | | | | | | | |
| Carrington Hospital....... | Gen | Indep | 25 | 10 | 6 | No | 60 | 600 |
| Devils Lake, 5,451—Ramsey Co. | | | | | | | | |
| General Hospital◊■......... | Gen | Indep | 38 | 23 | 8 | Yes | 94 | 1,804 |
| Mercy Hospital◊■......... | Gen | Church | 60 | 38 | 12 | No | 116 | 1,117 |
| Dickinson, 5,025—Stark Co. | | | | | | | | |
| St. Joseph's Hospital..... | Gen | Church | 68 | 39 | 10 | No | 155 | 1,064 |
| Drayton, 502—Pembina Co. | | | | | | | | |
| Drayton Hospital■......... | Gen | Indep | 14 | 7 | 2 | Yes | 9 | 291 |
| Edgeley, 821—La Moure Co. | | | | | | | | |
| Edgeley Hospital.......... | Gen | Indiv | 12 | 6 | .. | No | 6 | 260 |
| Fargo, 28,619—Cass Co. | | | | | | | | |
| St. John's Hospital★◊..... | Gen | Church | 170 | 87 | 30 | No | 495 | 3,188 |
| St. Luke's Hospital◊■..... | Gen | Church | 108 | 67 | 17 | No | 190 | 2,529 |
| Veterans Admin. Hospital■ | Gen | VetAd | 57 | 49 | .. | Yes | ... | 557 |
| Ft. Totten, 61—Benson Co. | | | | | | | | |
| Ft. Totten Hospital....... | Gen | Indian | 31 | 9 | 4 | Yes | 14 | 515 |
| Ft. Yates, 400—Sioux Co. | | | | | | | | |
| Standing Rock Indian Hospital ..................... | Gen | Indian | 36 | 13 | 3 | Yes | 36 | 459 |
| Grafton, 3,136—Walsh Co. | | | | | | | | |
| Grafton Deaconess Hosp.◊ | Gen | Church | 44 | 24 | 6 | No | 184 | 1,007 |
| Grand Forks, 17,112—Grand Forks Co. | | | | | | | | |
| Grand Forks Deaconess Hospital◊■ ............ | Gen | Indep | 85 | 45 | 25 | No | 244 | 2,049 |
| St. Michael's Hospital◊.... | Gen | Church | 55 | 37 | 15 | Yes | 222 | 1,363 |
| Harvey, 2,157—Wells Co. | | | | | | | | |
| Good Samaritan Hospital and Sanitarium.......... | Gen | Indep | 18 | 7 | 6 | No | 97 | 492 |
| Jamestown, 8,187—Stutsman Co. | | | | | | | | |
| North Dakota State Hospital for Insane+........ | N&M | State | 1,600 | 1,487 | .. | Yes | ... | 514 |
| Trinity Hospital◊.......... | Gen | Church | 80 | 46 | 15 | No | 181 | 1,384 |
| Kenmare, 1,494—Ward Co. | | | | | | | | |
| Kenmare Deaconess Hosp. | Gen | Church | 45 | 7 | 5 | No | 61 | 440 |
| Mandan, 5,037—Morton Co. | | | | | | | | |
| Mandan Deaconess Hosp.■ | Gen | Church | 35 | 13 | 6 | No | 76 | 516 |
| McVille, 513—Nelson Co. | | | | | | | | |
| Community Hospital....... | Gen | Indep | 12 | 8 | 1 | No | 40 | 300 |
| Minot, 16,099—Ward Co. | | | | | | | | |
| McCannel's Private Hosp. | EENT | Indiv | 15 | 10 | 1 | No | ... | 675 |
| St. Joseph's Hospital◊■... | Gen | Church | 86 | 53 | 14 | No | 149 | 1,043 |
| Trinity Hospital◊■......... | Gen | Church | 173 | 88 | 16 | No | 244 | 2,493 |
| New Rockford, 2,195—Eddy Co. | | | | | | | | |
| Donahue Hospital......... | Gen | Indiv | 10 | 3 | 3 | No | 18 | 110 |
| Northwood, 971—Grand Forks Co. | | | | | | | | |
| Northwood Deaconess Hospital and Home......... | Gen | Indep | 30 | 7 | 4 | No | 32 | 310 |
| Rolette, 428—Rolette Co. | | | | | | | | |
| Hayhurst Hospital........ | Gen | Indiv | 15 | 8 | 5 | No | 62 | 331 |

## NORTH DAKOTA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Rugby, 1,512—Pierce Co. | | | | | | | | |
| Good Samaritan Hosp.◊■ | Gen | Church | 45 | 38 | 12 | No | 166 | 1,222 |
| San Haven,—Rolette Co. | | | | | | | | |
| North Dakota State Tuberculosis Sanatorium◊■ | TB | State | 240 | 208 | .. | No | ... | 250 |
| Valley City, 5,268—Barnes Co. | | | | | | | | |
| Mercy Hospital◊■ | Gen | Church | 75 | 35 | 11 | No | 81 | 1,350 |
| Wahpeton, 3,176—Richland Co. | | | | | | | | |
| Wahpeton Hospital | Gen | Part | 29 | 17 | 5 | No | 75 | 549 |
| Williston, 5,106—Williams Co. | | | | | | | | |
| Good Samaritan Hospital | Gen | Church | 43 | 17 | 7 | No | 66 | 690 |
| Mercy Hospital◊■ | Gen | Church | 75 | 27 | 10 | No | 96 | 1,137 |
| **Related Institutions** | | | | | | | | |
| Arthur, 322—Cass Co. | | | | | | | | |
| Evangelical Lutheran Good Samaritan Home | Inst | Church | 105 | 96 | .. | ... | ... | ..... |
| Arvilla, 348—Grand Forks Co. | | | | | | | | |
| Grand Forks Co. Hosp.■ | Inst | County | 60 | 40 | .. | No | ... | 18 |
| Beach, 1,263—Golden Valley Co. | | | | | | | | |
| Beach Community Hosp. | Gen | Indep | 10 | 2 | 4 | ... | 24 | 68 |
| Bismarck, 11,090—Burleigh Co. | | | | | | | | |
| North Dakota State Penitentiary Hospital■ | Inst | State | 50 | 28 | .. | No | ... | ..... |
| Cando, 1,164—Towner Co. | | | | | | | | |
| Cando Hospital | Gen | Indiv | 5 | 3 | 3 | No | 11 | 63 |
| Elgin, 505—Grant Co. | | | | | | | | |
| Community Hospital | Gen | Indep | 8 | 3 | 2 | No | 17 | 90 |
| Fargo, 28,619—Cass Co. | | | | | | | | |
| Camp Maternity Hospital | Mater | Indiv | 15 | 5 | 12 | No | 128 | 119 |
| Cass County Hospital■ | Gen | County | 25 | 20 | 3 | No | 14 | 144 |
| City Detention Hospital | Iso | City | 45 | 3 | .. | No | ... | 47 |
| Florence Crittenton Home | Mater | Indep | 11 | 4 | 36 | ... | 98 | 99 |
| Grafton, 3,136—Walsh Co. | | | | | | | | |
| North Dakota Institution for the Feebleminded | MenDef | State | 693 | 658 | .. | No | ... | 71 |
| Grand Forks, 17,112—Grand Forks Co. | | | | | | | | |
| Grand Forks City Hosp. | Iso | City | 18 | ... | .. | No | ... | 47 |
| Linton, 1,192—Emmons Co. | | | | | | | | |
| Wolverton Hospital | Gen | Indiv | 7 | 3 | 5 | No | ... | ..... |
| Lisbon, 1,650—Ransom Co. | | | | | | | | |
| Lisbon Hospital | Gen | Part | 8 | 2 | 2 | No | 15 | 91 |
| Mayville, 1,199—Traill Co. | | | | | | | | |
| Union Hospital | Gen | Indep | 8 | 3 | 1 | No | 46 | 225 |
| Wahpeton, 3,176—Richland Co. | | | | | | | | |
| Wahpeton Indian School Hospital | Gen | Indian | 28 | 7 | .. | No | ... | 303 |

Summary for North Dakota:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 37 | 3,817 | 2,775 | 37,335 |
| Related institutions | 16 | 1,101 | 877 | 1,385 |
| Totals | 53 | 4,918 | 3,652 | 38,720 |
| Refused registration | 3 | 55 | | |

## OHIO

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Akron, 255,040—Summit Co. | | | | | | | | |
| Akron Eye, Ear, Nose and Throat Hospital | EENT | Part | 11 | 5 | .. | ... | ... | ..... |
| Children's Hospital+⊙■ | Chil | Indep | 110 | 80 | .. | Yes | ... | 2,353 |
| City Hospital★+◊■ | Gen | Indep | 312 | 190 | 38 | Yes | 966 | 5,546 |
| Peoples Hospital◊■ | Gen | Indep | 160 | 90 | 38 | No | 614 | 3,132 |
| St. Thomas Hospital★◊■ | Gen | Church | 154 | 91 | 29 | No | 556 | 3,093 |
| Alliance, 23,047—Stark Co. | | | | | | | | |
| Alliance City Hospital◊■ | Gen | City | 81 | 41 | 14 | No | 108 | 1,450 |
| Amherst, 2,844—Lorain Co. | | | | | | | | |
| Pleasant View Sanat.■ | TB | County | 76 | 60 | .. | Yes | ... | 60 |
| Ashland, 11,141—Ashland Co. | | | | | | | | |
| Samaritan Hospital◊■ | Gen | Indep | 26 | 20 | 12 | No | 112 | 537 |
| Ashtabula, 23,301—Ashtabula Co. | | | | | | | | |
| Ashtabula General Hosp.◊■ | Gen | Indep | 90 | 45 | 14 | No | 136 | 1,322 |
| Athens, 7,252—Athens Co. | | | | | | | | |
| Athens State Hospital | N&M | State | 1,545 | 1,402 | .. | No | ... | 256 |
| Sheltering Arms Hospital■ | Gen | Indiv | 25 | 8 | 5 | No | ... | 332 |
| Barberton, 23,934—Summit Co. | | | | | | | | |
| Citizens Hospital■ | Gen | Indep | 49 | 31 | 9 | Yes | 117 | 1,146 |
| Bedford, 6,814—Cuyahoga Co. | | | | | | | | |
| Bedford Municipal Hosp.■ | Gen | City | 24 | 12 | 8 | Yes | 109 | 602 |
| Bellaire, 13,327—Belmont Co. | | | | | | | | |
| City Hospital■ | Gen | Indep | 45 | 27 | 5 | No | 58 | 845 |
| Bell[illegible] Co. | | | | | | | | |
| I[illegible]■ | EENT | Indiv | 10 | 2 | .. | No | ... | 72 |
| [illegible]—Huron Co. | | | | | | | | |
| Bellevue Hospital■ | Gen | Indep | 29 | 9 | 6 | No | 53 | 304 |
| Berea, 5,697—Cuyahoga Co. | | | | | | | | |
| Community Hospital■ | Gen | Indep | 32 | 20 | 8 | No | 129 | 776 |
| Bucyrus, 10,027—Crawford Co. | | | | | | | | |
| Bucyrus City Hosp[illegible] | Gen | City | 21 | 10 | 4 | No | 27 | 335 |
| [illegible] Co. | | | | | | | | |
| C[illegible]■ | Gen | Indiv | 20 | 7 | 4 | No | 11 | 240 |
| [illegible] | Gen | Indep | 32 | 15 | 8 | Yes | 31 | 560 |
| [illegible] | Gen | Indep | 135 | 85 | 24 | No | 370 | 2,628 |
| [illegible] | Gen | Church | 192 | 82 | 33 | No | 323 | 3,488 |
| [illegible]■ | TB | County | 162 | 132 | .. | No | ... | 239 |
| [illegible] Hospital | (Included in Mercy Hospital) | | | | | | | |
| Celina, 4,664—Mercer Co. | | | | | | | | |
| Otis Hospital | Gen | Indiv | 19 | 7 | 4 | No | 15 | 248 |

## OHIO—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Chillicothe, 18,340—Ross Co. | | | | | | | | |
| Chillicothe Hospital■ | Gen | Indep | 42 | 29 | 6 | No | 61 | 600 |
| Mt. Logan Sanatorium■ | TB | County | 56 | 48 | .. | No | ... | 50 |
| Veterans Admin. Hospital | N&M | VetAd | 614 | 625 | .. | No | ... | 461 |
| Cincinnati, 451,160—Hamilton Co. | | | | | | | | |
| Bethesda Hospital★◊■ | Gen | Church | 240 | 153 | 54 | Yes | 989 | 5,085 |
| Children's Hospital+⊙■ | Chil | Church | 155 | 98 | .. | Yes | ... | 2,032 |
| Christ Hospital★◊■ | Gen | Church | 318 | 136 | 48 | Yes | 529 | 3,672 |
| Christian R. Holmes Hosp. | Gen | City | 50 | 16 | .. | No | ... | 526 |
| Cincinnati Gen. Hosp.★+◊■▲ | Gen | City | 860 | 832 | 65 | No | 1,347 | 13,233 |
| Cincinnati Sanitarium+ | N&M | Indep | 100 | 87 | .. | No | ... | 133 |
| Deaconess Hospital★+◊ | Gen | Church | 150 | 109 | 25 | No | 496 | 2,483 |
| Good Samaritan Hospital★+◊■▲ | Gen | Church | 464 | 364 | 72 | Yes | 1,413 | 10,555 |
| Grandview Hospital | N&M | Indep | 40 | 36 | .. | No | ... | ..... |
| Hamilton Co. T.B. Sanat. | TB | County | 439 | 349 | .. | No | ... | 388 |
| Jewish Hospital★◊▲ | Gen | Indep | 235 | 145 | 37 | No | 622 | 4,100 |
| Longview State Hospital | N&M | State | 1,674 | 2,016 | .. | Yes | ... | 598 |
| Murphy Memorial Hospital | EENT | Part | 12 | 4 | .. | No | ... | 839 |
| Ophthalmic Hospital■ | EENT | Indiv | 10 | 3 | .. | Yes | ... | 225 |
| St. Mary Hospital★◊■ | Gen | Church | 203 | 128 | .. | Yes | ... | 3,265 |
| Circleville, 7,369—Pickaway Co. | | | | | | | | |
| Berger Hospital■ | Gen | City | 25 | 11 | 6 | No | 29 | 338 |
| Cleveland, 900,429—Cuyahoga Co. | | | | | | | | |
| Babies and Children's Hospital+⊙ | Chil | Indep | 131 | 95 | .. | Yes | ... | 1,027 |
| Charity Hospital★+◊■ | Gen | Church | 301 | 221 | .. | Yes | ... | 6,328 |
| City Hospital★+◊■▲ | Gen | City | 1,100 | 993 | 50 | Yes | 885 | 10,181 |
| Cleveland Clinic Hosp.■ | Gen | Indep | 229 | 173 | .. | No | ... | 5,821 |
| Cleveland State Hosp.+◊ | N&M | State | 1,700 | 2,328 | .. | No | ... | 260 |
| East 55th Street Hospital | Gen | Indep | 60 | 11 | 12 | No | 12 | 278 |
| Evangelical Hospital■ | Gen | Church | 109 | 47 | 35 | No | 488 | 1,725 |
| Evangelical Lutheran Hospital◊■ | Gen | Church | 114 | 71 | 31 | No | 538 | 2,420 |
| Fairview Park Hospital◊■ | Gen | Church | 92 | 65 | 18 | Yes | 403 | 2,321 |
| Glenville Hospital◊■ | Gen | Indep | 83 | 54 | 17 | Yes | 328 | 1,729 |
| Grace Hospital■ | Gen | Indep | 32 | 22 | .. | No | 1 | 1,384 |
| Huron Road Hospital◊■ | Gen | Indep | 103 | 75 | 12 | Yes | 261 | 2,918 |
| Lakeside Hospital★+◊■ | Gen | Indep | 262 | 225 | .. | Yes | ... | 6,737 |
| Maternity Hospital+⊙■ | Mater | Indep | 150 | 95 | 150 | Yes | 2,315 | 2,600 |
| Mt. Sinai Hospital★+◊■ | Gen | Indep | 220 | 141 | 45 | Yes | 663 | 6,434 |
| Polyclinic Hospital■ | Gen | Indep | 90 | 44 | 15 | No | 195 | 1,989 |
| Provident Hospital | Gen | Indep | 25 | 10 | 12 | No | 140 | 395 |
| St. Alexis Hospital★+◊■ | Gen | Church | 220 | 181 | .. | Yes | ... | 4,824 |
| St. Ann's Maternity Hospital+⊙■ | Mater | Church | 59 | 47 | 59 | No | 1,432 | 1,553 |
| St. John's Hospital★◊■ | Gen | Church | 184 | 145 | 28 | Yes | 831 | 4,564 |
| St. Luke's Hospital★+◊■ | Gen | Church | 345 | 238 | 55 | Yes | 1,223 | 8,460 |
| U. S. Marine Hospital■ | Gen | USPHS | 251 | 209 | .. | Yes | ... | 2,077 |
| Windsor Hospital | N&M | Indep | 70 | 69 | .. | No | ... | 294 |
| Woman's Hospital★■ | Gen | Indep | 89 | 65 | 31 | No | 693 | 2,547 |
| Columbus, 290,564—Franklin Co. | | | | | | | | |
| Children's Hospital+⊙■ | Chil | Indep | 100 | 64 | .. | Yes | ... | 1,838 |
| Columbus Radium Hosp. | Gen | Indep | 32 | 20 | 6 | No | 93 | 1,069 |
| Columbus State Hospital+ | N&M | State | 2,200 | 2,457 | .. | No | ... | 603 |
| Franklin County Sanat.■ | TB | County | 210 | 184 | .. | Yes | ... | 286 |
| Dr. Gaver Sanitarium | N&M | Indiv | 25 | ... | .. | No | ... | ..... |
| Grant Hospital★◊■ | Gen | Indep | 300 | 224 | 30 | No | 551 | 6,237 |
| McMillen Sanitarium | N&M | Indep | 30 | 25 | .. | No | ... | 112 |
| Mercy Hospital◊■ | Gen | Indep | 65 | 51 | 12 | Yes | 120 | 1,625 |
| Mt. Carmel Hospital★◊■ | Gen | Church | 213 | 156 | 25 | No | 362 | 3,667 |
| St. Ann's Infant Asylum and Maternity Hospital | Mater | Church | 25 | 14 | 25 | No | 480 | 505 |
| St. Clair Hospital■ | Gen | Indep | 27 | 10 | 3 | No | 16 | 483 |
| St. Francis Hospital★ | Gen | Church | 150 | 102 | .. | No | ... | 2,645 |
| Sanor Eye, Ear, Nose and Throat Hospital | EENT | Indiv | 15 | 2 | .. | Yes | ... | 300 |
| Starling-Loving University Hospital★◊■ | Gen | State | 251 | 175 | 25 | No | 383 | 4,680 |
| Station Hospital■ | Gen | Army | 68 | 20 | 4 | Yes | 10 | 404 |
| White Cross Hospital★◊■ | Gen | Church | 250 | 167 | 28 | Yes | 544 | 5,689 |
| Conneaut, 9,691—Ashtabula Co. | | | | | | | | |
| Brown Memorial Hospital■ | Gen | Indep | 30 | 13 | 5 | No | 77 | 500 |
| Cortland, 940—Trumbull Co. | | | | | | | | |
| Dr. McCurley's Private Hospital■ | Gen | Indiv | 10 | 6 | 3 | No | 23 | 124 |
| Coshocton, 10,908—Coshocton Co. | | | | | | | | |
| Coshocton City Hosp.◊■ | Gen | City | 39 | 22 | 8 | No | 80 | 1,027 |
| Crestline, 4,425—Crawford Co. | | | | | | | | |
| Crestline Emerg. Hosp.■ | Gen | Indep | 15 | 6 | 4 | No | 21 | 173 |
| Cuyahoga Falls, 19,797—Summit Co. | | | | | | | | |
| Fair Oaks Villa | N&M | Indep | 60 | 55 | .. | No | ... | 149 |
| Dayton, 200,982—Montgomery Co. | | | | | | | | |
| Dayton State Hospital+ | N&M | State | 1,100 | 1,357 | .. | Yes | ... | 358 |
| Miami Valley Hospital★◊■ | Gen | Indep | 352 | 312 | 44 | Yes | 1,325 | 9,390 |
| Orchard Springs Sanit. | N&M | Indep | 22 | 15 | .. | No | ... | 48 |
| St. Ann's Maternity Hosp. | (Maternity Dept. of St. Elizabeth's Hosp.) | | | | | | | |
| St. Elizabeth Hospital★◊■ | Gen | Church | 385 | 340 | 35 | Yes | 1,162 | 5,811 |
| Stillwater Sanitarium | TB | County | 94 | 87 | .. | No | ... | 125 |
| Defiance, 8,818—Defiance Co. | | | | | | | | |
| Defiance Hospital | Gen | Indep | 15 | 6 | 4 | No | 17 | 263 |
| Dennison, 4,529—Tuscarawas Co. | | | | | | | | |
| Twin City Hospital■ | Gen | Indep | 30 | 10 | 5 | No | 36 | 327 |
| Dover, 9,716—Tuscarawas Co. | | | | | | | | |
| Union Hospital■ | Gen | Indep | 75 | 32 | 10 | No | 64 | 843 |
| East Akron,—Summit Co. | | | | | | | | |
| Springfield Lake Sanat.■ | TB | County | 228 | 236 | .. | Yes | ... | 157 |
| East Liverpool, 23,329—Columbiana Co. | | | | | | | | |
| East Liverpool City Hospital◊■ | Gen | City | 87 | 40 | 13 | Yes | ... | 1,499 |
| Elyria, 25,633—Lorain Co. | | | | | | | | |
| Elyria Clinic Hospital | Gen | Indep | 20 | 13 | .. | No | ... | 804 |
| Elyria Memorial Hosp.★◊■ | Gen | Indep | 124 | 80 | 30 | Yes | 405 | 1,675 |
| Gates Hospital for Crippled Children | (Included in Elyria Memorial Hospital) | | | | | | | |

Key to symbols and abbreviations is on page 2078

## OHIO—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Findlay, 19,363—Hancock Co. | | | | | | | | |
| Home and Hospital◊■ | Gen | City | 63 | 28 | 12 | No | 110 | 1,043 |
| Fremont, 13,422—Sandusky Co. | | | | | | | | |
| Community Hospital■ | Gen | Indiv | 14 | 10 | 4 | No | 18 | 332 |
| Memorial Hospital of Sandusky County◊■ | Gen | County | 38 | 31 | 12 | No | 176 | 850 |
| Galion, 7,674—Crawford Co. | | | | | | | | |
| Good Samaritan Hospital■ | Gen | City | 12 | 5 | 4 | No | 17 | 188 |
| Gallipolis, 7,106—Gallia Co. | | | | | | | | |
| Holzer Hospital◊■ | Gen | Part | 51 | 34 | 4 | Yes | 29 | 1,199 |
| Ohio Hosp. for Epileptics | Epil | State | 1,835 | 2,001 | .. | No | ... | 284 |
| Greenville, 7,036—Darke Co. | | | | | | | | |
| ■ | Gen | Indep | 28 | 14 | 4 | No | 42 | 486 |
| ■ | Gen | Indep | 84 | 36 | 24 | Yes | 319 | 1,317 |
| ■ | Gen | Church | 195 | 88 | 25 | Yes | 473 | 2,152 |
| Hicksville, 2,445—Defiance Co. | | | | | | | | |
| Amaden Hospital | Gen | Indiv | 10 | 3 | 2 | No | 5 | 134 |
| Hillsboro, 4,040—Highland Co. | | | | | | | | |
| Hillsboro Hospital■ | Gen | Indep | 17 | 6 | 4 | Yes | 16 | 242 |
| Ironton, 16,621—Lawrence Co. | | | | | | | | |
| Charles S. Gray Deaconess Hospital■ | Gen | City | 28 | 15 | 5 | No | 48 | 442 |
| Kenton, 7,069—Hardin Co. | | | | | | | | |
| McKitrick Hospital■ | Gen | Indep | 21 | 17 | 4 | Yes | 41 | 419 |
| San Antonio Hospital■ | Gen | Church | 20 | 12 | 4 | No | 13 | 438 |
| ■ | Gen | Army | 20 | 3 | .. | Yes | 1 | 88 |
| Co. | | | | | | | | |
| Lakewood City Hospital◊■ | Gen | Indep | 62 | 50 | 16 | Yes | ... | ..... |
| Lima, 42,287—Allen Co. | | | | | | | | |
| District Tuberculosis Hospital■ | TB | County | 56 | 48 | .. | Yes | ... | 122 |
| ■ | Gen | Indep | 80 | 60 | 10 | No | 226 | 1,980 |
| | N&M | State | 1,019 | 1,055 | .. | No | ... | ..... |
| ■ | Gen | Church | 100 | 61 | 16 | Yes | 229 | 1,856 |
| ■ | Gen | Indep | 17 | 8 | 5 | No | 34 | 336 |
| ■ | Gen | Part | 35 | 11 | 4 | No | 19 | 299 |
| Lorain, 44,512—Lorain Co. | | | | | | | | |
| ■ | Gen | Church | 100 | 50 | 20 | Yes | 373 | 2,119 |
| Co. | | | | | | | | |
| ◊■ | Gen | Indep | 62 | 58 | 12 | No | 289 | ..... |
| Thomas Hospital■ | Gen | Indiv | 14 | 4 | 4 | No | 34 | 158 |
| Marietta, 14,285—Washington Co. | | | | | | | | |
| Marietta Memorial Hosp.■ | Gen | Indep | 54 | 29 | 10 | No | 82 | 905 |
| ■ | Gen | Indiv | 12 | 3 | 3 | No | 24 | 111 |
| ■ | Gen | City | 38 | 27 | 12 | No | 130 | 890 |
| Sawyer Sanatorium | N&M | Part | 40 | 28 | .. | No | ... | 121 |
| Martins Ferry, 14,524—Belmont Co. | | | | | | | | |
| Martins Ferry Hospital◊■ | Gen | Indep | 70 | 49 | 5 | No | 94 | 2,129 |
| Massillon, 26,400—Stark Co. | | | | | | | | |
| | Gen | Indep | 92 | 57 | 14 | No | 316 | 2,235 |
| | N&M | State | 1,925 | 2,654 | .. | Yes | ... | 739 |
| Co. | | | | | | | | |
| Rocky Glen Sanatorium | TB | Indep | 127 | 113 | .. | No | ... | 138 |
| Mentor, 1,589—Lake Co. | | | | | | | | |
| | N&M | Indep | 100 | 80 | .. | No | ... | ..... |
| | Gen | Indep | 86 | 55 | 14 | Yes | 318 | 1,457 |
| | Gen | Indiv | 10 | 4 | .. | No | ... | 79 |
| Mt. Vernon, 9,370—Knox Co. | | | | | | | | |
| Hinde-Ball Mercy Hospital | Gen | Church | 38 | 15 | 10 | No | 76 | 574 |
| Mt. Vernon Hospital-Sanit. | Gen | Indiv | 55 | 23 | 6 | Yes | ... | ..... |
| Ohio State Sanatorium+■ | TB | State | 240 | 226 | .. | No | ... | 466 |
| Napoleon, 4,545—Henry Co. | | | | | | | | |
| S. M. Heller Memorial Hospital | Gen | City | 16 | 8 | .. | No | 12 | 265 |
| ■ | Gen | Indep | 100 | 34 | 17 | No | 150 | 1,283 |
| Norwalk, 7,776—Huron Co. | | | | | | | | |
| Norwalk Memorial Hosp.■ | Gen | Indep | 27 | 10 | 8 | No | 88 | 340 |
| Oberlin, 4,292—Lorain Co. | | | | | | | | |
| Allen Hospital, Oberlin College■ | Gen | Indep | 36 | 13 | 5 | Yes | 50 | 812 |
| Oxford, 2,588—Butler Co. | | | | | | | | |
| Oxford Retreat | N&M | Indep | 30 | 20 | .. | No | ... | ..... |
| Perrysburg, 3,182—Wood Co. | | | | | | | | |
| Community Hospital | Gen | Indiv | 11 | 5 | 3 | No | 13 | 179 |
| Rheinfrank Hospital | Goiter | Indiv | 13 | 8 | .. | No | ... | 300 |
| Piqua, 16,009—Miami Co. | | | | | | | | |
| Ball Memorial Hospital◊■ | Gen | Indep | 54 | 30 | 6 | No | 144 | 1,069 |
| Pt. Clinton, 4,408—Ottawa Co. | | | | | | | | |
| ■ | Gen | Indiv | 16 | 9 | 3 | No | 12 | 303 |
| | Gen | Church | 65 | 30 | 10 | No | 121 | 1,163 |
| ■ | Gen | City | 90 | 41 | 10 | No | 113 | 1,370 |
| ■ | Gen | Indiv | 50 | 22 | 6 | Yes | 33 | 660 |
| Co. | | | | | | | | |
| ■ | TB | County | 56 | 55 | .. | No | ... | 60 |
| Central Clinic and Hosp.■ | Gen | Indep | 30 | 23 | 6 | Yes | 71 | 669 |
| Salem City Hospital◊■ | Gen | Indep | 48 | 20 | 10 | No | 75 | 835 |
| ■ | Gen | Indep | 56 | 38 | 9 | No | 137 | 1,104 |
| ■ | Gen | Church | 50 | 28 | 10 | No | 161 | 839 |
| ■ | Gen | Indep | 26 | 15 | 5 | No | 99 | 473 |
| Wilson Memorial Hosp.■ | Gen | Indep | 24 | 12 | 6 | No | 36 | 393 |
| South Euclid, 4,399—Cuyahoga Co. | | | | | | | | |
| Rainbow Hosp. for Crip. & Convalescent Children | Ortho | Indep | 100 | 92 | .. | No | ... | 240 |

## OHIO—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Springfield, 68,743—Clark Co. | | | | | | | | |
| Clark County Tuberculosis Sanatorium■ | TB | County | 120 | 78 | .. | No | ... | 115 |
| Quinn Private Hospital | Gen | Indiv | 18 | 7 | 6 | No | 68 | 240 |
| Springfield City Hosp.*◊■ | Gen | City | 110 | 98 | 30 | Yes | 423 | 2,641 |
| Steubenville, 35,422—Jefferson Co. | | | | | | | | |
| Gill Memorial Hospital | Gen | Church | 30 | 17 | 2 | No | 11 | 575 |
| Ohio Valley Hospital◊ | Gen | Indep | 115 | 78 | 10 | No | 217 | 2,418 |
| Tiffin, 16,428—Seneca Co. | | | | | | | | |
| Mercy Hospital■ | Gen | Church | 35 | 24 | 8 | No | 117 | 794 |
| Toledo, 290,718—Lucas Co. | | | | | | | | |
| East Side Hospital■ | Gen | Indep | 41 | 17 | 5 | No | 35 | 782 |
| Flower Hospital*◊■ | Gen | Church | 110 | 79 | 40 | No | 374 | 2,483 |
| Lucas Co. Gen. Hosp.*◊■ | Gen | County | 315 | 161 | 33 | Yes | 381 | 3,249 |
| Lucas Co. Tuber. Hosp.■ | TB | County | 191 | 127 | .. | No | ... | 239 |
| Mercy Hospital*◊■ | Gen | Church | 101 | 85 | 20 | Yes | 398 | 2,261 |
| Robinwood Hospital◊ | Gen | Church | 91 | 50 | 13 | No | 170 | 1,452 |
| St. Vincent's Hospital*◊■ | Gen | Church | 342 | 172 | 45 | Yes | 842 | 10,185 |
| Toledo Hospital*◊■ | Gen | Indep | 250 | 111 | 25 | No | 360 | 3,280 |
| Toledo Sanitarium | N&M | Indep | 28 | 8 | .. | No | ... | 103 |
| Toledo State Hospital+◊ | N&M | State | 1,908 | 2,163 | .. | Yes | ... | 518 |
| Women's and Children's Hospital+◊■ | Gen | Indep | 148 | 56 | 32 | Yes | 401 | 1,491 |
| Troy, 8,675—Miami Co. | | | | | | | | |
| Stouder Memorial Hosp.■ | Gen | City | 40 | 18 | 10 | No | 41 | 879 |
| Urbana, 7,742—Champaign Co. | | | | | | | | |
| Champaign County Hosp.■ | Gen | County | 30 | 14 | 4 | No | 74 | 358 |
| Van Wert, 8,472—Van Wert Co. | | | | | | | | |
| Van Wert County Hosp.◊■ | Gen | County | 50 | 18 | 9 | Yes | 39 | 439 |
| a Co. | | | | | | | | |
| Iosp. | Gen | City | 25 | 12 | 12 | No | 85 | 505 |
| Co. | | | | | | | | |
| St. Joseph's Riverside Hospital■ | Gen | Church | 40 | 32 | 10 | No | 211 | 1,169 |
| Trumbull County Tuberculosis Sanatorium■ | TB | County | 50 | 50 | .. | Yes | ... | 58 |
| Warren City Hospital◊■ | Gen | Indep | 107 | 81 | 18 | No | 343 | 2,425 |
| Warrensville, 1,507—Cuyahoga Co. | | | | | | | | |
| Sunny Acres, Cleveland Tuberculosis Sanatorium■ | TB | City | 460 | 313 | .. | No | ... | 710 |
| Wauseon, 2,889—Fulton Co. | | | | | | | | |
| De Etta Harrison Detwiler Memorial Hospital+■ | Gen | Indep | 46 | 27 | 10 | Yes | 60 | 813 |
| Willard, 4,514—Huron Co. | | | | | | | | |
| Municipal Hospital■ | Gen | City | 24 | 10 | 6 | No | 40 | 307 |
| Wilmington, 5,332—Clinton Co. | | | | | | | | |
| Dr. Kelley Hale Surgical Hospital■ | Gen | Indiv | 16 | 6 | 7 | No | 3 | 214 |
| Wooster, 10,742—Wayne Co. | | | | | | | | |
| Kinney and Knestrick Hospital■ | Gen | Indep | 25 | 14 | 5 | No | 55 | 461 |
| Wooster Hospital | Gen | Indiv | 31 | 8 | 2 | No | 5 | 315 |
| Co. | | | | | | | | |
| | N&M | Indep | 35 | 27 | .. | No | ... | 157 |
| | Gen | Indep | 20 | 15 | 4 | No | 34 | 431 |
| Youngstown, 170,002—Mahoning Co. | | | | | | | | |
| Mahoning Tuber. Sanat.■ | TB | County | 112 | 112 | .. | Yes | ... | 171 |
| St. Elizabeth's Hosp.*◊■ | Gen | Church | 246 | 134 | 54 | Yes | ... | 4,912 |
| ■ | Gen | Indep | 376 | 274 | 74 | Yes | 940 | 7,768 |
| Co. | | | | | | | | |
| ■ | Gen | Church | 108 | 55 | 22 | No | 259 | 1,877 |
| ■ | Gen | Church | 120 | 79 | 20 | No | 182 | 1,798 |
| **Related Institutions** | | | | | | | | |
| Akron, 255,040—Summit Co. | | | | | | | | |
| Goodyear Hosp. & Disp. | Indus | Indus | 25 | 6 | .. | No | ... | 140 |
| Apple Creek, 459—Wayne Co. | | | | | | | | |
| Institution for Feebleminded | MenDef | State | 450 | 476 | .. | No | ... | ..... |
| Bluffton, 2,035—Allen Co. | | | | | | | | |
| Bluffton Community Hospital■ | Gen | Indep | 9 | 6 | 3 | No | 29 | 193 |
| Bowling Green, 6,688—Wood Co. | | | | | | | | |
| Bowling Green Sanitarium and Hospital■ | Gen | Indiv | 23 | 6 | 2 | No | 3 | 121 |
| Cambridge, 14,613—Guernsey Co. | | | | | | | | |
| Childrens and Maternity | Mater | Indep | 8 | 2 | 8 | Yes | ... | ..... |
| ■ | Inst | County | 25 | 18 | .. | No | ... | 8 |
| Chagrin Falls, 2,739—Cuyahoga Co. | | | | | | | | |
| Cleveland Protestant Orphan Asylum | Inst | Church | 24 | 6 | .. | No | ... | 151 |
| | Mater | Indiv | 10 | 5 | 4 | No | 68 | 364 |
| Co. | | | | | | | | |
| Home | Inst | Indep | 100 | 29 | .. | No | ... | 76 |
| Children's Home (Hanna Hospital) | Inst | Indep | 38 | 14 | .. | No | ... | 436 |
| Evangeline Booth Home and Hospital | Mater | Church | 8 | 6 | 4 | No | 31 | 128 |
| Home for Incurables | Incur | Indep | 61 | 60 | .. | No | ... | 6 |
| Jewish Convalescent Home | Conv | Indep | 130 | ... | .. | No | ... | ..... |
| Jones and Stitt Hospital for Treatment of Diseases of Ear, Nose and Throat | ENT | Part | 8 | 3 | .. | No | ... | 632 |
| Maple Knoll Hospital and Home for the Friendless | Mater | Indep | 35 | 4 | 15 | No | 137 | 145 |
| Methodist Home for Aged | Inst | Church | 37 | 35 | .. | No | ... | ..... |
| Psychopathic Institute of the Jewish Hospital | N&M | Indep | 12 | 9 | .. | Yes | ... | 98 |
| Ridge Rest Home | N&M | Indep | 30 | 18 | .. | No | ... | 56 |

Key to symbols and abbreviations is on page 2078

## OHIO—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Francis Hospital for Incurables | Incur | Church | 250 | 250 | .. | No | ... | 365 |
| St. Joseph's Infant Asylum and Maternity Hospital | Mater | Church | 15 | 2 | 15 | No | 80 | 80 |
| St. Michael's Conv. Home | Conv | Indep | 28 | 25 | .. | Yes | ... | 135 |
| Salvation Army Catherine Booth Home and Maternity Hospital | Mater | Church | 10 | 5 | 10 | No | 67 | 199 |
| Cleveland, 900,429—Cuyahoga Co. | | | | | | | | |
| Booth Memorial Maternity Home and Hospital | Mater | Church | 13 | 5 | 12 | No | 79 | 142 |
| Children's Fresh Air Camp and Hospital | Conv | Indep | 60 | 62 | .. | No | ... | 202 |
| Emergency Hospital■ | Emerg | Part | 20 | 12 | .. | Yes | ... | 394 |
| Florence Crittenton Home | Mater | Indep | 17 | 13 | 13 | ... | 17 | 21 |
| Holy Cross House for Crippled and Invalid Children | Ortho | Church | 12 | 7 | .. | No | ... | 13 |
| Jewish Orphan's Home | Inst | Frat | 36 | 9 | .. | No | ... | 471 |
| Joanna Private Hospital and Invalids Home | Chron | Indiv | 19 | ... | .. | No | ... | ..... |
| St. Luke's Convalescent Hospital for Children | Ortho | Church | 62 | 35 | .. | No | ... | ..... |
| Columbus, 290,564—Franklin Co. | | | | | | | | |
| Florence Crittenton Home | Mater | Indep | 38 | 12 | 18 | No | 41 | 40 |
| Franklin County Home | Inst | County | 125 | 118 | 5 | No | ... | ..... |
| Home Sanitarium | Inst | Indiv | 5 | 5 | .. | No | ... | 10 |
| Institution for Feeble-minded | MenDef | State | 2,045 | 2,058 | .. | No | ... | 444 |
| Ohio Penitentiary Hospital | Inst | State | 145 | 104 | .. | Yes | ... | 4,016 |
| St. Anthony's Hospital□ | Inst | Church | 260 | 240 | .. | No | ... | 717 |
| Covington, 1,807—Miami Co. | | | | | | | | |
| Covington Hospital | Gen | Part | 8 | 3 | 2 | No | 10 | 90 |
| Dayton, 200,982—Montgomery Co. | | | | | | | | |
| Dayton Door of Hope | Mater | Indep | 16 | 8 | 6 | No | ... | ..... |
| Quarantine Hospital■ | Iso | City | 25 | 3 | 1 | No | ... | 86 |
| Veterans Admin. Home■▲ | Inst | VetAd | 1,100 | 867 | .. | Yes | ... | 4,986 |
| Delaware, 8,675—Delaware Co. | | | | | | | | |
| Girls' Industrial School Hospital | Inst | State | 32 | 9 | .. | No | ... | 317 |
| Monnett Hospital | Gen | Indep | 12 | 5 | .. | Yes | ... | ..... |
| Euclid, 12,751—Cuyahoga Co. | | | | | | | | |
| Ream Sanatorium | N&M | Indiv | 25 | 10 | .. | No | ... | 50 |
| Wright's Sanitarium | N&M | Indiv | 15 | New | .. | No | ... | ..... |
| Fairfield, 1,240—Greene Co. | | | | | | | | |
| Station Hospital | Gen | Army | 12 | 1 | .. | No | ... | 60 |
| Granville, 1,467—Licking Co. | | | | | | | | |
| Whisler Hall Mem. Hosp. | Inst | Indep | 20 | 3 | .. | Yes | ... | 325 |
| Hamilton, 52,176—Butler Co. | | | | | | | | |
| Butler County Home | TB | County | 20 | 8 | .. | No | ... | 15 |
| Ruth Hospital | Inst | Indep | 14 | 4 | .. | No | ... | ..... |
| Lakewood, 70,509—Cuyahoga Co. | | | | | | | | |
| Wright's Sanitarium | Conv | Indiv | 25 | 13 | .. | ... | ... | 41 |
| Lancaster, 18,716—Fairfield Co. | | | | | | | | |
| Boys' Industrial School Hospital■ | Inst | State | 100 | 28 | .. | No | ... | 1,054 |
| Lebanon, 3,222—Warren Co. | | | | | | | | |
| Blair Brothers Hospital | Gen | Part | 8 | 4 | 3 | No | 18 | 191 |
| Lima, 42,287—Allen Co. | | | | | | | | |
| Herr's Hospital Clinic | Gen | Indep | 8 | 8 | .. | Yes | ... | 700 |
| Mansfield, 33,525—Richland Co. | | | | | | | | |
| Ohio State Reformatory■ | Inst | State | 90 | 55 | .. | No | ... | 1,499 |
| Marblehead, 1,027—Ottawa Co. | | | | | | | | |
| Kelley Island Lime and Transport Co. Hospital■ | Gen | Indus | 6 | 2 | 2 | Yes | 12 | 70 |
| Marysville, 3,639—Union Co. | | | | | | | | |
| Ohio Reformatory for Women | Inst | State | 16 | 9 | 10 | No | 2 | ..... |
| Munroe Falls, 302—Summit Co. | | | | | | | | |
| Summit Co. Home Hosp.■ | Inst | County | 43 | 39 | .. | No | ... | ..... |
| New London, 1,527—Huron Co. | | | | | | | | |
| New London Hospital□ | Gen | Indep | 9 | 2 | 3 | No | 23 | 120 |
| Orient, 255—Pickaway Co. | | | | | | | | |
| Institution for Feeble-minded | MenDef | State | 2,500 | 2,444 | .. | Yes | ... | 219 |
| Oxford, 2,588—Butler Co. | | | | | | | | |
| Miami University Students Hosp. and Dispensary■ | Inst | State | 24 | 11 | .. | Yes | ... | 1,092 |
| Sandusky, 24,622—Erie Co. | | | | | | | | |
| Erie County Home Hosp. | Chron | County | 35 | 22 | .. | No | ... | ..... |
| Springfield, 68,743—Clark Co. | | | | | | | | |
| Ohio Knights of Pythias Home | Inst | Frat | 55 | 35 | .. | No | ... | ..... |
| Ohio Rebekah Hospital | Inst | Frat | 75 | 53 | .. | Yes | ... | 538 |
| Rickly Memorial Hospital | Inst | Frat | 222 | 215 | .. | No | ... | 258 |
| Springfield Eye, Ear, Nose and Throat Hospital | EENT | Indiv | 6 | 5 | 2 | Yes | ... | 196 |
| Ohio Soldiers and Sailors Home Hospital | Inst | State | 200 | 115 | .. | Yes | ... | 457 |
| Tiffin, 16,428—Seneca Co. | | | | | | | | |
| Kentucky Memorial Hosp. | Inst | Frat | 50 | 12 | .. | No | ... | 1,061 |
| Toledo, 290,718—Lucas Co. | | | | | | | | |
| Lucas Co. Hosp. Annex | Chron | County | 110 | 84 | .. | ... | ... | 345 |
| Municipal Hospital for Contagious Diseases■ | Iso | City | 46 | 19 | 3 | Yes | ... | 96 |
| Warrensville, 1,507—Cuyahoga Co. | | | | | | | | |
| Cleveland City Infirmary■▲ | Inst | City | 283 | 175 | .. | No | ... | 133 |
| West Dover, 309—Cuyahoga Co. | | | | | | | | |
| Cedarcrest Sanitarium | N&M | Indiv | 36 | ... | .. | No | ... | ..... |
| Wilberforce, 324—Greene Co. | | | | | | | | |
| Tawawa Hosp. of Wilberforce University (col.) | Inst | State | 11 | 3 | .. | Yes | ... | 149 |
| Wooster, 10,742—Wayne Co. | | | | | | | | |
| Hygeia Hall | Inst | Indep | 25 | 2 | .. | Yes | ... | 214 |
| Xenia, 10,507—Greene Co. | | | | | | | | |
| Espey Hospital | Gen | Indiv | 12 | 4 | 2 | No | ... | ..... |
| Ohio Soldiers and Sailors Orphans Home Hospital■ | Inst | State | 70 | 29 | .. | No | ... | ..... |
| Youngstown, 170,002—Mahoning Co. | | | | | | | | |
| Youngstown Municipal Hospital | Iso | City | 65 | 2 | .. | No | ... | 76 |

Summary for Ohio:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 195 | 37,672 | 31,802 | 318,513 |
| Related institutions | 74 | 9,624 | 8,019 | 24,241 |
| Totals | 269 | 47,296 | 39,821 | 342,754 |
| Refused registration | 28 | 779 | | |

## OKLAHOMA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ada, 11,261—Pontotoc Co. | | | | | | | | |
| Ada Hospital■ | Gen | Indiv | 25 | 12 | 5 | No | 85 | 713 |
| Breco's Hospital■ | Gen | Indep | 20 | 12 | 2 | No | 14 | 538 |
| Altus, 8,439—Jackson Co. | | | | | | | | |
| City Hospital | Gen | City | 15 | 3 | 2 | No | 16 | 200 |
| Alva, 5,121—Woods Co. | | | | | | | | |
| Alva Hospital | Gen | City | 11 | 2 | 2 | No | 17 | 212 |
| Ardmore, 15,741—Carter Co. | | | | | | | | |
| Hardy Sanitarium■ | Gen | Indiv | 40 | 21 | 4 | No | 52 | 632 |
| Von Keller Hospital | Gen | Indep | 25 | 8 | 2 | Yes | 10 | 341 |
| Bartlesville, 14,763—Washington Co. | | | | | | | | |
| Washington County Memorial Hospital◊■ | Gen | County | 50 | 25 | 10 | No | 198 | 1,121 |
| Beaver, 1,028—Beaver Co. | | | | | | | | |
| Beaver Hospital | Gen | Part | 22 | 7 | 3 | Yes | 19 | 425 |
| Blackwell, 9,521—Kay Co. | | | | | | | | |
| Blackwell Hospital | Gen | Indiv | 35 | 15 | 4 | ... | ... | 300 |
| Leslie Sanatorium | Gen | Indiv | 20 | 13 | 10 | Yes | 114 | 475 |
| Bristow, 6,619—Creek Co. | | | | | | | | |
| Bristow General Hospital | Gen | Indep | 14 | 4 | 3 | No | 16 | 152 |
| Butler, 473—Custer Co. | | | | | | | | |
| Sunnyside Hospital | Gen | Part | 22 | 5 | 5 | No | 178 | 378 |
| Chandler, 2,717—Lincoln Co. | | | | | | | | |
| Hancock Hospital■ | Gen | Indiv | 12 | 4 | .. | No | 10 | ..... |
| Cherokee, 2,236—Alfalfa Co. | | | | | | | | |
| Masonic Hospital◊ | Gen | Frat | 30 | 15 | 6 | No | 45 | 525 |
| Chickasha, 14,099—Grady Co. | | | | | | | | |
| Chickasha Hospital◊□ | Gen | Part | 64 | 23 | 6 | No | 39 | 1,086 |
| Cottage Hospital■ | Gen | Indiv | 20 | 12 | 5 | No | 24 | 16 |
| General Hospital□ | Gen | Indep | 16 | 5 | 1 | Yes | 18 | 37 |
| Claremore, 3,720—Rogers Co. | | | | | | | | |
| Claremore Indian Hospital | Gen | Indian | 38 | 28 | 6 | Yes | 9 | 326 |
| Clinton, 7,512—Custer Co. | | | | | | | | |
| Clinton Hospital◊■ | Gen | Indep | 75 | 16 | 4 | No | 45 | 918 |
| Western Oklahoma State Tuberculosis Sanatorium | TB | State | 210 | 200 | .. | No | ... | ..... |
| Concho, 290—Canadian Co. | | | | | | | | |
| Cheyenne and Arapaho Hospital | Gen | Indian | 60 | 20 | 4 | Yes | 21 | 698 |
| Cordell, 2,936—Washita Co. | | | | | | | | |
| Florence Hospital | Gen | Indiv | 30 | 5 | 3 | No | 26 | 176 |
| Cushing, 9,301—Payne Co. | | | | | | | | |
| Masonic Hospital■ | Gen | Frat | 28 | 12 | 4 | No | 32 | 450 |
| Depew, 1,126—Creek Co. | | | | | | | | |
| Coppedge Hospital | Gen | Indiv | 12 | 7 | 2 | No | 24 | 149 |
| Duncan, 8,363—Stephens Co. | | | | | | | | |
| Weedn Hospital◊■ | Gen | Indiv | 30 | 20 | 4 | Yes | 15 | 375 |
| Durant, 7,463—Bryan Co. | | | | | | | | |
| Bryan County Hospital | Gen | Indiv | 15 | 4 | .. | No | 8 | 80 |
| Elk City, 5,666—Beckham Co. | | | | | | | | |
| Standifer Hospital■ | Gen | Indiv | 25 | 10 | 4 | No | 20 | 296 |
| Tisdal Hospital■ | Gen | Indiv | 55 | 15 | 8 | Yes | ... | 650 |
| El Reno, 9,384—Canadian Co. | | | | | | | | |
| Catto Hospital | Gen | Indiv | 25 | 6 | 3 | No | ... | ..... |
| El Reno Sanitarium■ | Gen | Indiv | 51 | 22 | 4 | No | 57 | 670 |
| Enid, 23,399—Garfield Co. | | | | | | | | |
| Baptist Hospital◊ | Gen | Church | 40 | 30 | 10 | No | 133 | 1,040 |
| Enid General Hospital◊ | Gen | Indep | 90 | 50 | 10 | No | 154 | 1,834 |
| Enid Springs Sanitarium and Hospital◊ | Gen | Indep | 35 | 15 | 2 | No | 51 | 611 |
| Erick, 2,231—Beckham Co. | | | | | | | | |
| Erick Hospital | Gen | Indep | 20 | 10 | 2 | No | 20 | 175 |
| Ft. Sill, 3,479—Comanche Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 140 | 98 | 5 | Yes | 85 | 3,068 |
| Frederick, 4,568—Tillman Co. | | | | | | | | |
| Frederick Clinic Hospital | Gen | Part | 12 | 6 | 2 | Yes | 70 | 500 |
| Spurgeon, Arrington and Allen Hosp. and Clinic | Gen | Part | 15 | 2 | 1 | No | 22 | 113 |
| Grandfield, 1,416—Tillman Co. | | | | | | | | |
| Grandfield Hospital | Gen | Indiv | 10 | 3 | 2 | No | 25 | 79 |
| Guthrie, 9,582—Logan Co. | | | | | | | | |
| Duke Sanitarium | N&M | Indep | 35 | 19 | .. | No | ... | 165 |
| Oklahoma Methodist Episcopal Hospital | Gen | Church | 35 | 21 | 4 | No | ... | ..... |
| Park Sanitarium (col.) | Gen | Indiv | 20 | ... | 3 | No | ... | ..... |
| Henryetta, 7,694—Okmulgee Co. | | | | | | | | |
| Henryetta Hospital | Gen | Indiv | 20 | 8 | 2 | No | 15 | 333 |
| Keystone Hospital | Gen | Indiv | 20 | 9 | 4 | No | 18 | 585 |
| Hobart, 4,982—Kiowa Co. | | | | | | | | |
| General Hospital■ | Gen | Part | 20 | 6 | 3 | No | 32 | 388 |

Key to symbols and abbreviations is on page 2078

## OKLAHOMA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Holdenville, 7,268—Hughes Co. | | | | | | | | |
| Holdenville Hospital | Gen | Indep | 28 | 12 | 3 | Yes | 34 | 421 |
| Hollis, 2,914—Harmon Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 20 | 7 | 4 | ... | 13 | 437 |
| [illegible] | Gen | City | 11 | ... | 2 | No | ... | 60 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indian | 100 | 64 | 14 | Yes | 84 | 1,891 |
| [illegible] | Gen | Part | 25 | 7 | 5 | No | 24 | 284 |
| Mangum, 4,806—Greer Co. | | | | | | | | |
| Border-McGregor Hospital and Clinic◊■ | Gen | Part | 50 | 19 | 6 | Yes | 28 | 501 |
| Marlow, 3,084—Stephens Co. | | | | | | | | |
| Weedn Hospital | Gen | Indiv | 20 | 6 | 6 | Yes | 14 | 366 |
| Maud, 4,326—Seminole Co. | | | | | | | | |
| Maud Hospital | Gen | Indiv | 16 | 14 | 4 | No | 37 | 490 |
| McAlester, 11,804—Pittsburg Co. | | | | | | | | |
| Albert Pike Hospital◊■ | Gen | Frat | 55 | 17 | 6 | No | 43 | 800 |
| [illegible] | Gen | Church | 28 | 8 | 2 | No | 32 | 344 |
| [illegible] | Gen | Church | 50 | 18 | 10 | Yes | 34 | 1,077 |
| Muskogee, 32,026—Muskogee Co. | | | | | | | | |
| Muskogee Provident Hospital (col.) | Gen | Indep | 30 | 15 | .. | Yes | 25 | 370 |
| Oklahoma Baptist Hosp.◊■ | Gen | Church | 115 | 30 | 30 | No | 203 | 1,221 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 400 | 360 | .. | Yes | ... | 3,078 |
| Norman, 9,603—Cleveland Co. | | | | | | | | |
| Central Oklahoma State Hospital | N&M | State | 2,000 | 2,135 | .. | No | ... | 716 |
| Nowata, 3,531—Nowata Co. | | | | | | | | |
| Nowata Hospital | Gen | Indiv | 14 | 6 | 2 | No | 10 | 140 |
| Okemah, 4,002—Okfuskee Co. | | | | | | | | |
| Okemah Hospital | Gen | Indiv | 12 | 3 | 2 | No | 21 | 183 |
| Oklahoma City, 185,389—Oklahoma Co. | | | | | | | | |
| Farm Sanatorium | TB | Indiv | 60 | 40 | .. | No | ... | 152 |
| Great Western Hospital (col.) | Gen | Part | 26 | 12 | 2 | No | 3 | 1,062 |
| Oklahoma City Gen. Hospital◊■ | Gen | Indep | 88 | 66 | 12 | No | 189 | 3,044 |
| [illegible] | Gen | Indiv | 73 | 45 | 6 | No | 116 | 1,008 |
| McBride Clinic | Ortho | Part | 30 | 9 | .. | Yes | ... | 244 |
| Rolater Hospital■ | Gen | Indiv | 84 | 25 | 8 | No | 47 | 886 |
| St. Anthony's Hospital.★◊ | Gen | Church | 250 | 168 | 40 | Yes | 943 | 5,989 |
| State University Hosp. and Crippled Children's Hospital★+◊■ | Gen | State | 440 | 401 | 22 | Yes | 396 | 6,121 |
| Wesley Hospital★◊ | Gen | Indep | 103 | 72 | 9 | No | 276 | 3,305 |
| Okmulgee, 17,097—Okmulgee Co. | | | | | | | | |
| Okmulgee City Hospital◊ | Gen | City | 75 | 24 | 6 | No | 141 | 1,570 |
| Okmulgee Colored City Hospital | Gen | City | 30 | 5 | 1 | Yes | 12 | 131 |
| Pauls Valley, 4,235—Garvin Co. | | | | | | | | |
| Lindsey-Johnson Hospital. | Gen | Part | 10 | 7 | 1 | No | 12 | 286 |
| Pawhuska, 5,931—Osage Co. | | | | | | | | |
| Pawhuska Municipal Hospital■ | Gen | City | 30 | 8 | 4 | No | 44 | 459 |
| Pawnee, 2,562—Pawnee Co. | | | | | | | | |
| Pawnee-Ponca Hospital | Gen | Indian | 46 | 13 | 7 | Yes | 43 | 428 |
| Picher, 7,773—Ottawa Co. | | | | | | | | |
| American Hospital | Gen | Indiv | 40 | 4 | 3 | Yes | 6 | 74 |
| Picher Hospital | Gen | Indiv | 18 | 9 | 2 | No | 8 | 122 |
| Ponca City, 16,136—Kay Co. | | | | | | | | |
| Grand Avenue Gen. Hosp.■ | Gen | Indiv | 17 | 7 | 4 | No | 10 | 270 |
| Ponca City Hospital◊■ | Gen | Church | 50 | 30 | 12 | No | ... | 1,050 |
| Ryan, 1,258—Jefferson Co. | | | | | | | | |
| Ryan Hospital | Gen | Indiv | 10 | 8 | 2 | No | 52 | 104 |
| Sand Springs, 6,674—Tulsa Co. | | | | | | | | |
| Home Hospital■ | Gen | Indiv | 40 | 7 | 2 | No | 3 | 206 |
| Sapulpa, 10,533—Creek Co. | | | | | | | | |
| Sapulpa City Hospital■ | Gen | City | 17 | 5 | 2 | No | 12 | 266 |
| [illegible] | Gen | Indiv | 17 | 4 | 3 | No | 10 | 139 |
| Harber Hospital■ | Gen | Indep | 20 | 10 | 2 | No | 52 | 718 |
| Shattuck, 1,490—Ellis Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 44 | 41 | 6 | No | 86 | 1,292 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Part | 28 | 20 | 6 | No | 132 | 731 |
| Shawnee Indian Sanat. | TB | Indian | 100 | 93 | .. | Yes | ... | 117 |
| Shawnee Municipal Hosp.◊■ | Gen | City | 80 | 23 | 12 | No | 104 | 1,146 |
| Shidler, 1,177—Osage Co. | | | | | | | | |
| Emerg. Hosp. of Phillips Petroleum Company | Gen | Indus | 10 | 4 | 1 | No | 2 | 10 |
| Sulphur, 4,242—Murray Co. | | | | | | | | |
| Soldiers Tubercular Sanat. | TB | State | 125 | 105 | .. | No | ... | 470 |
| [illegible] | Gen | Part | 22 | 8 | 2 | No | ... | ..... |
| [illegible] | N&M | State | 1,000 | 1,012 | .. | No | ... | 237 |
| [illegible] | TB | Indian | 60 | 60 | .. | No | ... | 132 |
| Tuberculosis Sanatorium | TB | State | 187 | 183 | .. | No | ... | 152 |
| Thomas, 1,256—Custer Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 20 | 4 | 4 | No | 20 | 211 |
| [illegible] | Gen | Part | 20 | 4 | 5 | No | 15 | 125 |
| Tulsa, 141,258—Tulsa Co. | | | | | | | | |
| Flower Hospital | Gen | Part | 29 | 12 | 8 | No | 96 | 548 |
| Hubbard Memorial Clinic. | Gen | Part | 15 | 8 | .. | Yes | ... | ..... |
| Maurice Willows Hospital (col.) | Gen | Indep | 25 | ... | 5 | No | ... | ..... |
| Morningside Hospital★◊ | Gen | Indiv | 225 | 108 | 25 | No | 517 | 4,476 |
| Oklahoma Hosp. & Sanit. | N&M | Indep | 50 | 10 | .. | No | ... | 95 |
| St. John's Hospital★◊■ | Gen | Church | 250 | 173 | 23 | No | 583 | 4,905 |
| Sisler Hospital | Ortho | Indiv | 35 | 20 | .. | Yes | ... | 375 |

## OKLAHOMA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Vinita, 4,263—Craig Co. | | | | | | | | |
| Eastern Oklahoma Hosp. | N&M | State | 1,500 | 1,866 | .. | No | ... | 472 |
| Vinita Hospital | Gen | Part | 14 | 8 | 3 | No | 23 | 443 |
| [illegible] | Gen | Indiv | 14 | ... | 1 | Yes | ... | ..... |
| [illegible] | Gen | Indep | 24 | 12 | 2 | No | 36 | 365 |
| [illegible] | Gen | Indiv | 18 | 15 | 4 | No | ... | ..... |
| [illegible] | Gen | Indiv | 25 | 15 | 4 | No | 40 | 350 |
| Woodward, 5,056—Woodward Co. | | | | | | | | |
| Woodward General Hosp.◊ | Gen | Indep | 36 | 16 | 5 | No | 30 | 403 |

### Related Institutions

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Chilocco, 280—Kay Co. | | | | | | | | |
| Chilocco Indian School Hospital | Gen | Indian | 50 | ... | .. | No | ... | ..... |
| Colony, 415—Washita Co. | | | | | | | | |
| Segar Indian School Hosp. | Gen | Indian | 8 | 5 | .. | Yes | 6 | 125 |
| Davenport, 1,072—Lincoln Co. | | | | | | | | |
| [illegible] | [illegible] | Part | 10 | 2 | .. | No | ... | 55 |
| [illegible] | [illegible] | State | 800 | 720 | .. | No | ... | ..... |
| Fa[illegible] | [illegible] | Indiv | 8 | 3 | 2 | No | 18 | 165 |
| Ft. I[illegible] Co. | | | | | | | | |
| St[illegible] | [illegible] | Army | 12 | 2 | .. | Yes | ... | 210 |
| McA[illegible] | | | | | | | | |
| Ok[illegible] pital■ | Inst | State | 51 | 21 | .. | Yes | ... | 1,008 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Inst | State | 14 | ... | .. | ... | ... | ..... |
| [illegible] Co. | | | | | | | | |
| Hygeia Hall | Inst | State | 38 | 8 | .. | Yes | ... | 1,230 |
| Okeene, 1,035—Blaine Co. | | | | | | | | |
| Okeene Hospital■ | Gen | Indiv | 10 | 2 | 2 | No | 9 | 48 |
| Oklahoma City, 185,389—Oklahoma Co. | | | | | | | | |
| Holmes Home of Redeeming Love | Mater | Church | 25 | 12 | 30 | No | 188 | 232 |
| Oklahoma Union Soldiers Home | Inst | State | 30 | 30 | .. | Yes | ... | 60 |
| Stillwater, 7,016—Payne Co. | | | | | | | | |
| Agriculture and Mechanical College Infirmary | Inst | State | 75 | 18 | .. | No | ... | 2,207 |
| Stroud, 1,894—Lincoln Co. | | | | | | | | |
| Glendale Hospital | Gen | Indiv | 10 | 4 | .. | No | 15 | ..... |
| Tahlequah, 2,495—Cherokee Co. | | | | | | | | |
| Sequoyah Training School Hospital | Inst | Indian | 12 | 6 | .. | Yes | ... | 217 |
| Tahlequah Hospital | Gen | Indiv | 8 | 3 | 2 | ... | 12 | 157 |

Summary for Oklahoma:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 110 | 10,412 | 8,366 | 79,007 |
| Related institutions | 16 | 1,161 | 838 | 5,714 |
| Totals | 126 | 11,573 | 9,204 | 84,721 |
| Refused registration | 18 | 451 | | |

## OREGON

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Albany, 5,325—Linn Co. | | | | | | | | |
| Albany General Hospital | Gen | Indep | 52 | 18 | 8 | No | 121 | 657 |
| Ashland, 4,544—Jackson Co. | | | | | | | | |
| Community Hospital | Gen | City | 17 | 7 | 3 | No | ... | 324 |
| Astoria, 10,349—Clatsop Co. | | | | | | | | |
| Columbia Hospital■ | Gen | Indep | 54 | 36 | 12 | No | 124 | 1,778 |
| St. Mary's Hospital◊ | Gen | Church | 70 | 39 | 10 | No | ... | ..... |
| Baker, 7,858—Baker Co. | | | | | | | | |
| Baker County Protestant Hospital | Gen | Church | 25 | 10 | 4 | No | 50 | 390 |
| St. Elizabeth's Hospital◊ | Gen | Church | 72 | 30 | 12 | No | 80 | 507 |
| Bandon, 1,516—Coos Co. | | | | | | | | |
| Leep Memorial Hospital | Gen | Indiv | 10 | 2 | 2 | No | 3 | 129 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Church | 25 | 20 | 7 | No | 98 | 588 |
| Valley View Hospital | Gen | Indep | 27 | 9 | 6 | No | 38 | 386 |
| Corvallis, 7,585—Benton Co. | | | | | | | | |
| Corvallis General Hosp.■ | Gen | Indep | 40 | 18 | 6 | No | 79 | 926 |
| Dallas, 2,975—Polk Co. | | | | | | | | |
| Dallas Hospital | Gen | Indep | 16 | 8 | 4 | No | 43 | 289 |
| Enterprise, 1,379—Wallowa Co. | | | | | | | | |
| Enterprise Hospital■ | Gen | Indep | 15 | 5 | 3 | Yes | 14 | 178 |
| Eugene, 18,901—Lane Co. | | | | | | | | |
| Eugene Hospital and Clinic | Gen | Indep | 56 | 38 | 8 | No | 68 | 1,290 |
| Pacific Christian Hospital | Gen | Church | 78 | 53 | 18 | No | 369 | 1,879 |
| Forest Grove, 1,859—Washington Co. | | | | | | | | |
| Guymon Hospital | Gen | Indiv | 20 | 15 | 5 | No | 42 | ..... |
| Grants Pass, 4,666—Josephine Co. | | | | | | | | |
| Josephine General Hosp. | Gen | County | 32 | 18 | 6 | No | 20 | 340 |
| Hood River, 2,757—Hood River Co. | | | | | | | | |
| Hood River Hospital | Gen | Indep | 18 | 13 | 2 | No | 52 | 490 |
| Klamath Agency, 163—Klamath Co. | | | | | | | | |
| Klamath Reservation Hosp. | Gen | Indian | 25 | 8 | 2 | Yes | ... | 294 |

## OREGON—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Klamath Falls, 16,093—Klamath Co. | | | | | | | | |
| Hillside Hospital | Gen | Indep | 50 | 35 | 12 | No | ... | ..... |
| Klamath Valley Hospital■ | Gen | Indiv | 66 | 27 | 14 | No | 160 | 1,008 |
| La Grande, 8,050—Union Co. | | | | | | | | |
| Grande Ronde Hospital■ | Gen | Indep | 70 | 28 | 4 | No | 71 | 642 |
| Lakeview, 1,799—Lake Co. | | | | | | | | |
| Lakeview Public Hospital■ | Gen | Indiv | 10 | 4 | 4 | No | 30 | 220 |
| Lebanon, 1,851—Linn Co. | | | | | | | | |
| Lebanon General Hosp.■ | Gen | Part | 12 | 5 | 3 | No | 53 | 208 |
| Marshfield, 5,287—Coos Co. | | | | | | | | |
| Wesley Hospital■ | Gen | Church | 65 | 18 | 10 | No | 47 | 749 |
| McMinnville, 2,917—Yamhill Co. | | | | | | | | |
| McMinnville Hospital | Gen | Part | 28 | 15 | 4 | No | 45 | 503 |
| Medford, 11,007—Jackson Co. | | | | | | | | |
| Community Hospital | Gen | Indep | 30 | 17 | 6 | No | 95 | 558 |
| Sacred Heart Hospital◊■ | Gen | Church | 65 | 40 | 7 | No | 112 | 1,171 |
| Milwaukie, 1,767—Clackamas Co. | | | | | | | | |
| Portland Open Air Sanat.■ | TB | Indep | 79 | 63 | .. | Yes | ... | 233 |
| Myrtle Point, 1,362—Coos Co. | | | | | | | | |
| Mast Hospital | Gen | Indiv | 21 | 10 | 6 | No | 20 | 291 |
| Newberg, 2,951—Yamhill Co. | | | | | | | | |
| Dr. Wendt's Hospital | Gen | Indiv | 15 | 2 | 3 | No | 12 | 106 |
| North Bend, 4,012—Coos Co. | | | | | | | | |
| Keizer Brothers Hospital | Gen | Indep | 65 | 27 | 10 | Yes | 90 | 984 |
| Mercy Hospital■ | Gen | Church | 50 | 15 | 4 | No | 38 | 300 |
| Ontario, 1,941—Malheur Co. | | | | | | | | |
| Holy Rosary Hospital | Gen | Church | 30 | 16 | 6 | No | 40 | 590 |
| Oregon City, 5,761—Clackamas Co. | | | | | | | | |
| Oregon City Hospital | Gen | Indep | 52 | 25 | 8 | No | 136 | 902 |
| Pendleton, 6,621—Umatilla Co. | | | | | | | | |
| Eastern Oregon State Hospital | N&M | State | 1,060 | 1,048 | .. | No | ... | 93 |
| St. Anthony's Hospital◊■ | Gen | Church | 70 | 20 | 12 | No | 101 | 1,189 |
| Portland, 301,815—Multnomah Co. | | | | | | | | |
| Doernbecher Memorial Hospital+○■ | Chil | State | 75 | 40 | .. | Yes | ... | 1,584 |
| Eivers Hospital | Mater | Indiv | 16 | 4 | 12 | No | 98 | 125 |
| Emanuel Hospital★◊■ | Gen | Church | 217 | 171 | 66 | No | 970 | 5,372 |
| Good Samaritan Hosp.★◊■ | Gen | Church | 304 | 223 | 24 | Yes | 500 | 7,857 |
| Louise Home and Juvenile Hospital for Girls | Mater | Indep | 44 | 6 | 8 | No | 38 | 195 |
| Morningside Hospital | N&M | Fed | 280 | 261 | .. | No | ... | 59 |
| Mountain View Sanitarium | N&M | Indep | 20 | 7 | .. | No | ... | ..... |
| Multnomah Hospital★+◊■ | Gen | County | 300 | 275 | 20 | No | 590 | 3,633 |
| Portland Conv. Hospital | Conv | Indiv | 25 | 20 | .. | No | ... | 99 |
| Portland Eye, Ear, Nose and Throat Hospital | EENT | Indiv | 38 | 14 | .. | No | ... | 1,050 |
| Portland Medical Hospital | Gen | Indep | 35 | 32 | .. | Yes | ... | 604 |
| Portland Sanitarium and Hospital★◊■ | Gen | Church | 120 | 90 | 24 | No | 524 | 3,497 |
| Dr. Robert C. Coffey Clinic and Hospital■ | Gen | Indiv | 110 | 51 | .. | Yes | ... | 955 |
| St. Vincent's Hospital★◊ | Gen | Church | 366 | 331 | 36 | No | 685 | 8,844 |
| Sellwood General Hospital | Gen | Indep | 45 | 14 | 8 | Yes | 56 | 478 |
| Shriners Hospital for Crippled Children+ | Ortho | Frat | 60 | 59 | .. | Yes | ... | 193 |
| Veterans Admin. Hosp.■▲ | Gen | VetAd | 313 | 282 | .. | Yes | ... | 3,232 |
| Waverleigh Sanatorium | N&M | Part | 12 | 8 | .. | No | ... | 2 |
| Roseburg, 4,362—Douglas Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 25 | 15 | 6 | No | 15 | 180 |
| Roseburg General Hospital | Gen | Indep | 26 | 20 | 6 | Yes | 96 | 630 |
| St. Helens, 3,994—Columbia Co. | | | | | | | | |
| St. Helens General Hosp. | Gen | Indiv | 19 | 8 | 6 | No | 20 | 417 |
| Salem, 26,266—Marion Co. | | | | | | | | |
| Oregon State Hospital | N&M | State | 1,950 | 2,070 | .. | No | ... | 696 |
| Oregon State Tuber. Hosp.■ | TB | State | 200 | 199 | .. | No | ... | 155 |
| Salem General Hospital◊■ | Gen | Indep | 65 | 29 | 10 | No | 162 | 1,440 |
| Silverton, 2,462—Marion Co. | | | | | | | | |
| Silverton Hospital | Gen | Indep | 20 | 8 | 5 | ... | 74 | 279 |
| The Dalles, 5,883—Wasco Co. | | | | | | | | |
| Eastern Oregon Tuberculosis Hospital■ | TB | State | 100 | 98 | .. | Yes | ... | 85 |
| Mid-Columbia Hospital■ | Gen | Part | 23 | 14 | 6 | No | 60 | 474 |
| The Dalles Hospital◊■ | Gen | Indep | 65 | 33 | 10 | Yes | 147 | 1,102 |
| Tillamook, 2,549—Tillamook Co. | | | | | | | | |
| Charlton Hospital | Gen | Indiv | 35 | 20 | 5 | No | ... | ..... |
| Tillamook General Hosp. | Gen | Indiv | 16 | 6 | 5 | No | ... | 199 |
| Toledo, 2,137—Lincoln Co. | | | | | | | | |
| Lincoln Hospital | Gen | Indep | 20 | 8 | 3 | No | 43 | 243 |
| Troutdale, 227—Multnomah Co. | | | | | | | | |
| Multnomah County Tuberculosis Pavilion■ | TB | County | 36 | 36 | .. | No | ... | 100 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bend, 8,848—Deschutes Co. | | | | | | | | |
| Lumbermen's Hospital | Indus | Indus | 15 | 4 | .. | No | ... | 220 |
| Chemawa, 625—Marion Co. | | | | | | | | |
| Salem Indian School Hosp. | Inst | Indian | 40 | 14 | .. | Yes | ... | 763 |
| Corvallis, 7,585—Benton Co. | | | | | | | | |
| Oregon State Agricultural College Hospital■ | Inst | State | 18 | 10 | .. | Yes | ... | 567 |
| Jacksonville, 706—Jackson Co. | | | | | | | | |
| Jacksonville Sanitarium | Gen | Indiv | 15 | 6 | 1 | No | 1 | 21 |
| Mill City, 1,214—Marion Co. | | | | | | | | |
| Mill City Hospital | Gen | Indiv | 8 | 4 | 2 | Yes | 2 | 66 |
| Portland, 301,815—Multnomah Co. | | | | | | | | |
| Florence Crittenton Refuge Home■ | Mater | Indep | 12 | 4 | 14 | No | 51 | 74 |
| Isolation Hospital■ | Iso | City | 70 | 14 | 6 | No | 2 | 595 |
| Salvation Army White Shield Home | Mater | Church | 45 | 40 | 25 | No | 65 | ..... |
| Woman's Conv. Home | Conv | Indep | 17 | 4 | .. | No | ... | 123 |
| Rainier, 1,353—Columbia Co. | | | | | | | | |
| Rainier City Hospital | Gen | Indiv | 6 | 1 | 2 | No | 14 | 18 |

Key to symbols and abbreviations is on page 2078

## OREGON—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Roseburg, 4,362—Douglas Co. | | | | | | | | |
| Oregon Soldiers' Home Hospital■ | Inst | State | 50 | 27 | .. | No | ... | 92 |
| Salem, 26,266—Marion Co. | | | | | | | | |
| Oregon State Institution for Feebleminded | MenDef | State | 875 | 840 | .. | No | ... | 80 |
| Oregon State Penitentiary | Inst | State | 50 | 8 | .. | No | ... | ..... |
| Oregon State School for the Deaf | Inst | State | 10 | 1 | .. | No | ... | 207 |
| Wallowa, 749—Wallowa Co. | | | | | | | | |
| Wallowa Hospital | Gen | Indiv | 9 | 4 | 2 | No | ... | ..... |
| Woodburn, 1,675—Marion Co. | | | | | | | | |
| Oregon State Training School | Inst | State | 13 | 6 | .. | No | ... | 368 |

Summary for Oregon:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 68 | 7,470 | 6,214 | 64,571 |
| Related institutions | 16 | 1,253 | 987 | 3,194 |
| Totals | 84 | 8,723 | 7,201 | 67,765 |
| Refused registration | 7 | 245 | | |

## PENNSYLVANIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Abington, 821—Montgomery Co. | | | | | | | | |
| Abington Mem. Hosp.★◊■ | Gen | Indep | 205 | 130 | 37 | Yes | 489 | 3,966 |
| Allentown, 92,563—Lehigh Co. | | | | | | | | |
| Allentown Hospital★◊ | Gen | Indep | 300 | 212 | 25 | Yes | 400 | 5,635 |
| Allentown State Hosp.+◊ | N&M | State | 1,460 | 1,416 | .. | Yes | ... | 450 |
| Baer Hospital | Gen | Indiv | 20 | 6 | 10 | No | 76 | 205 |
| Sacred Heart Hospital★◊■ | Gen | Church | 278 | 132 | 22 | Yes | 378 | 3,386 |
| Devitt's Camp for Tuber. | TB | Indep | 110 | 105 | .. | No | ... | 100 |
| Altoona, 82,054—Blair Co. | | | | | | | | |
| Altoona Hospital★◊■ | Gen | Indep | 162 | 104 | 18 | Yes | 419 | 2,883 |
| Mercy Hospital★◊■ | Gen | Indep | 121 | 74 | 14 | Yes | 351 | 2,414 |
| Ambler, 3,944—Montgomery Co. | | | | | | | | |
| Dufur Hospital | N&M | Indiv | 50 | 25 | .. | No | ... | 32 |
| Ardmore, 10,075—Montgomery Co. | | | | | | | | |
| Wood Lea Sanitarium | N&M | Indiv | 14 | 9 | .. | No | ... | ..... |
| Ashland, 7,164—Schuylkill Co. | | | | | | | | |
| Ashland State Hospital◊ | Gen | State | 226 | 178 | 15 | Yes | 210 | 4,445 |
| Beaver Falls, 17,147—Beaver Co. | | | | | | | | |
| Providence Hospital■ | Gen | Church | 55 | 40 | 10 | Yes | 151 | 920 |
| Bedford, 2,953—Bedford Co. | | | | | | | | |
| Timmins' Hospital■ | Gen | Indiv | 14 | 8 | 2 | No | 25 | 215 |
| Bellefonte, 4,804—Centre Co. | | | | | | | | |
| Center County Hospital◊■ | Gen | Indep | 60 | 36 | 4 | Yes | 126 | 954 |
| Bellevue, 10,252—Allegheny Co. | | | | | | | | |
| Suburban General Hosp.◊■ | Gen | Indep | 100 | 55 | 15 | Yes | 243 | 1,839 |
| Berwick, 12,660—Columbia Co. | | | | | | | | |
| Berwick Hospital◊■ | Gen | Indep | 48 | 22 | 10 | Yes | 131 | 702 |
| Berwyn, 1,050—Chester Co. | | | | | | | | |
| Alcluyd Hospital | N&M | Indiv | 20 | 20 | .. | ... | ... | ..... |
| Bethlehem, 57,892—Northampton Co. | | | | | | | | |
| St. Luke's Hospital★◊■ | Gen | Indep | 185 | 132 | 20 | Yes | 345 | 3,487 |
| Bloomsburg, 9,093—Columbia Co. | | | | | | | | |
| Bloomsburg Hospital◊■ | Gen | Cy&Co | 111 | 43 | 15 | Yes | 126 | 1,316 |
| Blossburg, 1,696—Tioga Co. | | | | | | | | |
| Blossburg State Hospital■ | Gen | State | 80 | 48 | 6 | Yes | 62 | 2,557 |
| Braddock, 19,329—Allegheny Co. | | | | | | | | |
| Braddock General Hosp.◊■ | Gen | Indep | 121 | 76 | 16 | Yes | 261 | 2,232 |
| Bradford, 19,306—McKean Co. | | | | | | | | |
| Bradford Hospital◊■ | Gen | Indep | 117 | 64 | 23 | Yes | 306 | 2,185 |
| Brookville, 4,387—Jefferson Co. | | | | | | | | |
| Brookville Hospital◊■ | Gen | Indep | 36 | 18 | 4 | No | 44 | 467 |
| Brownsville, 2,869—Fayette Co. | | | | | | | | |
| Brownsville Gen. Hosp.◊■ | Gen | Indep | 90 | 71 | 10 | Yes | 101 | 1,681 |
| Bryn Mawr, 3,056—Montgomery Co. | | | | | | | | |
| Bryn Mawr Hospital★◊■ | Gen | Indep | 238 | 147 | 24 | Yes | 416 | 3,630 |
| Butler, 23,568—Butler Co. | | | | | | | | |
| Butler County Memorial Hospital◊■ | Gen | Indep | 82 | 50 | 10 | No | 132 | 1,878 |
| Canonsburg, 12,558—Washington Co. | | | | | | | | |
| Canonsburg Gen. Hosp.◊■ | Gen | Indep | 55 | 32 | 10 | No | 122 | 979 |
| Carbondale, 20,061—Lackawanna Co. | | | | | | | | |
| Carbondale General Hosp.■ | Gen | Indep | 65 | 30 | 10 | Yes | 62 | 885 |
| St. Joseph's Hosp ■ | Gen | Church | 106 | 53 | 10 | Yes | 133 | 1,905 |
| Cr | | | | | | | | |
| C ). | | | | | | | | |
| S ■ | Gen | Indep | 42 | 32 | 8 | Yes | 193 | 1,081 |
| Ch ■ | Gen | Army | 32 | 8 | 1 | Yes | 16 | 458 |
| C Co. | | | | | | | | |
| s Hospital◊■ | Gen | Indep | 100 | 39 | 16 | Yes | 230 | 1,329 |
| Chester, 59,164—Delaware Co. | | | | | | | | |
| Chester Hospital★◊■ | Gen | Indep | 250 | 128 | 35 | Yes | 566 | 4,151 |
| J. Lewis Crozer Home for Incurables and Homeopathic Hospital■ | Gen | Indep | 80 | 25 | 18 | Yes | 213 | 900 |
| Mercy Hospital | Gen | Indiv | 20 | 8 | 4 | No | 24 | 309 |
| Clarks Summit, 2,604—Lackawanna Co. | | | | | | | | |
| Hillside Home and Hospital for Mental Di | M | City | 900 | 723 | .. | No | ... | 100 |
| ( ■ | | Indep | 112 | 70 | 18 | Yes | 190 | 2,463 |
| | N&M | Indep | 50 | 42 | .. | No | ... | ..... |
| | | Indiv | 12 | 8 | .. | ... | ... | ..... |

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| [illegible] | Gen | State | 82 | 71 | .. | Yes | 3 | 714 |
| ■ | Gen | Indep | 111 | 59 | 14 | Yes | 171 | 1,840 |
| Veterans Admin. Hospital | N&M | VetAd | 483 | ... | .. | No | ... | ..... |
| Columbia, 11,349—Lancaster Co. | | | | | | | | |
| Columbia Hospital■........ | Gen | Indep | 65 | 20 | 10 | No | 84 | 566 |
| Colver, 2,000—Cambria Co. | | | | | | | | |
| Colver Hospital■........... | Gen | Indus | 20 | 9 | 4 | No | 46 | 360 |
| Confluence, 989—Somerset Co. | | | | | | | | |
| Frantz Hospital............ | Gen | Indiv | 15 | 7 | 4 | No | 34 | 184 |
| Connellsville, 13,290—Fayette Co. | | | | | | | | |
| Connellsville State Hosp.■ | Gen | State | 106 | 45 | 15 | Yes | 132 | 1,220 |
| Corry, 7,152—Erie Co. | | | | | | | | |
| Corry Hospital■........... | Gen | Indep | 32 | 21 | 8 | No | 121 | 1,113 |
| Coudersport, 2,740—Potter Co. | | | | | | | | |
| Coudersport General Hospital■ .................... | Gen | Indep | 14 | 9 | 5 | No | 27 | 199 |
| Cresson, 2,317—Cambria Co. | | | | | | | | |
| Pennsylvania State Sanat. for Tuberculosis No. 2+■ | TB | State | 850 | 721 | .. | No | ... | 946 |
| Danville, 7,185—Montour Co. | | | | | | | | |
| Danville State Hospital+◊. | N&M | State | 1,808 | 1,818 | .. | Yes | ... | 355 |
| Geo. F. Geisinger Memorial Hospital★◊ ............... | Gen | Indep | 180 | 125 | 15 | Yes | 166 | 4,563 |
| Dixmont, 1,200—Allegheny Co. | | | | | | | | |
| Dixmont Hosp. for Insane◊ | N&M | Indep | 962 | 1,146 | .. | No | ... | 194 |
| Drexel Hill, 1,119—Delaware Co. | | | | | | | | |
| Delaware County Hospital | Gen | Indep | 56 | 47 | 14 | Yes | 329 | 1,723 |
| Du Bois, 11,595—Clearfield Co. | | | | | | | | |
| Du Bois Hospital◊........ | Gen | Church | 50 | 24 | 6 | No | 55 | 609 |
| Maple Avenue Hospital◊■. | Gen | Indep | 72 | 31 | 6 | No | 75 | 1,087 |
| Eagleville, 184—Montgomery Co. | | | | | | | | |
| Eagleville Sanatorium...... | TB | Indep | 200 | 191 | .. | Yes | ... | 219 |
| Easton, 34,468—Northampton Co. | | | | | | | | |
| Betts' Private Hospital■. | Gen | Indiv | 42 | 27 | 10 | No | 90 | 2,000 |
| Easton Hospital★◊■........ | Gen | Indep | 199 | 141 | 21 | Yes | 301 | 4,164 |
| Easton Sanitarium......... | N&M | Indiv | 30 | 16 | .. | No | ... | 32 |
| East Stroudsburg, 6,099—Monroe Co. | | | | | | | | |
| General Hospital■.......... | Gen | County | 48 | 20 | 9 | Yes | 71 | 511 |
| Elizabethtown, 3,940—Lancaster Co. | | | | | | | | |
| Hosp. for Crippled Chil.■ | Ortho | State | 100 | 90 | .. | Yes | ... | 143 |
| Philadelphia Freemasons' Memorial Hospital....... | Gen | Frat | 110 | 100 | .. | No | ... | 525 |
| Ellwood City, 12,323—Lawrence Co. | | | | | | | | |
| Elwood City Hospital■..... | Gen | Indep | 55 | 13 | 8 | No | 90 | 651 |
| Erie, 115,967—Erie Co. | | | | | | | | |
| Hamot Hospital★◊■........ | Gen | Indep | 175 | 151 | 25 | Yes | 643 | 5,347 |
| Rose Memorial Private Hospital and Clinic.......... | Gen | Part | 14 | 5 | .. | No | ... | ..... |
| St. Vincent's Hospital★◊■ | Gen | Church | 185 | 180 | 29 | Yes | 676 | 5,649 |
| Zem Zem Hospital for Crippled Children......... | Ortho | Frat | 48 | 37 | .. | No | ... | 47 |
| Everett, 1,874—Bedford Co. | | | | | | | | |
| Everett Hospital........... | Gen | Indiv | 20 | 10 | 5 | No | 22 | 303 |
| Franklin, 10,254—Venango Co. | | | | | | | | |
| Franklin Hospital■........ | Gen | Indep | 47 | 20 | 10 | No | 141 | 726 |
| Gettysburg, 5,584—Adams Co. | | | | | | | | |
| Annie M. Warner Hosp.■. | Gen | Indep | 54 | 22 | 6 | Yes | 81 | 724 |
| Girard, 1,554—Erie Co. | | | | | | | | |
| Tuberculosis Sanatorium... | TB | Cy&Co | 21 | 21 | .. | No | ... | ..... |
| Gladwyne, 1,236—Montgomery Co. | | | | | | | | |
| Gladwyne Colony........... | N&M | Indiv | 70 | 68 | .. | ... | ... | ..... |
| Greensburg, 16,508—Westmoreland Co. | | | | | | | | |
| Westmoreland Hospital◊■. | Gen | Indep | 148 | 90 | 12 | No | 329 | 2,529 |
| Greenville, 8,628—Mercer Co. | | | | | | | | |
| Greenville Hospital■........ | Gen | Indep | 45 | 14 | 12 | No | 102 | 629 |
| Grove City, 6,156—Mercer Co. | | | | | | | | |
| Grove City Hospital■..... | Gen | Indep | 30 | 11 | 5 | No | 54 | 419 |
| [illegible] Co. | | | | | | | | |
| ■ | TB | State | 450 | 450 | .. | No | ... | 650 |
| ■ | Gen | Indep | 55 | 27 | 10 | Yes | 131 | 794 |
| Harrisburg, 80,339—Dauphin Co. | | | | | | | | |
| Harrisburg Hospital★◊■... | Gen | Indep | 214 | 150 | 32 | Yes | 504 | 4,736 |
| Harrisburg Polyclinic Hospital★◊■ .................. | Gen | Indep | 150 | 91 | 32 | Yes | 451 | 3,239 |
| Harrisburg State Hosp.+. | N&M | State | 1,791 | 1,660 | .. | No | ... | 286 |
| Keystone Hospital.......... | Gen | Indiv | 27 | 8 | 7 | No | 41 | 272 |
| [illegible] Co. | | | | | | | | |
| [illegible] osp. | Mater | Indiv | 18 | 10 | 16 | Yes | 250 | 396 |
| [illegible] ■.. | Gen | State | 140 | 118 | 10 | Yes | 194 | 4,123 |
| Hollidaysburg, 5,969—Blair Co. | | | | | | | | |
| Blair Co. Hosp. for Insane | N&M | County | 204 | 322 | .. | No | ... | 112 |
| Homestead, 20,141—Allegheny Co. | | | | | | | | |
| Homestead Hospital◊■.... | Gen | Indep | 98 | 66 | 20 | Yes | 257 | 1,606 |
| Honesdale, 5,490—Wayne Co. | | | | | | | | |
| Wayne County Memorial Hospital■ ................ | Gen | Indep | 32 | 11 | 7 | Yes | 63 | 449 |
| Huntingdon, 7,558—Huntingdon Co. | | | | | | | | |
| J. C. Blair Mem. Hosp.◊■ | Gen | Indep | 68 | 51 | 10 | No | 161 | 1,422 |
| Indiana, 9,569—Indiana Co. | | | | | | | | |
| Indiana Hospital◊■......... | Gen | Indep | 126 | 79 | 12 | Yes | 80 | 2,032 |
| Jersey Shore, 5,781—Lycoming Co. | | | | | | | | |
| Jersey Shore Hospital■... | Gen | Indep | 24 | 5 | 4 | No | 40 | 400 |
| Dr. F. G. Sanford's Private Hospital .................. | Gen | Indiv | 17 | 10 | 6 | No | 28 | 327 |
| Johnstown, 66,993—Cambria Co. | | | | | | | | |
| Cambria Hospital■......... | Indus | Indus | 65 | 25 | .. | Yes | ... | 331 |
| Conemaugh Valley Memorial Hospital★◊■ .............. | Gen | Indep | 260 | 190 | 31 | Yes | 453 | 5,147 |
| Lee Homeopathic Hosp.■. | Gen | Indep | 50 | 33 | 10 | Yes | 138 | 1,061 |
| Mendenhall Maternity Hospital ........................ | Mater | Indiv | 14 | 12 | 14 | No | 152 | 175 |
| Mercy Hospital◊■.......... | Gen | Church | 86 | 56 | 14 | Yes | 308 | 1,768 |
| Kane, 6,232—McKean Co. | | | | | | | | |
| Community Hospital■..... | Gen | Indep | 54 | 19 | 12 | No | 85 | 719 |
| Kane Summit Hospital■.. | Gen | Indep | 80 | 14 | 7 | No | 38 | 468 |
| Kingston, 21,600—Luzerne Co. | | | | | | | | |
| Nesbitt Memorial Hosp.■. | Gen | Indep | 116 | 63 | 16 | Yes | 250 | 2,417 |
| Kittanning, [illegible]—Armstrong Co. | | | | | | | | |
| ■ | Gen | Indep | 35 | 21 | 5 | No | 36 | 682 |
| [illegible] Co. | | | | | | | | |
| Lancaster Gen. Hosp.★◊■. | Gen | Indep | 241 | 140 | 32 | Yes | 588 | 4,412 |
| Rossmere Sanatorium■..... | TB | Cy&Co | 56 | 52 | .. | No | ... | ..... |
| St. Joseph's Hospital◊■.. | Gen | Church | 170 | 108 | 30 | Yes | 404 | 3,115 |
| Latrobe, 10,644—Westmoreland Co. | | | | | | | | |
| Latrobe Hospital◊■........ | Gen | Indep | 62 | 40 | 10 | No | 136 | 1,053 |
| Lebanon, 25,561—Lebanon Co. | | | | | | | | |
| Good Samaritan Hospital◊ | Gen | Indep | 90 | 39 | 10 | Yes | 156 | 1,299 |
| Lebanon Sanatorium■...... | Gen | Indep | 25 | 13 | 5 | No | 53 | 462 |
| [illegible] Co. | | | | | | | | |
| [illegible] Hospital■...... | Gen | Church | 20 | 12 | 2 | No | 56 | 267 |
| [illegible] Co. | | | | | | | | |
| Lewistown Hospital◊....... | Gen | Indep | 80 | 50 | 8 | Yes | 40 | 1,460 |
| Lock Haven, 9,668—Clinton Co. | | | | | | | | |
| Lock Haven Hospital◊■... | Gen | Indep | 80 | 37 | 10 | Yes | 127 | 1,151 |
| Teah Private Hospital..... | Gen | Indiv | 22 | 16 | 6 | No | 33 | ..... |
| Lock No. 4——618—Washington Co. | | | | | | | | |
| Charleroi-Monessen Hosp.■ | Gen | Indep | 65 | 42 | 18 | Yes | 87 | 1,159 |
| Mayview, 47—Allegheny Co. | | | | | | | | |
| Pittsburgh City Home and Hospitals◊■ ............. | N&M | City | 1,834 | 2,224 | 8 | Yes | 15 | 1,987 |
| McKeesport, 54,632—Allegheny Co. | | | | | | | | |
| McKeesport Hospital★◊■... | Gen | Indep | 223 | 176 | 40 | Yes | 379 | 4,337 |
| McKee's Rocks, 18,116—Allegheny Co. | | | | | | | | |
| Ohio Valley Gen. Hosp.◊■ | Gen | Indep | 51 | 30 | 9 | Yes | 60 | 971 |
| [illegible] Co. | | | | | | | | |
| ■ | Gen | Indep | 75 | 35 | 14 | No | 95 | 1,110 |
| [illegible] | Gen | Indep | 107 | 45 | 13 | Yes | 131 | 1,595 |
| Media, 5,372—Delaware Co. | | | | | | | | |
| Brookwood Farm........... | N&M | Indiv | 16 | 6 | .. | No | ... | ..... |
| Media Hospital■............ | Gen | Indiv | 20 | 8 | 3 | Yes | 20 | 277 |
| Mercer, 2,125—Mercer Co. | | | | | | | | |
| Mercer Cottage Hospital◊■ | Gen | Indep | 50 | 33 | 3 | No | 33 | 1,323 |
| Mercer Sanitarium◊........ | N&M | Part | 43 | 38 | .. | No | ... | 71 |
| Meyersdale, 3,065—Somerset Co. | | | | | | | | |
| Hazel McGilvery Hospital■ | Gen | Indiv | 10 | 4 | 2 | No | 12 | 212 |
| Meyersdale Hospital■...... | Gen | Indiv | 15 | 5 | 2 | Yes | ... | 144 |
| Middleburg, 1,024—Snyder Co. | | | | | | | | |
| Joseph L. Potter Hospital | Gen | Indiv | 10 | 5 | 2 | Yes | ... | 160 |
| Monaca, 4,641—Beaver Co. | | | | | | | | |
| Beaver County Sanatorium | TB | County | 63 | 63 | .. | No | ... | 105 |
| Monessen, 20,268—Westmoreland Co. | | | | | | | | |
| Gemmill Hospital■......... | EENT | Indiv | 12 | 4 | .. | ... | ... | 477 |
| Monongahela, 8,675—Washington Co. | | | | | | | | |
| Memorial Hospital■........ | Gen | Indep | 66 | 39 | 6 | Yes | 60 | 995 |
| Mt. Pleasant, 5,869—Westmoreland Co. | | | | | | | | |
| Mt. Pleasant Mem. Hosp. | Gen | Indep | 65 | 30 | 10 | No | ... | ..... |
| Muncy, 2,413—Lycoming Co. | | | | | | | | |
| Muncy Valley Private Hospital■ ..................... | Gen | Indep | 18 | 8 | 7 | No | 48 | 498 |
| Nanticoke, 26,043—Luzerne Co. | | | | | | | | |
| State Hospital◊............ | Gen | State | 120 | 96 | 10 | Yes | 157 | 2,807 |
| New Brighton, 9,950—Beaver Co. | | | | | | | | |
| Beaver Valley Gen. Hosp.◊■ | Gen | Indep | 70 | 33 | 10 | No | 153 | 1,113 |
| New Castle, 48,674—Lawrence Co. | | | | | | | | |
| Jameson Mem. Hosp.★◊■.. | Gen | Indep | 131 | 68 | 34 | No | 282 | 2,226 |
| New Castle Hospital◊■.... | Gen | Church | 105 | 63 | 20 | No | 326 | 2,115 |
| New Kensington, 16,762—Westmoreland Co. | | | | | | | | |
| Citizens General Hosp.◊■.. | Gen | Indep | 87 | 70 | 13 | No | 208 | 1,945 |
| Norristown, 35,853—Montgomery Co. | | | | | | | | |
| Montgomery Hospital★◊■. | Gen | Indep | 105 | 68 | 20 | Yes | 415 | 2,339 |
| Norristown State Hosp.+.. | N&M | State | 2,961 | 3,026 | .. | No | ... | 468 |
| Riverview Hospital......... | Gen | Indep | 42 | 28 | 10 | No | 122 | 709 |
| Northampton, 9,839—Northampton Co. | | | | | | | | |
| Haff Hospital■............. | Gen | Indiv | 35 | 13 | 5 | No | 16 | 502 |
| Oil City, 22,075—Venango Co. | | | | | | | | |
| Grandview Sanatorium..... | TB | Indep | 50 | 25 | .. | No | ... | 48 |
| Oil City General Hosp.◊■. | Gen | Indep | 120 | 56 | 22 | No | 258 | 1,360 |
| Palmerton, 7,678—Carbon Co. | | | | | | | | |
| Palmerton Hospital◊■..... | Gen | Indep | 65 | 48 | 7 | Yes | 136 | 1,761 |
| Peckville, 3,915—Lackawanna Co. | | | | | | | | |
| Mid-Valley Hospital◊■..... | Gen | Indep | 62 | 43 | 8 | No | 175 | 1,258 |
| Philadelphia, 1,950,961—Philadelphia Co. | | | | | | | | |
| American Hosp. for Diseases of the Stomach... | Gen | Indep | 39 | 23 | .. | Yes | 4 | 1,127 |
| American Oncologic Hosp.■ | Sk&Ca | Indep | 45 | 28 | .. | Yes | ... | 583 |
| Anderson Hospital......... | Gen | Indep | 86 | 32 | 26 | No | 268 | 2,735 |
| Babies' Hospital........... | Ch'l | Indep | 14 | 10 | .. | Yes | ... | 368 |
| Broad Street Hospital■... | Gen | Indep | 80 | 39 | 30 | Yes | 394 | 1,471 |
| Chestnut Hill Hospital★◊■ | Gen | Indep | 92 | 66 | 20 | Yes | 399 | 2,239 |
| Children's Heart Hosp.■.. | Card | Indep | 42 | 42 | .. | No | ... | 78 |
| Children's Hospital+◊■..... | Chil | Indep | 120 | 90 | .. | Yes | ... | 2,263 |
| Fairmount Farm........... | N&M | Indep | 44 | 22 | .. | No | ... | 150 |
| Frankford Hospital★◊■.... | Gen | Indep | 119 | 89 | 23 | Yes | 465 | 3,243 |
| Frederick Douglass Memorial Hospital (col.)★. | Gen | Indep | 65 | 37 | 6 | Yes | 84 | 1,006 |
| Friends Hospital+◊........ | N&M | Indep | 190 | 155 | .. | No | ... | 117 |
| Garretson Hospital◊■...... | Mater | Indep | 40 | 21 | 40 | Yes | 651 | 811 |
| Germantown Dispensary and Hospital★◊■ .............. | Gen | Indep | 310 | 215 | 50 | Yes | 1,362 | 6,400 |
| Graduate Hosp. of the Univ. of Pennsylvania★+◊■..... | Gen | Indep | 475 | 278 | 18 | Yes | 288 | 8,905 |
| Hahnemann Medical College Hospital★◊■ .............. | Gen | Indep | 515 | 402 | 77 | Yes | 1,454 | 10,736 |
| Home for Consumptives■. | TB | Church | 105 | 99 | .. | No | ... | 107 |
| Hospital of the Protestant Episcopal Church★◊■..... | Gen | Church | 450 | 300 | .. | Yes | ... | 6,105 |

Key to symbols and abbreviations is on page 2078

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Hospital of the University of Pennsylvania★+◊■ | Gen | State | 557 | 353 | 32 | Yes | 544 | 9,622 |
| Hospital of the Woman's Medical College★◊■ | Gen | Indep | 150 | 53 | 21 | Yes | 283 | 1,846 |
| Institute of the Pennsylvania Hospital | N&M | Indep | 60 | 34 | .. | Yes | ... | ..... |
| Jeanes Hospital+■ | Cancer | Indep | 72 | 49 | .. | Yes | ... | 288 |
| Jefferson Medical College Hospital★◊■ | Gen | Indep | 631 | 523 | 57 | Yes | 973 | 12,452 |
| Jewish Hospital★◊■ | Gen | Indep | 333 | 243 | 70 | Yes | 1,001 | 5,964 |
| Joseph Price Mem. Hosp.◊■ | Gen | Indep | 60 | 33 | 5 | Yes | 57 | 588 |
| Kensington Hospital for Women◊■ | Mater | Indep | 70 | 52 | 31 | Yes | 787 | 1,500 |
| Lankenau Hospital★◊■ | Gen | Indep | 268 | 186 | 30 | Yes | 507 | 3,263 |
| Mary J. Drexel Home and Children's Hospital+■ | Chil | Church | 47 | 25 | 4 | Yes | ... | 995 |
| Memorial Hospital★■ | Gen | Indep | 100 | 75 | 15 | Yes | 230 | ..... |
| Mercy Hospital (col.)★◊ | Gen | Indep | 94 | 73 | 10 | Yes | 184 | 1,587 |
| Methodist Episcopal Hospital★◊ | Gen | Church | 264 | 184 | 37 | Yes | 883 | 5,841 |
| Metropolitan Hospital | Gen | Indep | 34 | 14 | 8 | No | 98 | 1,202 |
| Misericordia Hospital★◊■ | Gen | Church | 250 | 147 | 36 | Yes | 895 | 4,728 |
| Mt. Sinai Hospital★◊■ | Gen | Indep | 261 | 193 | 55 | Yes | 822 | 6,326 |
| National Stomach Hosp.■ | Gen | Indep | 46 | 19 | 10 | Yes | ... | 595 |
| Northeastern Hospital★◊■ | Gen | Indep | 90 | 62 | 12 | Yes | 395 | 2,222 |
| Northern Liberties Hosp.■ | Gen | Indep | 58 | 45 | 11 | Yes | 139 | 1,835 |
| Northwestern General Hospital◊■ | Gen | Indep | 57 | 38 | 8 | Yes | 137 | 1,576 |
| Pennsylvania Hospital★+◊■ | Gen | Indep | 430 | 323 | 130 | Yes | 1,925 | 10,018 |
| Pennsylvania Hosp. Dept. for Mental and Nervous Diseases+◊ | N&M | Indep | 280 | 211 | .. | Yes | ... | 188 |
| Philadelphia General Hospital★+◊■▲ | Gen | City | 2,000 | 1,802 | 60 | Yes | 975 | 21,894 |
| Philadelphia Hospital for Contagious Diseases⊙ | Iso | City | 900 | 408 | .. | No | ... | 4,584 |
| Philadelphia Hospital for Mental Diseases | N&M | Cy&Co | 2,500 | 4,518 | .. | No | ... | 1,485 |
| Philadelphia Ortho. Hosp. & Infirmary for Nervous Diseases+◊■ | Ortho,Nerv | Indep | 144 | 71 | .. | Yes | ... | 779 |
| Presbyterian Hospital★◊■ | Gen | Church | 282 | 182 | 42 | Yes | 564 | 4,214 |
| Preston Retreat | Mater | Indep | 50 | 31 | 35 | Yes | 510 | 500 |
| Rush Hosp. for Consumption and Allied Diseases■ | TB | Indep | 178 | 108 | .. | No | ... | 592 |
| St. Agnes' Hospital★◊▲ | Gen | Church | 300 | 205 | 46 | Yes | 674 | 4,637 |
| St. Christopher's Hospital for Children+◊■ | Chil | Indep | 75 | 58 | .. | Yes | ... | 2,213 |
| St. Joseph's Hospital★◊■ | Gen | Church | 238 | 96 | 42 | Yes | 490 | 2,854 |
| St. Luke's and Children's Homeo. Hospitals★+◊■ | ChilGen | Indep | 242 | 122 | 58 | Yes | 529 | 3,360 |
| St. Mary's Hospital★◊ | Gen | Church | 167 | 110 | 43 | Yes | ... | 3,420 |
| St. Vincent's Hospital for Women and Children | Gen | Church | 439 | 305 | 32 | Yes | 518 | 1,947 |
| Shriners' Hospital for Crippled Children■ | Ortho | Frat | 120 | 122 | .. | Yes | ... | 288 |
| Stetson Hospital◊■ | Gen | Indep | 62 | 40 | 16 | Yes | 155 | 1,296 |
| Temple University Hosp.★◊■ | Gen | Indep | 321 | 250 | 35 | Yes | 751 | 7,842 |
| U. S. Naval Hospital★■ | Gen | Navy | 717 | 576 | .. | No | ... | 5,638 |
| Veterans Admin. Hospital | N&M | VetAd | 416 | 355 | .. | Yes | ... | 303 |
| Wills Hospital+■ | Eye | Indep | 126 | 83 | .. | Yes | ... | 2,413 |
| Woman's Hospital★◊■ | Gen | Indep | 130 | 100 | 40 | Yes | 902 | 2,879 |
| Women's Homeopathic Hospital★◊■ | Gen | Indep | 160 | 111 | 40 | Yes | 590 | 2,745 |
| Philipsburg, 3,600—Centre Co. | | | | | | | | |
| Dr. McGirk Sanitarium | Gen | Indiv | 20 | 6 | 6 | No | 41 | 299 |
| Philipsburg State Hosp.◊■ | Gen | State | 96 | 78 | 12 | Yes | 111 | 1,825 |
| Phoenixville, 12,029—Chester Co. | | | | | | | | |
| Phoenixville Hospital◊■ | Gen | Indep | 58 | 23 | 9 | Yes | 102 | 770 |
| Pittsburgh, 669,817—Allegheny Co. | | | | | | | | |
| Allegheny Gen. Hosp.★+◊■ | Gen | Indep | 379 | 315 | 26 | Yes | 696 | 7,143 |
| Belvedere General Hosp. | Gen | Indep | 40 | 14 | 8 | Yes | ... | ..... |
| Children's Hosp+⊙■ | Chil | Indep | 196 | 121 | .. | Yes | ... | 2,501 |
| Elizabeth Steel Magee Hospital+◊■ | Gen | Indep | 262 | 189 | 133 | Yes | 2,363 | 4,440 |
| Eye and Ear Hospital+ | EENT | Indep | 50 | 30 | 5 | Yes | ... | 3,178 |
| Fairview Sanatorium | N&M | Indep | 12 | 11 | .. | No | ... | 22 |
| Haddon Maternity Hosp. | Mater | Indep | 19 | 10 | 12 | No | 246 | 435 |
| Homeopathic Medical and Surgical Hospital and Dispensary★◊■ | Gen | Indep | 265 | 170 | 45 | Yes | 703 | 4,221 |
| Leech Farm Sanatorium■ | TB | City | 285 | 275 | .. | Yes | ... | 360 |
| Mercy Hospital★+◊■ | Gen | Church | 622 | 545 | 48 | Yes | 598 | 10,411 |
| Montefiore Hospital★◊■ | Gen | Indep | 194 | 125 | 31 | Yes | 421 | 4,123 |
| Municipal Hospital for Contagious Diseases | Iso | City | 250 | 67 | .. | No | ... | 985 |
| Passavant Hospital★◊■ | Gen | Church | 126 | 82 | 24 | Yes | 270 | 2,621 |
| Pittsburgh Hospital★◊■ | Gen | Church | 176 | 138 | 24 | Yes | 457 | 3,461 |
| Presbyterian Hospital★◊■ | Gen | Church | 188 | 138 | 9 | Yes | 73 | 3,636 |
| Roselia Foundling and Maternity Hospital | Mater | Indep | 83 | 47 | 132 | Yes | 236 | ..... |
| St. Francis Hospital★+◊■▲ | Gen | Church | 600 | 483 | 35 | Yes | 688 | 7,610 |
| St. John's Gen. Hosp.★◊■ | Gen | Church | 180 | 122 | 22 | Yes | 422 | 2,935 |
| St. Joseph's Hospital★◊■ | Gen | Church | 128 | 94 | 12 | Yes | 151 | 2,310 |
| St. Margaret Memorial Hospital★◊■ | Gen | Church | 152 | 76 | 21 | Yes | 262 | 2,237 |
| South Side Hospital★◊ | Gen | Indep | 210 | 158 | 15 | Yes | 332 | 4,251 |
| Tuberculosis League Hospital+■ | TB | Indep | 150 | 143 | .. | Yes | ... | 253 |
| U. S. Marine Hospital■ | Gen | USPHS | 92 | 88 | .. | Yes | ... | 677 |
| Western Pennsylvania Hospital★+◊■ | Gen | Indep | 600 | 497 | 51 | Yes | 1,087 | 10,222 |
| Pittston, 18,246—Luzerne Co. | | | | | | | | |
| Pittston Hospital◊ | Gen | Indep | 100 | 80 | 18 | Yes | 145 | 2,386 |

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Pottstown, 19,430—Montgomery Co. | | | | | | | | |
| Homeopathic Hospital■ | Gen | Indep | 52 | 15 | 10 | Yes | 90 | 674 |
| Pottstown Hospital◊■ | Gen | Indep | 66 | 35 | 9 | Yes | 152 | 1,282 |
| Pottsville, 24,300—Schuylkill Co. | | | | | | | | |
| Lemos B. Warne Hospital■ | Gen | Indiv | 75 | 39 | 12 | Yes | 64 | 1,270 |
| A. C. Milliken Hospital■ | Gen | Indep | 58 | 25 | 10 | Yes | ... | 1,030 |
| Pottsville Hospital★◊■ | Gen | Indep | 128 | 77 | 12 | Yes | 147 | 2,530 |
| Punxsutawney, 9,266—Jefferson Co. | | | | | | | | |
| Adrian Hospital | Gen | Indep | 102 | 57 | 8 | No | 128 | 1,704 |
| Quakertown, 4,883—Bucks Co. | | | | | | | | |
| Quakertown Hospital■ | Gen | Indep | 50 | 24 | 10 | Yes | 95 | 607 |
| Ransom, 57—Lackawanna Co. | | | | | | | | |
| Ransom Home and Mental Hospital | N&M | City | 370 | 355 | .. | No | ... | 41 |
| Reading, 111,171—Berks Co. | | | | | | | | |
| Berks Co. Tuber. Sanat.■ | TB | County | 89 | 69 | .. | Yes | ... | 138 |
| Homeopathic Medical and Surgical Hospital◊■ | Gen | Indep | 100 | 79 | 15 | Yes | 296 | 2,549 |
| Reading Hospital★◊■ | Gen | Indep | 230 | 191 | 38 | Yes | 604 | 4,816 |
| St. Joseph's Hospital★◊■ | Gen | Church | 180 | 135 | 25 | Yes | 406 | 4,098 |
| Dr. Stryker's Private Hospital | Gen | Indiv | 24 | 8 | 4 | No | ... | ..... |
| Renovo, 3,947—Clinton Co. | | | | | | | | |
| Renovo Hospital■ | Gen | Indep | 26 | 10 | 6 | No | 52 | 328 |
| Retreat, 31—Luzerne Co. | | | | | | | | |
| Retreat Mental Hospital | N&M | County | 750 | 794 | .. | No | ... | 165 |
| Ridgway, 6,313—Elk Co. | | | | | | | | |
| Elk. County Gen. Hosp.■ | Gen | Indep | 70 | 33 | 8 | No | 110 | 1,134 |
| Ridley Park, 3,356—Delaware Co. | | | | | | | | |
| Taylor Hospital■ | Gen | Indep | 109 | 55 | 15 | Yes | 368 | 1,900 |
| Roaring Spring, 2,724—Blair Co. | | | | | | | | |
| Nason Hospital■ | Gen | Indep | 52 | 33 | 6 | Yes | 100 | 620 |
| Rochester, 7,726—Beaver Co. | | | | | | | | |
| Rochester General Hosp.◊■ | Gen | Indep | 108 | 77 | 10 | Yes | 246 | 3,069 |
| St. Mary's, 7,433—Elk Co. | | | | | | | | |
| Andrew Kaul Mem. Hosp.■ | Gen | Indep | 44 | 14 | 6 | No | 55 | 506 |
| Sayre, 7,902—Bradford Co. | | | | | | | | |
| Robert Packer Hosp.★◊■ | Gen | Indep | 255 | 199 | 20 | Yes | 295 | 6,106 |
| Schuylkill Haven, 6,514—Schuylkill Co. | | | | | | | | |
| Schuylkill County Hospital for Mental Diseases | N&M | County | 500 | 478 | .. | Yes | ... | 80 |
| Scranton, 143,433—Lackawanna Co. | | | | | | | | |
| Hahnemann Hospital★◊■ | Gen | Indep | 109 | 81 | 16 | Yes | 371 | 2,381 |
| Lackawanna County Tuberculosis Hospital | TB | County | 135 | 122 | .. | No | ... | 150 |
| Mercy Hospital◊ | Gen | Church | 90 | 74 | 20 | No | 500 | 2,301 |
| Moses Taylor Hospital★◊■ | Gen | Indep | 100 | 81 | .. | Yes | ... | 2,092 |
| St. Joseph's Children's and Maternity Hospital⊙ | Mater | Church | 148 | 95 | 40 | No | 36 | 226 |
| St. Mary's Keller Memorial Hospital◊■ | Gen | Church | 36 | 34 | 6 | No | ... | 951 |
| Scranton Private Hosp.■ | Gen | Indep | 30 | 16 | 10 | No | ... | 1,221 |
| Scranton State Hosp.★◊■ | Gen | State | 185 | 159 | 13 | Yes | 177 | 3,163 |
| West Side Hospital◊■ | Gen | Indep | 55 | 50 | 10 | Yes | 237 | 1,833 |
| Selinsgrove, 2,797—Snyder Co. | | | | | | | | |
| Selinsgrove State Colony for Epileptics | Epil | State | 368 | 144 | .. | ... | ... | 34 |
| Sellersville, 2,063—Bucks Co. | | | | | | | | |
| Grand View Hospital■ | Gen | Indep | 65 | 30 | 7 | Yes | 87 | 764 |
| Sewickley, 5,599—Allegheny Co. | | | | | | | | |
| Valley Hospital◊ | Gen | Indep | 109 | 90 | 17 | Yes | 375 | 2,269 |
| Shamokin, 20,274—Northumberland Co. | | | | | | | | |
| Shamokin State Hospital■ | Gen | State | 85 | 76 | 5 | Yes | 60 | 2,606 |
| Sharon, 25,908—Mercer Co. | | | | | | | | |
| Christian H. Buhl Hosp.◊■ | Gen | Indep | 108 | 55 | 17 | Yes | 274 | 1,893 |
| Sharpsburg, 8,642—Allegheny Co. | | | | | | | | |
| Veterans Admin. Hospital■ | TB | VetAd | 226 | 210 | .. | No | ... | 304 |
| Shenandoah, 21,782—Schuylkill Co. | | | | | | | | |
| Locust Mountain State Hospital■ | Gen | State | 70 | 30 | 5 | Yes | 24 | 687 |
| Somerset, 4,395—Somerset Co. | | | | | | | | |
| Somerset Community Hosp. | Gen | Indep | 20 | 10 | 6 | Yes | 44 | 521 |
| South Mountain, 29—Franklin Co. | | | | | | | | |
| Pennsylvania State Sanat.+■ | TB | State | 970 | 843 | .. | No | ... | 1,324 |
| Spangler, 2,761—Cambria Co. | | | | | | | | |
| Miners' Hospital of Northern Cambria◊■ | Gen | Indep | 69 | 56 | 6 | No | 62 | 1,550 |
| Sunbury, 15,626—Northumberland Co. | | | | | | | | |
| Mary M. Packer Hospital■ | Gen | Indep | 61 | 38 | 9 | Yes | 121 | 1,143 |
| Susquehanna, 3,203—Susquehanna Co. | | | | | | | | |
| Simon H. Barnes Memorial Hospital | Gen | Indep | 16 | 8 | 5 | No | 44 | 241 |
| Tarentum, 9,551—Allegheny Co. | | | | | | | | |
| Allegheny Valley Hosp.◊■ | Gen | Indep | 94 | 62 | 10 | No | 161 | 1,721 |
| Taylor, 10,428—Lackawanna Co. | | | | | | | | |
| Taylor Hospital◊■ | Gen | Indep | 40 | 36 | 8 | Yes | 70 | 1,151 |
| Titusville, 8,055—Crawford Co. | | | | | | | | |
| Titusville Hospital◊ | Gen | Indep | 44 | 18 | 6 | No | 107 | 727 |
| Torrance, 414—Westmoreland Co. | | | | | | | | |
| Torrance State Hospital | N&M | State | 880 | 794 | .. | No | ... | 384 |
| Uniontown, 19,544—Fayette Co. | | | | | | | | |
| Uniontown Hospital★◊■ | Gen | Indep | 205 | 140 | 20 | Yes | 293 | 3,602 |
| Upland, 2,500—Delaware Co. | | | | | | | | |
| Bram Goiter Institute | Goiter | Indiv | 25 | 10 | .. | No | ... | ..... |
| Warren, 14,863—Warren Co. | | | | | | | | |
| Warren General Hospital◊ | Gen | Indep | 80 | 46 | 22 | No | 379 | 1,664 |
| Warren State Hospital+◊ | N&M | State | 1,596 | 1,768 | .. | Yes | ... | 385 |
| Washington, 24,545—Washington Co. | | | | | | | | |
| Hillsview Farms Sanit. | Gen | Indiv | 50 | 42 | .. | No | ... | 390 |
| Washington Hospital★◊■ | Gen | Indep | 138 | 108 | 28 | Yes | 316 | 2,899 |
| Waymart, 902—Wayne Co. | | | | | | | | |
| Farview State Hospital■ | N&M | State | 625 | 620 | .. | Yes | ... | 52 |
| Waynesboro, 10,167—Franklin Co. | | | | | | | | |
| Waynesboro Hospital■ | Gen | Indep | 87 | 29 | 10 | No | 143 | 875 |

Key to symbols and abbreviations is on page 2078

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Waynesburg, 4,915—Greene Co. | | | | | | | | |
| Greene County Memorial Hospital■ | Gen | Indep | 31 | 17 | 6 | No | 36 | 703 |
| Wernersville, 1,096—Berks Co. | | | | | | | | |
| Wernersville State Hosp. | N&M | State | 1,250 | 1,121 | .. | No | ... | 99 |
| West Chester, 12,325—Chester Co. | | | | | | | | |
| Chester County Hosp.*◊■ | Gen | Indep | 132 | 75 | 22 | Yes | 263 | 2,345 |
| Homeopathic Hospital◊■ | Gen | Indep | 67 | 39 | 10 | Yes | 150 | 1,155 |
| Veil Maternity Hospital | Mater | Indiv | 90 | 45 | 35 | No | 243 | 261 |
| West Grove, 1,375—Chester Co. | | | | | | | | |
| West Grove Hospital | Gen | Indiv | 23 | 14 | 8 | ... | ... | ..... |
| White Haven, 1,537—Luzerne Co. | | | | | | | | |
| White Haven Sanatorium◊ | TB | Indep | 250 | 239 | .. | No | ... | 695 |
| Wilkes-Barre, 86,626—Luzerne Co. | | | | | | | | |
| Mercy Hospital*◊■ | Gen | Church | 203 | 127 | 17 | Yes | 367 | 4,236 |
| Wilkes-Barre Gen. Hosp.*◊ | Gen | Indep | 415 | 203 | 57 | Yes | 443 | 6,341 |
| Wyoming Valley Homeopathic Hospital◊■ | Gen | Indep | 70 | 52 | 10 | Yes | 322 | 2,096 |
| Wilkinsburg, 29,539—Allegheny Co. | | | | | | | | |
| Columbia Hospital*◊■ | Gen | Church | 178 | 114 | 26 | Yes | 399 | 2,589 |
| Williamsport, 45,729—Lycoming Co. | | | | | | | | |
| Rothfuss Clinic & Hosp.■ | Gen | Part | 22 | 10 | 5 | Yes | 41 | 400 |
| Williamsport Hospital*◊■ | Gen | Indep | 231 | 110 | 44 | Yes | 432 | 3,535 |
| Williamstown, 2,958—Dauphin Co. | | | | | | | | |
| Williams Valley Hospital■ | Gen | Indiv | 24 | 5 | 2 | Yes | 4 | 100 |
| Windber, 9,205—Somerset Co. | | | | | | | | |
| Windber Hospital*◊■ | Gen | Indep | 98 | 80 | 4 | Yes | 131 | 2,192 |
| Woodville, 510—Allegheny Co. | | | | | | | | |
| Allegheny County Home and Hospital for Insane | N&M | County | 2,778 | 2,484 | .. | No | ... | ..... |
| York, 55,254—York Co. | | | | | | | | |
| West Side Sanitarium□ | Gen | Indiv | 50 | 29 | 10 | No | 74 | 941 |
| York Hospital*◊■ | Gen | Indep | 194 | 112 | 25 | Yes | 369 | 3,606 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bellevue, 10,252—Allegheny Co. | | | | | | | | |
| Salvation Army Woman's Home and Hospital□ | Mater | Church | 10 | 4 | 10 | No | 110 | 135 |
| Broomall, 125—Delaware Co. | | | | | | | | |
| Convalscent Hospital | Conv | Frat | 30 | 18 | .. | No | ... | 251 |
| Bryn Mawr, 3,056—Montgomery Co. | | | | | | | | |
| Bryn Mawr College Infirm. | Inst | Indep | 14 | 8 | .. | Yes | ... | 300 |
| Cambridge Springs, 1,665—Crawford Co. | | | | | | | | |
| Logan's Hospital | Gen | Indiv | 8 | 3 | 2 | No | 10 | 90 |
| Carlisle, 12,596—Cumberland Co. | | | | | | | | |
| Cumberland County Home□ | Inst | County | 24 | 20 | .. | No | ... | 15 |
| Chambersburg, 13,788—Franklin Co. | | | | | | | | |
| Wilson College for Women Infirmary | Inst | Indep | 10 | 2 | .. | ... | ... | ..... |
| Darby, 9,899—Delaware Co. | | | | | | | | |
| St. Francis' Country House for Conv. & St. Francis Hall for Incurables | ConvIncur | Church | 50 | 47 | 5 | No | ... | 592 |
| Devon, 364—Chester Co. | | | | | | | | |
| Favorlea Farm | N&M | Indiv | 12 | ... | .. | ... | ... | ..... |
| Perfect Rest | N&M | Indiv | 10 | 2 | .. | No | ... | ..... |
| Ebensburg, 3,063—Cambria Co. | | | | | | | | |
| Cambria County Hosp.■▲ | Inst | County | 108 | 75 | 5 | No | 8 | ..... |
| Elwyn, 162—Delaware Co. | | | | | | | | |
| Elwyn Training School | MenDef | Indep | 1,045 | 1,000 | .. | No | ... | 96 |
| Embreeville, 147—Chester Co. | | | | | | | | |
| Chester County Hospital for Insane | N&M | County | 400 | 386 | .. | No | ... | 74 |
| Emsworth (Pittsburgh P.O.), 2,709—Allegheny Co. | | | | | | | | |
| Orphan Asylum of the Holy Family | Inst | Church | 20 | 10 | .. | No | ... | ..... |
| Erie, 115,967—Erie Co. | | | | | | | | |
| Lakeview Hospital | Iso | City | 74 | ... | .. | No | ... | ..... |
| Louise Home■ | TB | Indep | 16 | 14 | .. | No | ... | 53 |
| Gibsonia, 138—Allegheny Co. | | | | | | | | |
| St. Barnabas Free Home. | Incur | Church | 107 | 107 | .. | ... | ... | ..... |
| Harmarville, 786—Allegheny Co. | | | | | | | | |
| Harmarville Conv. Home. | Conv | Indep | 45 | 45 | 27 | No | ... | 229 |
| Huntingdon, 7,558—Huntingdon Co. | | | | | | | | |
| Pennsylvania Industrial Reformatory | Inst | State | 36 | 20 | .. | Yes | ... | 240 |
| Johnstown, 66,993—Cambria Co. | | | | | | | | |
| Municipal Hospital■ | Iso | City | 100 | 5 | .. | No | ... | 75 |
| Salus Private Hospital | Alcoh | Indiv | 12 | ... | .. | No | ... | ..... |
| Lancaster, 59,949—Lancaster Co. | | | | | | | | |
| Lancaster County Hospital and Hospital for Insane | N&M | Cy&Co | 315 | 286 | .. | Yes | ... | 37 |
| Lansdowne, 9,542—Delaware Co. | | | | | | | | |
| Sanatorium School | Ortho | Indiv | 30 | 21 | .. | No | ... | 21 |
| Laurelton, 327—Union Co. | | | | | | | | |
| Laurelton State Village | MenDef | State | 560 | 664 | .. | No | ... | ..... |
| Loysville, 400—Perry Co. | | | | | | | | |
| Tressler Orphans Home | Inst | Church | 40 | 6 | .. | No | ... | 120 |
| Mercer, 2,125—Mercer Co. | | | | | | | | |
| Mercer County Home and Hospital | N&M | County | 220 | 199 | .. | No | ... | 43 |
| Middletown, 6,085—Dauphin Co. | | | | | | | | |
| Odd Fellows' Home | Inst | Frat | 50 | 47 | .. | No | ... | 55 |
| Morganza,—Washington Co. | | | | | | | | |
| Pennsylvania Training School■ | Inst | State | 13 | 4 | .. | Yes | 6 | 1,602 |
| Nazareth, 5,505—Northampton Co. | | | | | | | | |
| Northampton County Almshouse■ | Inst | County | 95 | 90 | 8 | No | ... | ..... |
| New Brighton, 9,950—Beaver Co. | | | | | | | | |
| Beaver County Children's Home | Inst | Indep | 10 | ... | .. | No | ... | 19 |
| New Wilmington, 907—Lawrence Co. | | | | | | | | |
| Overlook Sanitarium | Conv | Indiv | 40 | 30 | .. | No | .... | ..... |
| North East, 3,670—Erie Co. | | | | | | | | |
| St. Barnabas' House by the Lake | Incur | Church | 28 | 28 | .. | No | ... | 30 |
| Oakbourne, 32—Chester Co. | | | | | | | | |
| James C. Smith Memorial Home | Conv | Church | 18 | 16 | .. | ... | ... | 331 |
| Pennsylvania Epileptic Hospital and Colony Farm | Epil | Indep | 110 | 106 | .. | No | ... | 12 |
| Olyphant, 10,743—Lackawanna Co. | | | | | | | | |
| Blakely Home | N&M | Indep | 155 | 136 | .. | No | ... | ..... |
| Pennhurst,—Chester Co. | | | | | | | | |
| Pennhurst State School+ | MenDef | State | 1,500 | 1,280 | .. | No | ... | 145 |
| Philadelphia, 1,950,961—Philadelphia Co. | | | | | | | | |
| Bello Vista Sanatorium | Conv | Indiv | 80 | 50 | .. | No | ... | 10 |
| Belmont Hospital | Mater | Church | 10 | 1 | 10 | No | 142 | 295 |
| Brown's Farm | Chil | City | 70 | 60 | .. | ... | ... | ..... |
| Chester Avenue Private Hospital | Gen | Indiv | 9 | 5 | 9 | No | 152 | 320 |
| Eastern State Penitentiary Hospital■ | Inst | State | 69 | 43 | .. | No | ... | 846 |
| Florence Crittenton Home. | Mater | Indep | 14 | 1 | 14 | No | 22 | 30 |
| Hebrew Sheltering Home | Inst | Indep | 30 | 20 | 6 | ... | ... | ..... |
| Home of the Merciful Savior for Crippled Children | Ortho | Indep | 62 | 61 | .. | No | ... | 62 |
| House of the Good Shepherd (col.) | Vener | Church | 75 | 55 | .. | No | ... | ..... |
| Kenwood Sanitarium | Conv | Indiv | 30 | 25 | .. | No | ... | ..... |
| Logan Private Hospital | N&M | Indiv | 9 | 5 | .. | No | ... | 3 |
| Lutheran Orphanage and Home for Aged | Inst | Church | 34 | 25 | .. | No | ... | ..... |
| Pennsylvania Institution for the Deaf | Inst | Indep | 20 | ... | .. | No | ... | ..... |
| Philadelphia County Prison Hospital■ | Inst | County | 15 | 10 | .. | No | ... | 118 |
| Philadelphia Home for Incurables | Incur | Indep | 203 | 203 | .. | No | ... | 200 |
| Roseneath Farms | Conv | Indep | 24 | 21 | .. | No | ... | 65 |
| Sharon Hall | Conv | Indiv | 30 | 18 | .. | ... | ... | ..... |
| Widener Memorial Industrial Training School for Crippled Children | Ortho | Indep | 100 | 80 | .. | No | ... | 6 |
| Pittsburgh, 669,817—Allegheny Co. | | | | | | | | |
| J. M. Gusky Orphanage and Home | Inst | Indep | 20 | 5 | .. | No | ... | ..... |
| Industrial Home for Crippled Children | Inst | Indep | 28 | 18 | .. | No | ... | ..... |
| Jewish Home for the Aged | Inst | Indep | 20 | 20 | .. | No | ... | 8 |
| Western Penitentiary Hospital | Inst | State | 25 | 21 | .. | No | ... | 727 |
| Polk, 3,337—Venango Co. | | | | | | | | |
| Polk State School+ | MenDef | State | 2,000 | 2,611 | .. | Yes | ... | 264 |
| Pottstown, 19,430—Montgomery Co. | | | | | | | | |
| Hill School Infirmary | Inst | Indep | 30 | 9 | .. | Yes | ... | 447 |
| Retreat, 31—Luzerne Co. | | | | | | | | |
| Retreat Home and Hospital for Chronic Diseases□ | Inst | County | 130 | 100 | .. | No | ... | 501 |
| Rochester, 7,726—Beaver Co. | | | | | | | | |
| Passavant Mem. Homes for the Care of Epileptics | Epil | Church | 150 | 120 | .. | No | ... | ..... |
| Schuylkill Haven, 6,514—Schuylkill Co. | | | | | | | | |
| Schuylkill County Hosp.■ | Inst | County | 150 | ... | .. | No | ... | ..... |
| Scranton, 143,433—Lackawanna Co. | | | | | | | | |
| Municipal Hospital for Contagious Diseases■ | Iso | City | 50 | 6 | .. | No | ... | 88 |
| Woman's Hospital | Mater | Part | 10 | 4 | 10 | No | ... | ..... |
| Shillington, 4,401—Berks Co. | | | | | | | | |
| Berks County Almshouse Hospital■▲ | Inst | County | 131 | 81 | .. | Yes | ... | 50 |
| Somerset, 4,395—Somerset Co. | | | | | | | | |
| Somerset County Home and Hospital | N&M | County | 450 | 492 | .. | No | ... | 34 |
| State College, 4,450—Centre Co. | | | | | | | | |
| Pennsylvania State College Health Service Infirm. | Inst | State | 25 | 6 | .. | Yes | ... | 435 |
| Troy, 1,190—Bradford Co. | | | | | | | | |
| Bradford County Home | Inst | County | 110 | ... | .. | ... | ... | ..... |
| Martha Lloyd School | MenDef | Indiv | 40 | 25 | .. | ... | ... | ..... |
| Tyrone, 9,042—Blair Co. | | | | | | | | |
| Methodist Home for Aged | Inst | Church | 23 | 23 | .. | No | ... | 25 |
| Union City, 3,788—Erie Co. | | | | | | | | |
| Union Hospital | Gen | Indep | 12 | 5 | 5 | No | 25 | 182 |
| Valencia, 308—Butler Co. | | | | | | | | |
| Lillian Convalescent Rest. | Conv | Indep | 59 | 48 | .. | No | ... | 357 |
| Weatherly, 2,531—Carbon Co. | | | | | | | | |
| Middle Coal Field Poor District Almshouse□ | Inst | County | 60 | 42 | .. | No | ... | ..... |
| White Haven, 1,537—Luzerne Co. | | | | | | | | |
| Clair Mont Sanatorium | TB | Indiv | 14 | 10 | .. | ... | ... | 30 |
| Ferncliff Sanatorium | TB | Part | 25 | 11 | .. | No | ... | 34 |
| Sunnyrest Sanatorium | TB | Part | 50 | 24 | .. | No | ... | 60 |
| Wilkes-Barre, 86,626—Luzerne Co. | | | | | | | | |
| Contagious Disease Hosp. | Iso | City | 12 | 4 | .. | No | ... | 100 |
| Willow Grove, 2,065—Montgomery Co. | | | | | | | | |
| Willow Crest for Conv. | Conv | Indep | 75 | 72 | 4 | No | ... | 705 |
| Wyncote, 275—Montgomery Co. | | | | | | | | |
| Crest View Sanitarium | N&M | Indiv | 15 | 4 | .. | ... | ... | ..... |

| Summary for Pennsylvania: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 297 | 63,399 | 50,172 | 562,027 |
| Related institutions | 79 | 11,045 | 9,592 | 10,772 |
| Totals | 376 | 74,444 | 59,764 | 572,799 |
| Refused registration | 21 | 388 | | |

Key to symbols and abbreviations is on page 2078

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Hospital of the University of Pennsylvania★+◊■ | Gen | State | 557 | 353 | 32 | Yes | 544 | 9,622 |
| Hospital of the Woman's Medical College★◊■ | Gen | Indep | 150 | 53 | 21 | Yes | 283 | 1,846 |
| Institute of the Pennsylvania Hospital | N&M | Indep | 60 | 34 | .. | Yes | ... | ..... |
| Jeanes Hospital+■ | Cancer | Indep | 72 | 49 | .. | Yes | ... | 288 |
| Jefferson Medical College Hospital★◊■ | Gen | Indep | 631 | 523 | 57 | Yes | 973 | 12,452 |
| Jewish Hospital★◊■ | Gen | Indep | 333 | 243 | 70 | Yes | 1,001 | 5,964 |
| Joseph Price Mem. Hosp.◊■ | Gen | Indep | 60 | 33 | 5 | Yes | 57 | 588 |
| Kensington Hospital for Women◊■ | Mater | Indep | 70 | 52 | 31 | Yes | 787 | 1,500 |
| Lankenau Hospital★◊■ | Gen | Indep | 268 | 186 | 30 | Yes | 507 | 3,263 |
| Mary J. Drexel Home and Children's Hospital+■ | Chil | Church | 47 | 25 | 4 | Yes | ... | 995 |
| Memorial Hospital★■ | Gen | Indep | 100 | 75 | 15 | Yes | 230 | ..... |
| Mercy Hospital (col.)★◊ | Gen | Indep | 94 | 73 | 10 | Yes | 184 | 1,587 |
| Methodist Episcopal Hospital★◊ | Gen | Church | 264 | 184 | 37 | Yes | 883 | 5,841 |
| Metropolitan Hospital | Gen | Indep | 34 | 14 | 8 | No | 98 | 1,202 |
| Misericordia Hospital★◊■ | Gen | Church | 250 | 147 | 36 | Yes | 895 | 4,728 |
| Mt. Sinai Hospital★◊■ | Gen | Indep | 261 | 193 | 55 | Yes | 822 | 6,326 |
| National Stomach Hosp.■ | Gen | Indep | 46 | 19 | 10 | Yes | ... | 595 |
| Northeastern Hospital★◊■ | Gen | Indep | 90 | 62 | 12 | Yes | 395 | 2,222 |
| Northern Liberties Hosp.■ | Gen | Indep | 58 | 45 | 11 | Yes | 139 | 1,835 |
| Northwestern General Hospital◊■ | Gen | Indep | 57 | 38 | 8 | Yes | 137 | 1,576 |
| Pennsylvania Hospital★+◊■ | Gen | Indep | 430 | 323 | 130 | Yes | 1,925 | 10,018 |
| Pennsylvania Hosp. Dept. for Mental and Nervous Diseases+◊ | N&M | Indep | 280 | 211 | .. | Yes | ... | 188 |
| Philadelphia General Hospital★+◊■▲ | Gen | City | 2,000 | 1,802 | 60 | Yes | 975 | 21,894 |
| Philadelphia Hospital for Contagious Diseases⊙ | Iso | City | 900 | 408 | .. | No | ... | 4,584 |
| Philadelphia Hospital for Mental Diseases | N&M | Cy&Co | 2,500 | 4,518 | .. | No | ... | 1,485 |
| Philadelphia Ortho. Hosp. & Infirmary for Nervous Diseases+◊■ | Ortho,Nerv | Indep | 144 | 71 | .. | Yes | ... | 770 |
| Presbyterian Hospital★◊■ | Gen | Church | 282 | 182 | 42 | Yes | 564 | 4,214 |
| Preston Retreat | Mater | Indep | 50 | 31 | 35 | Yes | 510 | 500 |
| Rush Hosp. for Consumption and Allied Diseases■ | TB | Indep | 178 | 108 | .. | No | ... | 592 |
| St. Agnes' Hospital★◊▲ | Gen | Church | 300 | 205 | 46 | Yes | 674 | 4,637 |
| St. Christopher's Hospital for Children+◊■ | Chil | Indep | 75 | 58 | .. | Yes | ... | 2,213 |
| St. Joseph's Hospital★◊■ | Gen | Church | 238 | 96 | 42 | Yes | 490 | 2,854 |
| St. Luke's and Children's Homeo. Hospitals★+◊■ | ChilGen | Indep | 242 | 122 | 58 | Yes | 529 | 3,360 |
| St. Mary's Hospital★◊ | Gen | Church | 167 | 110 | 43 | Yes | ... | 3,420 |
| St. Vincent's Hospital for Women and Children | Gen | Church | 439 | 305 | 32 | Yes | 518 | 1,947 |
| Shriners' Hospital for Crippled Children■ | Ortho | Frat | 120 | 122 | .. | Yes | ... | 288 |
| Stetson Hospital◊■ | Gen | Indep | 62 | 40 | 16 | Yes | 155 | 1,296 |
| Temple University Hosp.★◊■ | Gen | Indep | 321 | 250 | 35 | Yes | 751 | 7,842 |
| U. S. Naval Hospital★■ | Gen | Navy | 717 | 576 | .. | No | ... | 5,638 |
| Veterans Admin. Hospital | N&M | VetAd | 416 | 355 | .. | Yes | ... | 303 |
| Wills Hospital+■ | Eye | Indep | 126 | 83 | .. | Yes | ... | 2,413 |
| Woman's Hospital★◊■ | Gen | Indep | 130 | 100 | 40 | Yes | 902 | 2,879 |
| Women's Homeopathic Hospital★◊■ | Gen | Indep | 160 | 111 | 40 | Yes | 590 | 2,745 |
| Philipsburg, 3,600—Centre Co. | | | | | | | | |
| Dr. McGirk Sanitarium | Gen | Indiv | 20 | 6 | 6 | No | 41 | 299 |
| Philipsburg State Hosp.◊■ | Gen | State | 96 | 78 | 12 | Yes | 111 | 1,825 |
| Phoenixville, 12,029—Chester Co. | | | | | | | | |
| Phoenixville Hospital◊■ | Gen | Indep | 58 | 23 | 9 | Yes | 102 | 770 |
| Pittsburgh, 669,817—Allegheny Co. | | | | | | | | |
| Allegheny Gen. Hosp.★+◊■ | Gen | Indep | 379 | 315 | 26 | Yes | 696 | 7,143 |
| Belvedere General Hosp. | Gen | Indep | 40 | 14 | 8 | Yes | ... | ..... |
| Children's Hosp+⊙■ | Chil | Indep | 196 | 121 | .. | Yes | ... | 2,501 |
| Elizabeth Steel Magee Hospital+◊■ | Gen | Indep | 262 | 189 | 133 | Yes | 2,363 | 4,440 |
| Eye and Ear Hospital+ | EENT | Indep | 50 | 30 | 5 | Yes | ... | 3,178 |
| Fairview Sanatorium | N&M | Indep | 12 | 11 | .. | No | ... | 22 |
| Haddon Maternity Hosp. | Mater | Indep | 19 | 10 | 12 | No | 246 | 435 |
| Homeopathic Medical and Surgical Hospital and Dispensary★◊■ | Gen | Indep | 265 | 170 | 45 | Yes | 703 | 4,221 |
| Leech Farm Sanatorium■ | TB | City | 285 | 275 | .. | Yes | ... | 300 |
| Mercy Hospital★+◊■ | Gen | Church | 622 | 545 | 48 | Yes | 598 | 10,411 |
| Montefiore Hospital★◊■ | Gen | Indep | 194 | 125 | 31 | Yes | 421 | 4,123 |
| Municipal Hospital for Contagious Diseases | Iso | City | 250 | 67 | .. | No | ... | 985 |
| Passavant Hospital★◊■ | Gen | Church | 126 | 82 | 24 | Yes | 270 | 2,621 |
| Pittsburgh Hospital★◊■ | Gen | Church | 176 | 138 | 24 | Yes | 457 | 3,461 |
| Presbyterian Hospital★◊■ | Gen | Church | 188 | 138 | 9 | Yes | 73 | 3,636 |
| Roselia Foundling and Maternity Hospital | Mater | Indep | 83 | 47 | 132 | Yes | 236 | ..... |
| St. Francis Hospital★+◊■▲ | Gen | Church | 600 | 483 | 35 | Yes | 688 | 7,610 |
| St. John's Gen. Hosp.★◊■ | Gen | Church | 180 | 122 | 22 | Yes | 422 | 2,935 |
| St. Joseph's Hospital★◊■ | Gen | Church | 128 | 94 | 12 | Yes | 151 | 2,310 |
| St. Margaret Memorial Hospital★◊■ | Gen | Church | 152 | 76 | 21 | Yes | 262 | 2,237 |
| South Side Hospital★◊ | Gen | Indep | 210 | 158 | 15 | Yes | 332 | 4,251 |
| Tuberculosis League Hospital+■ | TB | Indep | 150 | 143 | .. | Yes | ... | 253 |
| U. S. Marine Hospital■ | Gen | USPHS | 92 | 88 | .. | Yes | ... | 677 |
| Western Pennsylvania Hospital★+◊■ | Gen | Indep | 600 | 497 | 51 | Yes | 1,087 | 10,222 |
| Pittston, 18,246—Luzerne Co. | | | | | | | | |
| Pittston Hospital◊ | Gen | Indep | 100 | 80 | 18 | Yes | 145 | 2,386 |
| Pottstown, 19,430—Montgomery Co. | | | | | | | | |
| Homeopathic Hospital■ | Gen | Indep | 52 | 15 | 10 | Yes | 90 | 674 |
| Pottstown Hospital◊■ | Gen | Indep | 66 | 35 | 9 | Yes | 152 | 1,282 |
| Pottsville, 24,300—Schuylkill Co. | | | | | | | | |
| Lemos B. Warne Hospital■ | Gen | Indiv | 75 | 39 | 12 | Yes | 64 | 1,270 |
| A. C. Milliken Hospital■ | Gen | Indep | 58 | 25 | 10 | Yes | ... | 1,030 |
| Pottsville Hospital★◊■ | Gen | Indep | 128 | 77 | 12 | Yes | 147 | 2,530 |
| Punxsutawney, 9,266—Jefferson Co. | | | | | | | | |
| Adrian Hospital | Gen | Indep | 102 | 57 | 8 | No | 128 | 1,704 |
| Quakertown, 4,883—Bucks Co. | | | | | | | | |
| Quakertown Hospital■ | Gen | Indep | 50 | 24 | 10 | Yes | 95 | 607 |
| Ransom, 57—Lackawanna Co. | | | | | | | | |
| Ransom Home and Mental Hospital | N&M | City | 370 | 355 | .. | No | ... | 41 |
| Reading, 111,171—Berks Co. | | | | | | | | |
| Berks Co. Tuber. Sanat.■ | TB | County | 89 | 69 | .. | Yes | ... | 138 |
| Homeopathic Medical and Surgical Hospital◊■ | Gen | Indep | 100 | 79 | 15 | Yes | 296 | 2,549 |
| Reading Hospital★◊■ | Gen | Indep | 230 | 194 | 38 | Yes | 604 | 4,816 |
| St. Joseph's Hospital★◊■ | Gen | Church | 180 | 135 | 25 | Yes | 406 | 4,098 |
| Dr. Stryker's Private Hospital | Gen | Indiv | 24 | 8 | 4 | No | ... | ..... |
| Renovo, 3,947—Clinton Co. | | | | | | | | |
| Renovo Hospital■ | Gen | Indep | 26 | 10 | 6 | No | 52 | 328 |
| Retreat, 31—Luzerne Co. | | | | | | | | |
| Retreat Mental Hospital | N&M | County | 750 | 704 | .. | No | ... | 165 |
| Ridgway, 6,313—Elk Co. | | | | | | | | |
| Elk County Gen. Hosp.■ | Gen | Indep | 70 | 33 | 8 | No | 110 | 1,134 |
| Ridley Park, 3,356—Delaware Co. | | | | | | | | |
| Taylor Hospital■ | Gen | Indep | 109 | 55 | 15 | Yes | 368 | 1,960 |
| Roaring Spring, 2,724—Blair Co. | | | | | | | | |
| Nason Hospital■ | Gen | Indep | 52 | 33 | 6 | Yes | 100 | 620 |
| Rochester, 7,726—Beaver Co. | | | | | | | | |
| Rochester General Hosp.◊■ | Gen | Indep | 108 | 77 | 10 | Yes | 246 | 3,069 |
| St. Mary's, 7,433—Elk Co. | | | | | | | | |
| Andrew Kaul Mem. Hosp.■ | Gen | Indep | 44 | 14 | 6 | No | 55 | 506 |
| Sayre, 7,902—Bradford Co. | | | | | | | | |
| Robert Packer Hosp.★◊■ | Gen | Indep | 255 | 199 | 20 | Yes | 295 | 6,106 |
| Schuylkill Haven, 6,514—Schuylkill Co. | | | | | | | | |
| Schuylkill County Hospital for Mental Diseases | N&M | County | 500 | 478 | .. | Yes | ... | 80 |
| Scranton, 143,433—Lackawanna Co. | | | | | | | | |
| Hahnemann Hospital★◊■ | Gen | Indep | 109 | 81 | 16 | Yes | 371 | 2,381 |
| Lackawanna County Tuberculosis Hospital | TB | County | 135 | 122 | .. | No | ... | 150 |
| Mercy Hospital◊ | Gen | Church | 90 | 74 | 20 | No | 509 | 2,301 |
| Moses Taylor Hospital★◊■ | Gen | Indep | 100 | 81 | .. | Yes | ... | 2,092 |
| St. Joseph's Children's and Maternity Hospital⊙ | Mater | Church | 148 | 95 | 40 | No | 36 | 226 |
| St. Mary's Keller Memorial Hospital◊■ | Gen | Church | 36 | 34 | 6 | No | ... | 951 |
| Scranton Private Hosp.■ | Gen | Indep | 30 | 16 | 10 | No | ... | 1,221 |
| Scranton State Hosp.★◊■ | Gen | State | 185 | 159 | 13 | Yes | 177 | 3,163 |
| West Side Hospital◊■ | Gen | Indep | 55 | 50 | 10 | Yes | 237 | 1,833 |
| Selinsgrove, 2,797—Snyder Co. | | | | | | | | |
| Selinsgrove State Colony for Epileptics | Epil | State | 368 | 144 | .. | ... | ... | 34 |
| Sellersville, 2,063—Bucks Co. | | | | | | | | |
| Grand View Hospital■ | Gen | Indep | 65 | 30 | 7 | Yes | 87 | 764 |
| Sewickley, 5,599—Allegheny Co. | | | | | | | | |
| Valley Hospital◊ | Gen | Indep | 109 | 90 | 17 | Yes | 375 | 2,269 |
| Shamokin, 20,274—Northumberland Co. | | | | | | | | |
| Shamokin State Hospital■ | Gen | State | 85 | 76 | 5 | Yes | 60 | 2,606 |
| Sharon, 25,908—Mercer Co. | | | | | | | | |
| Christian H. Buhl Hosp.◊■ | Gen | Indep | 108 | 55 | 17 | Yes | 274 | 1,893 |
| Sharpsburg, 8,642—Allegheny Co. | | | | | | | | |
| Veterans Admin. Hospital■ | TB | VetAd | 226 | 210 | .. | No | ... | 304 |
| Shenandoah, 21,782—Schuylkill Co. | | | | | | | | |
| Locust Mountain State Hospital■ | Gen | State | 70 | 30 | 5 | Yes | 24 | 687 |
| Somerset, 4,395—Somerset Co. | | | | | | | | |
| Somerset Community Hosp. | Gen | Indep | 20 | 10 | 6 | Yes | 44 | 521 |
| South Mountain, 29—Franklin Co. | | | | | | | | |
| Pennsylvania State Sanat.+■ | TB | State | 970 | 843 | .. | No | ... | 1,324 |
| Spangler, 2,761—Cambria Co. | | | | | | | | |
| Miners' Hospital of Northern Cambria◊■ | Gen | Indep | 69 | 56 | 6 | No | 62 | 1,550 |
| Sunbury, 15,626—Northumberland Co. | | | | | | | | |
| Mary M. Packer Hospital■ | Gen | Indep | 61 | 38 | 9 | Yes | 121 | 1,143 |
| Susquehanna, 3,203—Susquehanna Co. | | | | | | | | |
| Simon H. Barnes Memorial Hospital | Gen | Indep | 16 | 8 | 5 | No | 44 | 241 |
| Tarentum, 9,551—Allegheny Co. | | | | | | | | |
| Allegheny Valley Hosp.◊■ | Gen | Indep | 94 | 62 | 10 | No | 161 | 1,721 |
| Taylor, 10,428—Lackawanna Co. | | | | | | | | |
| Taylor Hospital◊■ | Gen | Indep | 40 | 36 | 8 | Yes | 70 | 1,151 |
| Titusville, 8,055—Crawford Co. | | | | | | | | |
| Titusville Hospital◊ | Gen | Indep | 44 | 18 | 6 | No | 107 | 727 |
| Torrance, 414—Westmoreland Co. | | | | | | | | |
| Torrance State Hospital | N&M | State | 880 | 794 | .. | No | ... | 384 |
| Uniontown, 19,544—Fayette Co. | | | | | | | | |
| Uniontown Hospital★◊■ | Gen | Indep | 205 | 140 | 20 | Yes | 293 | 3,602 |
| Upland, 2,500—Delaware Co. | | | | | | | | |
| Bram Goiter Institute | Goiter | Indiv | 25 | 10 | .. | No | ... | ..... |
| Warren, 14,863—Warren Co. | | | | | | | | |
| Warren General Hospital◊ | Gen | Indep | 80 | 46 | 22 | No | 379 | 1,664 |
| Warren State Hospital+◊ | N&M | State | 1,596 | 1,768 | .. | Yes | ... | 385 |
| Washington, 24,545—Washington Co. | | | | | | | | |
| Hillsview Farms Sanit. | Gen | Indiv | 50 | 42 | .. | No | ... | 390 |
| Washington Hospital★◊■ | Gen | Indep | 138 | 108 | 28 | Yes | 316 | 2,899 |
| Waymart, 902—Wayne Co. | | | | | | | | |
| Farview State Hospital■ | N&M | State | 625 | 620 | .. | Yes | ... | 52 |
| Waynesboro, 10,167—Franklin Co. | | | | | | | | |
| Waynesboro Hospital■ | Gen | Indep | 37 | 29 | 10 | No | 143 | 875 |

Key to symbols and abbreviations is on page 2078

## PENNSYLVANIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Waynesburg, 4,915—Greene Co. | | | | | | | | |
| Greene County Memorial Hospital■ | Gen | Indep | 31 | 17 | 6 | No | 36 | 703 |
| Wernersville, 1,096—Berks Co. | | | | | | | | |
| Wernersville State Hosp. | N&M | State | 1,250 | 1,121 | .. | No | ... | 99 |
| West Chester, 12,325—Chester Co. | | | | | | | | |
| Chester County Hosp.*◊■ | Gen | Indep | 132 | 75 | 22 | Yes | 263 | 2,345 |
| Homeopathic Hospital◊■ | Gen | Indep | 67 | 39 | 10 | Yes | 150 | 1,155 |
| Veil Maternity Hospital | Mater | Indiv | 90 | 45 | 35 | No | 243 | 261 |
| West Grove, 1,375—Chester Co. | | | | | | | | |
| West Grove Hospital | Gen | Indiv | 23 | 14 | 8 | ... | ... | ..... |
| White Haven, 1,537—Luzerne Co. | | | | | | | | |
| White Haven Sanatorium◊ | TB | Indep | 250 | 239 | .. | No | ... | 695 |
| Wilkes-Barre, 86,626—Luzerne Co. | | | | | | | | |
| Mercy Hospital*◊■ | Gen | Church | 203 | 127 | 17 | Yes | 367 | 4,236 |
| Wilkes-Barre Gen. Hosp.*◊ | Gen | Indep | 415 | 203 | 57 | Yes | 443 | 6,341 |
| Wyoming Valley Homeopathic Hospital◊■ | Gen | Indep | 70 | 52 | 10 | Yes | 322 | 2,006 |
| Wilkinsburg, 29,539—Allegheny Co. | | | | | | | | |
| Columbia Hospital*◊■ | Gen | Church | 178 | 114 | 26 | Yes | 399 | 2,589 |
| Williamsport, 45,729—Lycoming Co. | | | | | | | | |
| Rothfuss Clinic & Hosp.■ | Gen | Part | 22 | 10 | 5 | Yes | 41 | 400 |
| ort Hospital*◊■ | Gen | Indep | 231 | 110 | 44 | Yes | 432 | 3,535 |
| hin Co. | | | | | | | | |
| ■ | Gen | Indiv | 24 | 5 | 2 | Yes | 4 | 100 |
| Windber, 9,20 | | | | | | | | |
| Windber Hospital*◊■ | Gen | Indep | 98 | 80 | 4 | Yes | 131 | 2,192 |
| Woodville, 510—Allegheny Co. | | | | | | | | |
| Allegheny County Home and Hospital for Insane | N&M | County | 2,778 | 2,484 | .. | No | ... | ..... |
| York, 55,254—York Co. | | | | | | | | |
| West Side Sanitarium■ | Gen | Indiv | 50 | 29 | 10 | No | 74 | 941 |
| York Hospital*◊■ | Gen | Indep | 194 | 112 | 25 | Yes | 369 | 3,606 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bellevue, 10,252—Allegheny Co. | | | | | | | | |
| Salvation Army Woman's Home and Hospital■ | Mater | Church | 10 | 4 | 10 | No | 110 | 135 |
| Broomall, 125—Delaware Co. | | | | | | | | |
| Convalescent Hospital | Conv | Frat | 30 | 18 | .. | No | ... | 231 |
| Bryn Mawr, 3,036—Montgomery Co. | | | | | | | | |
| Bryn Mawr College Infirm. | Inst | Indep | 14 | 8 | .. | Yes | ... | 300 |
| Cambridge Springs, 1,665—Crawford Co. | | | | | | | | |
| Logan's Hospital | Gen | Indiv | 8 | 3 | 2 | No | 10 | 90 |
| Carlisle, 12,596—Cumberland Co. | | | | | | | | |
| Cumberland County Home■ | Inst | County | 24 | 20 | .. | No | ... | 15 |
| Chambersburg, 13,788—Franklin Co. | | | | | | | | |
| Wilson College for Women Infirmary | Inst | Indep | 10 | 2 | .. | ... | ... | ..... |
| Darby, 9,899—Delaware Co. | | | | | | | | |
| St. Francis' Country House for Conv. & St. Francis Hall for Incurables | ConvIncur | Church | 50 | 47 | 5 | No | ... | 592 |
| Devon, 364—Chester Co. | | | | | | | | |
| Favorlea Farm | N&M | Indiv | 12 | ... | .. | ... | ... | ..... |
| Perfect Rest | N&M | Indiv | 10 | 2 | .. | No | ... | ..... |
| Ebensburg, 3,063—Cambria Co. | | | | | | | | |
| Cambria County Hosp.■▲ | Inst | County | 108 | 75 | 5 | No | 8 | ..... |
| Elwyn, 162—Delaware Co. | | | | | | | | |
| Elwyn Training School | MenDef | Indep | 1,045 | 1,000 | .. | No | ... | 96 |
| Embreeville, 147—Chester Co. | | | | | | | | |
| Chester County Hospital for Insane | N&M | County | 400 | 386 | .. | No | ... | 74 |
| Emsworth (Pittsburgh P.O.), 2,709—Allegheny Co. | | | | | | | | |
| Orphan Asylum of the Holy Family | Inst | Church | 20 | 10 | .. | No | ... | ..... |
| Erie, 115,967—Erie Co. | | | | | | | | |
| Lakeview Hospital | Iso | City | 74 | ... | .. | No | ... | ..... |
| Louise Home■ | TB | Indep | 16 | 14 | .. | No | ... | 53 |
| Gibsonia, 138—Allegheny Co. | | | | | | | | |
| St. Barnabas Free Home. | Incur | Church | 107 | 107 | .. | ... | ... | ..... |
| Harmarville, 780—Allegheny Co. | | | | | | | | |
| Harmarville Conv. Home. | Conv | Indep | 45 | 45 | 27 | No | ... | 220 |
| Huntingdon, 7,558—Huntingdon Co. | | | | | | | | |
| Pennsylvania Industrial Reformatory | Inst | State | 36 | 20 | .. | Yes | ... | 240 |
| Johnstown, 66,993—Cambria Co. | | | | | | | | |
| Municipal Hospital■ | Iso | City | 100 | 5 | .. | No | ... | 75 |
| Salus Private Hospital | Alcoh | Indiv | 12 | ... | .. | No | ... | ..... |
| Lancaster, 59,949—Lancaster Co. | | | | | | | | |
| Lancaster County Hospital and Hospital for Insane | N&M | Cy&Co | 315 | 286 | .. | Yes | ... | 37 |
| Lansdowne, 9,542—Delaware Co. | | | | | | | | |
| Sanatorium School | Ortho | Indiv | 30 | 21 | .. | No | ... | 21 |
| Laurelton, 327—Union Co. | | | | | | | | |
| Laurelton State Village | MenDef | State | 560 | 664 | .. | No | ... | ..... |
| Loysville, 400—Perry Co. | | | | | | | | |
| Tressler Orphans Home | Inst | Church | 40 | 6 | .. | No | ... | 120 |
| Mercer, 2,125—Mercer Co. | | | | | | | | |
| Mercer County Home and Hospital | N&M | County | 220 | 199 | .. | No | ... | 43 |
| Middletown, 6,085—Dauphin Co. | | | | | | | | |
| Odd Fellows' Home | Inst | Frat | 50 | 47 | .. | No | ... | 55 |
| Morganza,—Washington Co. | | | | | | | | |
| Pennsylvania Training School■ | Inst | State | 13 | 4 | .. | Yes | 6 | 1,602 |
| Nazareth, 5,505—Northampton Co. | | | | | | | | |
| Northampton County Almshouse■ | Inst | County | 95 | 90 | 8 | No | ... | ..... |
| New Brighton, 9,950—Beaver Co. | | | | | | | | |
| Beaver County Children's Home | Inst | Indep | 10 | ... | .. | No | ... | 19 |
| New Wilmington, 907—Lawrence Co. | | | | | | | | |
| Overlook Sanitarium | Conv | Indiv | 40 | 30 | .. | No | ... | ..... |

## PENNSYLVANIA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| North East, 3,670—Erie Co. | | | | | | | | |
| St. Barnabas' House by the Lake | Incur | Church | 28 | 28 | .. | No | ... | 30 |
| Oakbourne, 32—Chester Co. | | | | | | | | |
| James C. Smith Memorial Home | Conv | Church | 18 | 16 | .. | ... | ... | 331 |
| Pennsylvania Epileptic Hospital and Colony Farm | Epil | Indep | 110 | 106 | .. | No | ... | 12 |
| Olyphant, 10,743—Lackawanna Co. | | | | | | | | |
| Blakely Home | N&M | Indep | 155 | 136 | .. | No | ... | ..... |
| Pennhurst,—Chester Co. | | | | | | | | |
| Pennhurst State School+ | MenDef | State | 1,500 | 1,280 | .. | No | ... | 1[illegible] |
| Philadelphia, 1,950,961—Philadelphia Co. | | | | | | | | |
| Bello Vista Sanatorium | Conv | Indiv | 80 | 50 | .. | No | ... | 10 |
| Belmont Hospital | Mater | Church | 10 | 1 | 10 | No | 142 | 295 |
| Brown's Farm | Chil | City | 70 | 60 | .. | ... | ... | ..... |
| Chester Avenue Private Hospital | Gen | Indiv | 9 | 5 | 9 | No | 152 | 320 |
| Eastern State Penitentiary Hospital■ | Inst | State | 69 | 43 | .. | No | ... | 846 |
| Florence Crittenton Home. | Mater | Indep | 14 | 1 | 14 | No | 22 | 30 |
| Hebrew Sheltering Home. | Inst | Indep | 30 | 20 | 6 | ... | ... | ..... |
| Home of the Merciful Savior for Crippled Children | Ortho | Indep | 62 | 61 | .. | No | ... | 62 |
| House of the Good Shepherd (col.) | Vener | Church | 75 | 55 | .. | No | ... | ..... |
| Kenwood Sanitarium | Conv | Indiv | 30 | 25 | .. | No | ... | ..... |
| Logan Private Hospital | N&M | Indiv | 9 | 5 | .. | No | ... | 3 |
| Lutheran Orphanage and Home for Aged | Inst | Church | 34 | 25 | .. | No | ... | ..... |
| Pennsylvania Institution for the Deaf | Inst | Indep | 20 | ... | .. | No | ... | ..... |
| Philadelphia County Prison Hospital■ | Inst | County | 15 | 10 | .. | No | ... | 118 |
| Philadelphia Home for Incurables | Incur | Indep | 203 | 203 | .. | No | ... | 200 |
| Roseneath Farms | Conv | Indep | 24 | 21 | .. | No | ... | 65 |
| Sharon Hall | Conv | Indiv | 30 | 18 | .. | ... | ... | ..... |
| Widener Memorial Industrial Training School for Crippled Children | Ortho | Indep | 100 | 80 | .. | No | ... | 6 |
| Pittsburgh, 669,817—Allegheny Co. | | | | | | | | |
| J. M. Gusky Orphanage and Home | Inst | Indep | 20 | 5 | .. | No | ... | ..... |
| Industrial Home for Crippled Children | Inst | Indep | 28 | 18 | .. | No | ... | ..... |
| Jewish Home for the Aged | Inst | Indep | 20 | 20 | .. | No | ... | 8 |
| Western Penitentiary Hospital | Inst | State | 25 | 21 | .. | No | ... | 727 |
| Polk, 3,337—Venango Co. | | | | | | | | |
| Polk State School+ | MenDef | State | 2,000 | 2,611 | .. | Yes | ... | 264 |
| Pottstown, 19,430—Montgomery Co. | | | | | | | | |
| Hill School Infirmary | Inst | Indep | 30 | 9 | .. | Yes | ... | 447 |
| Retreat, 31—Luzerne Co. | | | | | | | | |
| Retreat Home and Hospital for Chronic Diseases■ | Inst | County | 130 | 100 | .. | No | ... | 501 |
| Rochester, 7,726—Beaver Co. | | | | | | | | |
| Passavant Mem. Homes for the Care of Epileptics | Epil | Church | 150 | 120 | .. | No | ... | ..... |
| Schuylkill Haven, 6,514—Schuylkill Co. | | | | | | | | |
| Schuylkill County Hosp.■ | Inst | County | 150 | ... | .. | No | ... | ..... |
| Scranton, 143,433—Lackawanna Co. | | | | | | | | |
| Municipal Hospital for Contagious Diseases■ | Iso | City | 50 | 6 | .. | No | ... | 88 |
| Woman's Hospital | Mater | Part | 10 | 4 | 10 | No | ... | ..... |
| Shillington, 4,401—Berks Co. | | | | | | | | |
| Berks County Almshouse Hospital■▲ | Inst | County | 131 | 81 | .. | Yes | ... | 50 |
| Somerset, 4,395—Somerset Co. | | | | | | | | |
| Somerset County Home and Hospital | N&M | County | 450 | 492 | .. | No | ... | 34 |
| State College, 4,450—Centre Co. | | | | | | | | |
| Pennsylvania State College Health Service Infirm. | Inst | State | 25 | 6 | .. | Yes | ... | 435 |
| Troy, 1,190—Bradford Co. | | | | | | | | |
| Bradford County Home | Inst | County | 110 | ... | .. | ... | ... | ..... |
| Martha Lloyd School | MenDef | Indiv | 40 | 25 | .. | ... | ... | ..... |
| Tyrone, 9,042—Blair Co. | | | | | | | | |
| Methodist Home for Aged | Inst | Church | 23 | 23 | .. | No | ... | 25 |
| Union City, 3,788—Erie Co. | | | | | | | | |
| Union Hospital | Gen | Indep | 12 | 5 | 5 | No | 25 | 182 |
| Valencia, 308—Butler Co. | | | | | | | | |
| Lillian Convalescent Rest. | Conv | Indep | 59 | 48 | .. | No | ... | 357 |
| Weatherly, 2,531—Carbon Co. | | | | | | | | |
| Middle Coal Field Poor District Almshouse■ | Inst | County | 60 | 42 | .. | No | ... | ..... |
| White Haven, 1,537—Luzerne Co. | | | | | | | | |
| Clair Mont Sanatorium | TB | Indiv | 14 | 10 | .. | ... | ... | 30 |
| Ferncliff Sanatorium | TB | Part | 25 | 11 | .. | No | ... | 34 |
| Sunnyrest Sanatorium | TB | Part | 50 | 24 | .. | No | ... | 60 |
| Wilkes-Barre, 86,626—Luzerne Co. | | | | | | | | |
| Contagious Disease Hosp. | Iso | City | 12 | 4 | .. | No | ... | 100 |
| Willow Grove, 2,065—Montgomery Co. | | | | | | | | |
| Willow Crest for Conv. | Conv | Indep | 75 | 72 | 4 | No | ... | 705 |
| Wyncote, 275—Montgomery Co. | | | | | | | | |
| Crest View Sanitarium | N&M | Indiv | 15 | 4 | .. | ... | ... | ..... |

| Summary for Pennsylvania: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 297 | 63,399 | 50,172 | 562,027 |
| Related institutions | 79 | 11,045 | 9,592 | 10,772 |
| Totals | 376 | 74,444 | 59,764 | 572,799 |
| Refused registration | 21 | 388 | | |

Key to symbols and abbreviations is on page 2078

## RHODE ISLAND

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Central Falls, 25,898—Providence Co. | | | | | | | | |
| Notre Dame Hospital | Gen | Indep | 50 | 23 | 7 | Yes | 77 | 858 |
| East Greenwich, 3,666—Kent Co. | | | | | | | | |
| Crawford Allen Mem. Hosp. | (Included in Rhode Island Hosp., Providence) | | | | | | | |
| East Providence, 29,995—Providence Co. | | | | | | | | |
| Emma Pendleton Bradley Home | Chil,Nerv | Indep | 100 | New | .. | No | ... | ..... |
| Hillsgrove, 1,820—Kent Co. | | | | | | | | |
| St. Joseph's Sanit. Annex | TB | Church | 70 | 35 | .. | No | ... | 58 |
| Howard, 2,250—Providence Co. | | | | | | | | |
| State Hospital for Mental Diseases+◊ | N&M | State | 1,550 | 1,989 | .. | Yes | ... | 350 |
| State Infirmary■ | Gen | State | 897 | 885 | 12 | No | 49 | 800 |
| Newport, 27,612—Newport Co. | | | | | | | | |
| Newport Hospital◊■ | Gen | Indep | 150 | 99 | 21 | Yes | 314 | 1,917 |
| Station Hospital | Gen | Army | 25 | 6 | .. | Yes | ... | ..... |
| U. S. Naval Hospital■ | Gen | Navy | 303 | 220 | .. | Yes | ... | 2,058 |
| Pawtucket, 77,149—Providence Co. | | | | | | | | |
| Memorial Hospital★◊■ | Gen | Indep | 160 | 111 | 28 | Yes | 115 | 2,502 |
| Providence, 252,981—Providence Co. | | | | | | | | |
| Broadway Hospital | Gen | Indiv | 10 | 4 | .. | No | ... | 203 |
| Butler Hospital◊ | N&M | Indep | 174 | 142 | .. | Yes | ... | 141 |
| Charles V. Chapin Hospital+⊙■▲ | Iso,TB | City | 270 | 154 | .. | Yes | ... | 2,100 |
| Homeopathic Hospital★◊■ | Gen | Indep | 166 | 115 | 34 | Yes | 733 | 3,876 |
| Hope Hospital■ | Gen | Indep | 38 | 21 | .. | No | ... | 970 |
| Jane Brown Mem. Hosp. | Gen | Indep | 70 | 33 | .. | No | ... | 995 |
| John W. Keefe Surgery | Gen | Indep | 25 | 6 | .. | No | ... | 94 |
| Miriam Hospital■ | Gen | Indep | 63 | 35 | 14 | Yes | 184 | 1,305 |
| Providence Lying-In Hospital⊙■ | Mater | Indep | 155 | 96 | 155 | Yes | 2,363 | 2,656 |
| Rhode Island Hosp.★+◊■ | Gen | Indep | 600 | 397 | .. | Yes | ... | 7,963 |
| St. Joseph's Hospital★◊■ | Gen | Church | 278 | 160 | 40 | Yes | 421 | 3,045 |
| Wakefield, 2,716—Washington Co. | | | | | | | | |
| South County Hospital■ | Gen | Indep | 35 | 17 | 10 | No | 85 | 550 |
| Wallum Lake, 75—Providence Co. | | | | | | | | |
| Rhode Island State Sanatorium+■ | TB | State | 400 | 369 | .. | Yes | ... | 420 |
| Westerly, 10,997—Washington Co. | | | | | | | | |
| Margaret Edward Anderson Hospital■ | Gen | Indiv | 20 | 10 | 6 | Yes | ... | ..... |
| Westerly Hospital◊■ | Gen | Indep | 61 | 28 | 12 | No | 127 | 714 |
| Woonsocket, 49,376—Providence Co. | | | | | | | | |
| Woonsocket Hospital◊ | Gen | Indep | 125 | 72 | 20 | Yes | ... | ..... |
| **Related Institutions** | | | | | | | | |
| Bristol, 11,953—Bristol Co. | | | | | | | | |
| R. I. Soldiers' Home | Inst | State | 50 | 37 | .. | No | ... | 37 |
| Howard, 2,250—Providence Co. | | | | | | | | |
| Rhode Island State Prison Hospital■ | Inst | State | 21 | 8 | .. | Yes | ... | ..... |
| Sockanosset School for Boys | Inst | State | 9 | 4 | .. | No | ... | 253 |
| Hoxsie, 79—Kent Co. | | | | | | | | |
| Lakeside Home & Prevent. | TB | Indep | 140 | 54 | .. | No | ... | 317 |
| La Fayette, 700—Washington Co. | | | | | | | | |
| Exeter School | MenDef | State | 324 | 530 | .. | No | ... | 94 |
| Providence, 252,981—Providence Co. | | | | | | | | |
| Heath Sanatorium. | Conv | Indiv | 20 | 15 | .. | No | ... | 25 |
| Heath Sanitarium Annex. | Conv | Indiv | 14 | 12 | .. | No | 2 | 20 |
| St. Elizabeth Home for Incurables | Incur | Church | 44 | 43 | .. | No | ... | ..... |

Summary for Rhode Island:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 25 | 5,775 | 5,027 | 33,585 |
| Related institutions | 8 | 760 | 703 | 746 |
| Totals | 33 | 6,535 | 5,730 | 34,331 |
| Refused registration | 1 | 60 | | |

## SOUTH CAROLINA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Abbeville, 4,414—Abbeville Co. | | | | | | | | |
| Abbeville Co. Mem. Hosp.◊ | Gen | Indep | 25 | 5 | 2 | No | 18 | 234 |
| Aiken, 6,033—Aiken Co. | | | | | | | | |
| Aiken County Hospital■ | Gen | County | 29 | 21 | 2 | No | 18 | 676 |
| Anderson, 14,383—Anderson Co. | | | | | | | | |
| Anderson County Hosp.◊■ | Gen | Indep | 66 | 44 | 9 | Yes | 128 | 1,812 |
| St. Mary's Hospital■ | Gen | Indiv | 30 | New | 2 | Yes | ... | ..... |
| Bennettsville, 3,667—Marlboro Co. | | | | | | | | |
| Marlboro Co. Gen. Hosp.◊■ | Gen | County | 34 | 15 | 6 | Yes | 57 | 572 |
| Camden, 5,183—Kershaw Co. | | | | | | | | |
| Camden Hospital◊■ | Gen | Indep | 45 | 24 | 6 | Yes | 72 | 828 |
| Charleston, 62,265—Charleston Co. | | | | | | | | |
| Baker Sanatorium◊ | Gen | Indiv | 50 | 38 | 12 | No | 62 | 1,153 |
| Roper Hospital★◊■▲ | Gen | Indep | 270 | 223 | 30 | Yes | 514 | 5,190 |
| St. Francis Xavier Infirm.◊ | Gen | Church | 50 | 20 | 13 | No | 76 | 608 |
| Chester, 5,528—Chester Co. | | | | | | | | |
| Pryor Hospital◊■ | Gen | Indep | 60 | 21 | 6 | No | 51 | 538 |
| Clinton, 5,643—Laurens Co. | | | | | | | | |
| Dr. Hays' Hospital■ | Gen | Indiv | 15 | 7 | 2 | No | 15 | 326 |
| Columbia, 51,581—Richland Co. | | | | | | | | |
| Columbia Hospital★◊ | Gen | County | 127 | 79 | 12 | Yes | 243 | 2,934 |
| Good Samaritan Hospital (col.)◊ | Gen | Indep | 65 | 45 | 5 | No | 26 | ..... |
| South Carolina Baptist Hospital◊ | Gen | Church | 109 | 97 | 6 | Yes | 145 | 3,026 |

## SOUTH CAROLINA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| South Carolina State Hospital◊ | N&M | State | 2,918 | 3,214 | .. | Yes | ... | 915 |
| Waverley Fraternal Hospital (col.) | Gen | Frat | 58 | 30 | 4 | Yes | 24 | 634 |
| Waverley Sanitarium | N&M | Indep | 35 | 22 | .. | No | ... | 98 |
| Conway, 3,011—Horry Co. | | | | | | | | |
| Conway Hospital◊■ | Gen | Indep | 35 | 14 | 6 | Yes | 94 | 783 |
| Florence, 14,774—Florence Co. | | | | | | | | |
| Florence-Darlington Tuberculosis Sanatorium | TB | County | 38 | 33 | .. | No | ... | ..... |
| McLeod Infirmary◊■ | Gen | Indep | 130 | 90 | 8 | No | 129 | 2,966 |
| Saunders Memorial Hosp.◊■ | Gen | Indep | 65 | 29 | 4 | Yes | 23 | 1,416 |
| Gaffney, 6,827—Cherokee Co. | | | | | | | | |
| City Hospital◊■ | Gen | Indep | 35 | 10 | .. | No | 12 | 1,235 |
| Greenville, 29,154—Greenville Co. | | | | | | | | |
| Greenville City Hosp.★◊■ | Gen | City | 99 | 73 | 8 | Yes | 276 | 2,601 |
| Greenville Co. Tuber. Hosp. | TB | County | 70 | 52 | .. | Yes | ... | 140 |
| Dr. Jervey's Private Hosp. | EENT | Indiv | 15 | 5 | .. | No | ... | 275 |
| Shriners' Hospital for Crippled Children■ | Ortho | Frat | 60 | 61 | .. | Yes | ... | 368 |
| Dr. Tyler's Hospital | Surg | Indiv | 12 | 3 | .. | No | ... | ..... |
| Working Benevolent Society Hospital (col.) | Gen | Frat | 22 | 10 | 1 | No | 16 | 210 |
| Greenwood, 11,020—Greenwood Co. | | | | | | | | |
| Brewer Hospital (col.)◊ | Gen | Church | 21 | 5 | 1 | No | 9 | 186 |
| Greenwood City Hospital◊ | Gen | Indep | 51 | 14 | 4 | No | 58 | 576 |
| Lake City, 1,942—Florence Co. | | | | | | | | |
| Lynch Infirmary■ | Gen | Indiv | 15 | 4 | 2 | No | 30 | 68 |
| Lancaster, 3,545—Lancaster Co. | | | | | | | | |
| Lancaster Hospital■ | Gen | Indiv | 25 | 12 | 2 | No | ... | 163 |
| Laurens, 5,443—Laurens Co. | | | | | | | | |
| Laurens Hospital■ | Gen | Indep | 14 | 3 | 2 | Yes | 12 | 174 |
| Leesville, 1,340—Lexington Co. | | | | | | | | |
| Leesville Infirmary◊■ | Gen | Indep | 25 | 10 | 5 | No | 24 | 300 |
| Moultrieville, 515—Charleston Co. | | | | | | | | |
| Station Hospital | Gen | Army | 45 | 12 | .. | Yes | ... | 380 |
| Mullins, 3,158—Marion Co. | | | | | | | | |
| Marion County Tuberculosis Sanatorium (col.) | TB | County | 13 | 9 | .. | No | ... | ..... |
| Mullins Hospital◊■ | Gen | Indep | 45 | 23 | 5 | No | 95 | 1,051 |
| Navy Yard, 1,025—Charleston Co. | | | | | | | | |
| Pinehaven Sanatorium■ | TB | County | 50 | 47 | .. | Yes | ... | 77 |
| Newberry, 7,298—Newberry Co. | | | | | | | | |
| Newberry County Hosp.◊. | Gen | Indep | 25 | 7 | 5 | No | 19 | 329 |
| Orangeburg, 8,776—Orangeburg Co. | | | | | | | | |
| Orangeburg Hospital◊■ | Gen | Indiv | 51 | 19 | 5 | Yes | 12 | 1,457 |
| Parris Island, 305—Beaufort Co. | | | | | | | | |
| U. S. Naval Hospital■ | Gen | Navy | 201 | 89 | 5 | Yes | 26 | 1,465 |
| Ridgewood, (Columbia P.O.)—Richland Co. | | | | | | | | |
| Ridgewood Tuber. Camp.■ | TB | Indep | 64 | 52 | .. | Yes | ... | 70 |
| Rock Hill, 11,322—York Co. | | | | | | | | |
| Fennell Infirmary◊■ | Gen | Indiv | 35 | 20 | 2 | No | 50 | 948 |
| Six Mile, 150—Pickens Co. | | | | | | | | |
| Dr. Peck's Hospital | Gen | Indiv | 26 | 11 | 1 | No | 18 | 335 |
| Spartanburg, 28,723—Spartanburg Co. | | | | | | | | |
| Mary Black Clinic and Private Hospital◊ | Gen | Part | 45 | 30 | 5 | Yes | 10 | 816 |
| Spartanburg Gen. Hosp.★◊■ | Gen | County | 261 | 91 | 26 | Yes | 189 | 2,707 |
| State Park,—Richland Co. | | | | | | | | |
| Palmetto Sanatorium | (Colored Division of South Carolina Sanat.) | | | | | | | |
| South Carolina Sanat. | TB | State | 274 | 242 | .. | No | ... | 272 |
| Sumter, 11,780—Sumter Co. | | | | | | | | |
| Camp Alice | TB | Cy&Co | 26 | 22 | .. | No | ... | 61 |
| Tuomey Hospital◊■ | Gen | Indep | 80 | 40 | 8 | Yes | 79 | 1,105 |
| Taylor, 301—Greenville Co. | | | | | | | | |
| Chick Springs Hotel Sanit.◊ | Gen | Indiv | 75 | 36 | 3 | No | ... | ..... |
| Union, 7,419—Union Co. | | | | | | | | |
| Wallace Thompson Hosp. | Gen | Indep | 20 | 10 | 2 | No | 20 | 287 |
| Walterboro, 2,592—Colleton Co. | | | | | | | | |
| Charles Es'Dorn Hosp.◊■ | Gen | Indiv | 35 | 20 | 4 | No | 30 | 1,215 |
| Woodruff, 3,175—Spartanburg Co. | | | | | | | | |
| Workman Memorial Hosp. | Gen | Indiv | 10 | 4 | 2 | No | 15 | ..... |
| **Related Institutions** | | | | | | | | |
| Aiken, 6,033—Aiken Co. | | | | | | | | |
| Aiken Cottage Sanatorium | TB | Indep | 18 | 9 | .. | No | ... | 28 |
| Cedar Spring, 162—Spartanburg Co. | | | | | | | | |
| Infirmary of the South Carolina School for Deaf and Blind | Inst | State | 24 | 4 | .. | ... | ... | ..... |
| Charleston, 62,265—Charleston Co. | | | | | | | | |
| Charleston Orphan House. | Inst | City | 25 | 23 | .. | No | ... | 109 |
| Citadel Hospital | Inst | State | 30 | 10 | .. | No | ... | ..... |
| Clinton, 5,643—Laurens Co. | | | | | | | | |
| Lesh Infirmary of Thornwell Orphanage | Inst | Church | 30 | 5 | .. | No | ... | ..... |
| Columbia, 51,581—Richland Co. | | | | | | | | |
| South Carolina University Infirmary | Inst | State | 28 | 2 | .. | Yes | ... | 270 |
| Greenville, 29,154—Greenville Co. | | | | | | | | |
| Webb Memorial Infirmary. | Inst | Indep | 42 | 4 | .. | No | ... | 303 |
| Spartanburg, 28,723—Spartanburg Co. | | | | | | | | |
| Wofford Infirmary | Inst | Indep | 14 | 2 | .. | No | ... | ..... |
| Summerville, 2,579—Dorchester Co. | | | | | | | | |
| Arthur B. Lee Hospital (col.) | Gen | Indep | 12 | 3 | 3 | Yes | 10 | 98 |
| Summerville Infirmary | Gen | Indep | 9 | 3 | 3 | Yes | 11 | 113 |

Summary for South Carolina:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 53 | 6,099 | 5,117 | 43,610 |
| Related institutions | 10 | 239 | 69 | 921 |
| Totals | 63 | 6,338 | 5,186 | 44,531 |
| Refused registration | 1 | 22 | | |

Key to symbols and abbreviations is on page 2078

## SOUTH DAKOTA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aberdeen, 16,465—Brown Co. | | | | | | | | |
| Aberdeen Good Samaritan Hospital ................ | Gen | Indep | 80 | 15 | 9 | No | 49 | 513 |
| St. Luke's Hospital◊■.... | Gen | Church | 100 | 72 | 25 | No | 359 | 2,635 |
| Belle Fourche, 2,032—Butte Co. | | | | | | | | |
| Belle Fourche Hospital.... | Gen | Indep | 10 | 5 | 3 | No | 40 | 240 |
| B | | | | | | | | |
| [illegible] | | Indep | 11 | 4 | 3 | No | 56 | 250 |
| B | | | | | | | | |
| ■ | | Church | 24 | 13 | 8 | No | 100 | 600 |
| Canova, 364—Miner Co. | | | | | | | | |
| Canova Hospital.......... | Gen | Indep | 15 | 8 | 4 | No | 40 | 330 |
| Chamberlain, 1,364—Brule Co. | | | | | | | | |
| Chamberlain Sanitarium and Hospital◊□ ............... | Gen | Indep | 66 | 25 | 6 | Yes | 63 | 1,142 |
| Cheyenne Agency, 121—Dewey Co. | | | | | | | | |
| *Cheyenne River Indian Hospital* .................... | Gen | Indian | 40 | 27 | 3 | Yes | ... | ..... |
| Co. | | | | | | | | |
| [illegible] | Gen | Church | 50 | 21 | 6 | No | 75 | 966 |
| Co. | | | | | | | | |
| [illegible] | Gen | Indep | 26 | 10 | 4 | Yes | 36 | 318 |
| er Co. | | | | | | | | |
| ■ ..... | Gen | Indiv | 10 | 3 | 2 | No | 20 | 86 |
| Co. | | | | | | | | |
| osp. | Gen | Indep | 23 | 9 | 5 | No | 51 | 371 |
| Faulk County Hospital... | Gen | County | 17 | 13 | 4 | No | 68 | 400 |
| Flandreau, 1,934—Moody Co. | | | | | | | | |
| Flandreau Hospital....... | Gen | Indiv | 10 | 2 | 1 | No | 19 | 178 |
| Ft. Meade,—Meade Co. | | | | | | | | |
| ■ | n | Army | 25 | 18 | .. | Yes | 12 | 220 |
| [illegible] | n | Indian | 29 | 27 | 5 | Yes | 29 | 414 |
| [illegible] | n | Indiv | 10 | 3 | 2 | Yes | 21 | 102 |
| [illegible] | n | Indiv | 17 | 10 | 8 | No | 49 | 264 |
| Hospital■ ............... | Gen | Church | 40 | 14 | 3 | No | 7 | 369 |
| Our Lady of Lourdes Hospital and Sanitarium◊.. | Gen | Church | 75 | 32 | 6 | No | 47 | 1,266 |
| Huron, 10,946—Beadle Co. | | | | | | | | |
| Sprague Hospital◊■........ | Gen | Indep | 50 | 31 | 7 | Yes | 128 | 1,137 |
| Lead, 5,733—Lawrence Co. | | | | | | | | |
| Homestake Hospital....... | Gen | Indus | 25 | 11 | 5 | Yes | 29 | 417 |
| Lemmon, 1,708—Perkins Co. | | | | | | | | |
| [illegible] | Gen | Indiv | 14 | 5 | 6 | No | 25 | 225 |
| [illegible] | Gen | Indep | 50 | 27 | 12 | No | 99 | 1,168 |
| Milbank, 2,389—Grant Co. | | | | | | | | |
| St. Bernard's Providence Hospital ................ | Gen | Church | 25 | 6 | 5 | No | 39 | 330 |
| Miller, 1,447—Hand Co. | | | | | | | | |
| Miller Hosp. and Clinic... | Gen | Indiv | 18 | 9 | 5 | No | 69 | 320 |
| Mitchell, 10,942—Davison Co. | | | | | | | | |
| Methodist State Hosp.◊... | Gen | Church | 100 | 50 | 15 | No | 161 | 1,700 |
| St. Joseph's Hospital◊.... | Gen | Church | 85 | 45 | 12 | No | 199 | 1,490 |
| Mobridge, 3,464—Walworth Co. | | | | | | | | |
| Lowe's Hospital■.......... | Gen | Indiv | 20 | 9 | 6 | No | 43 | 317 |
| Mobridge Hospital.......... | Gen | Indep | 30 | 11 | 2 | No | 40 | 424 |
| New Underwood, 311—Pennington Co. | | | | | | | | |
| New Underwood Community Hospital■ ............... | Gen | Indep | 13 | 5 | 6 | No | 56 | 247 |
| Parkston, 1,336—Hutchinson Co. | | | | | | | | |
| Dr. J. L. Waldner's Hosp. | Gen | Indiv | 12 | 5 | .. | No | ... | ..... |
| Pierre, 3,659—Hughes Co. | | | | | | | | |
| St. Mary's Hospital◊■.... | Gen | Church | 100 | 52 | 8 | Yes | 103 | 2,103 |
| Pine Ridge, 618—Shannon Co. | | | | | | | | |
| U. S. Indian Service General Hospital............ | Gen | Indian | 54 | 21 | 6 | Yes | 34 | 540 |
| Rapid City, 10,404—Pennington Co. | | | | | | | | |
| Black Hills Methodist Hospital◊■ .................. | Gen | Church | 57 | 33 | 10 | No | 13 | 2,078 |
| St. John's Hospital◊■..... | Gen | Church | 75 | 35 | 12 | Yes | 126 | 1,777 |
| Redfield, 2,664—Spink Co. | | | | | | | | |
| Baldwin Community Hosp. | Gen | City | 15 | 4 | 5 | No | 21 | 198 |
| Rosebud, 120—Todd Co. | | | | | | | | |
| Rosebud Agency Indian Hospital ................ | Gen | Indian | 36 | 25 | 8 | Yes | 100 | 1,100 |
| Sanator, 10—Custer Co. | | | | | | | | |
| South Dakota State Sanatorium for Tuberculosis | TB | State | 240 | 150 | .. | No | ... | 135 |
| Sioux Falls, 33,362—Minnehaha Co. | | | | | | | | |
| McKennan Hospital◊....... | Gen | Church | 110 | 74 | 12 | No | 290 | 2,607 |
| Moe Hosp. and Clinic◊■... | Gen | Part | 44 | 22 | 6 | No | 79 | 940 |
| Sioux Valley Hospital◊■... | Gen | Indep | 125 | 63 | 25 | No | 268 | 2,260 |
| Vermilion, 2,850—Clay Co. | | | | | | | | |
| Vermilion Hospital......... | Gen | Indiv | 10 | 4 | .. | No | 10 | 150 |
| Volga, 604—Brookings Co. | | | | | | | | |
| Volga Hospital............. | Gen | Indep | 20 | ... | .. | No | ... | ..... |
| Watertown, 10,214—Codington Co. | | | | | | | | |
| Bartron Hospital◊......... | Gen | Church | 59 | 35 | 6 | No | 36 | 716 |
| Luther Hospital◊........... | Gen | Church | 60 | 45 | 10 | No | 152 | 1,324 |
| Webster, 1,805—Day Co. | | | | | | | | |
| Peabody Hospital◊......... | Gen | Indiv | 60 | 37 | 5 | No | 97 | 1,084 |
| Winner, 2,220—Tripp Co. | | | | | | | | |
| Wilson Hospital........... | Gen | Indiv | 10 | 5 | 2 | No | 33 | 317 |
| Winner General Hospital. | Gen | Indiv | 12 | 5 | 5 | No | 35 | 200 |
| Yankton, 6,072—Yankton Co. | | | | | | | | |
| Sacred Heart Hospital◊... | Gen | Church | 130 | 70 | 20 | No | 203 | 2,509 |
| Yankton State Hospital+. | N&M | State | 1,330 | 1,467 | .. | No | ... | 250 |

## SOUTH DAKOTA—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Avon, 670—Bon Homme Co. | | | | | | | | |
| Hollingsworth Hospital.... | Gen | Indiv | 8 | 3 | 2 | No | ... | ..... |
| Camp Crook, 161—Harding Co. | | | | | | | | |
| *Camp Crook Hospital....* | Gen | Indiv | 9 | 3 | 2 | No | ... | ..... |
| Canton, 2,270—Lincoln Co. | | | | | | | | |
| *Asylum for Insane Indians* | N&M | Indian | 92 | 89 | .. | No | ... | 10 |
| Flandreau, 1,934—Moody Co. | | | | | | | | |
| Flandreau Indian School Hospital ................. | Gen | Indian | 35 | 14 | .. | No | ... | 533 |
| Hot Springs, 2,908—Fall River Co. | | | | | | | | |
| State Soldiers' Home...... | Inst | State | 30 | 15 | .. | No | ... | 144 |
| Veterans Admin. Home■▲. | Inst | VetAd | 560 | 529 | .. | No | ... | 1,273 |
| Onida, 636—Sully Co. | | | | | | | | |
| Onida Hospital............ | Gen | Indiv | 7 | 3 | 3 | No | 12 | 40 |
| Pierre, 3,659—Hughes Co. | | | | | | | | |
| Pierre Indian School Hosp. | Gen | Indian | 26 | 11 | .. | Yes | ... | 387 |
| Pine Ridge, 618—Shannon Co. | | | | | | | | |
| *Oglala Boarding School* Hospital ................. | Inst | Indian | 24 | 13 | .. | No | ... | ..... |
| Platte, 1,207—Charles Mix Co. | | | | | | | | |
| Platte Hospital........... | Gen | Indiv | 7 | 2 | 2 | Yes | 18 | 278 |
| Redfield, 2,664—Spink Co. | | | | | | | | |
| State School and Home for Feebleminded ........... | MenDef | State | 600 | 532 | .. | No | ... | 135 |
| Tyndall, 1,287—Bon Homme Co. | | | | | | | | |
| Tyndall Hospital.......... | Gen | Indiv | 6 | 3 | .. | No | ... | ..... |
| Wagner, 1,420—Charles Mix Co. | | | | | | | | |
| Pinard Hospital........... | Gen | Indiv | 8 | 3 | 2 | No | ... | ..... |
| Wagner Hospital........... | Gen | Indiv | 8 | 5 | 2 | No | 8 | 62 |

*Summary for South Dakota:*

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 51 | 3,663 | 2,698 | 38,796 |
| Related institutions.......... | 14 | 1,420 | 1,225 | 2,862 |
| Totals...................... | 65 | 5,083 | 3,923 | 41,658 |
| Refused registration......... | 3 | 130 | | |

## TENNESSEE

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Athens, 5,385—McMinn Co. | | | | | | | | |
| Force Hospital■............ | Gen | Part | 10 | 4 | 3 | No | 25 | 150 |
| Bolivar, 1,217—Hardeman Co. | | | | | | | | |
| Western State Hospital+.. | N&M | State | 1,165 | 1,134 | .. | No | ... | 296 |
| Co. | | | | | | | | |
| ■ | Gen | Cy&Co | 32 | 15 | 5 | Yes | 18 | 544 |
| Edwards' Hospital........... | Gen | Indiv | 12 | 6 | 2 | .. | ... | ..... |
| Chattanooga, 119,798—Hamilton Co. | | | | | | | | |
| Baroness Erlanger Hospital★◊□ ................... | Gen | Cy&Co | 220 | 158 | 26 | Yes | 643 | 4,416 |
| Children's Hospital+□...... | Chil | Cy&Co | 73 | 47 | 11 | Yes | 128 | 1,099 |
| Newell and Newell Sanit.◊■ | Gen | Part | 65 | 45 | 5 | Yes | 25 | 996 |
| Pine Breeze Sanitarium+■. | TB | Indep | 210 | 208 | .. | Yes | ... | 232 |
| Walden Hospital (col.)... | Gen | Indiv | 25 | 4 | 2 | No | ... | ..... |
| Clarksville, 9,242—Montgomery Co. | | | | | | | | |
| Clarksville Home Infirmary (col.) .................... | Gen | Indiv | 25 | 5 | 2 | No | 5 | 490 |
| Clarksville Hospital◊....... | Gen | Indep | 30 | 12 | 6 | No | 22 | 434 |
| Cleveland, 9,136—Bradley Co. | | | | | | | | |
| Speck Hospital............ | Gen | Indep | 30 | 5 | 2 | No | 10 | 253 |
| Columbia, 7,882—Maury Co. | | | | | | | | |
| King's Daughters Hosp.◊.. | Gen | Indep | 50 | 20 | 8 | Yes | 46 | 900 |
| Cookeville, 3,738—Putnam Co. | | | | | | | | |
| Cookeville City Hospital.. | Gen | City | 20 | 6 | .. | ... | ... | ..... |
| Dayton, 2,006—Rhea Co. | | | | | | | | |
| Broyles Private Hospital.. | Gen | Indiv | 12 | 6 | 3 | No | 14 | 202 |
| Dyersburg, 8,733—Dyer Co. | | | | | | | | |
| Baird-Brewer Gen. Hosp.◊■ | Gen | Indep | 50 | 9 | 2 | No | 14 | 717 |
| Elizabethton, 8,093—Carter Co. | | | | | | | | |
| St. Elizabeth Gen. Hosp.■ | Gen | Indep | 20 | 5 | 5 | No | 23 | 289 |
| Greeneville, 5,544—Greene Co. | | | | | | | | |
| Greeneville Sanatorium and Hospital◊■ ............... | Gen | Part | 60 | 18 | 12 | No | 15 | 678 |
| Takoma Hosp. & Sanit.◊■ | Gen | Indep | 40 | 25 | 6 | No | 17 | 700 |
| Humboldt, 4,613—Gibson Co. | | | | | | | | |
| Oursler Clinic.............. | Gen | Indiv | 10 | 5 | 2 | No | 52 | 303 |
| Jackson, 22,172—Madison Co. | | | | | | | | |
| Crook Sanatorium◊........ | Gen | Indep | 75 | 30 | 6 | Yes | ... | ..... |
| Memorial Hospital◊■....... | Gen | Indep | 30 | 15 | 6 | Yes | 38 | 496 |
| Webb-Williamson Hospital-Clinic ...................... | Gen | Indep | 31 | 18 | 6 | No | 75 | 795 |
| Johnson City, 25,080—Washington Co. | | | | | | | | |
| Appalachian Hospital◊■.... | Gen | Indep | 50 | 28 | 6 | Yes | 123 | 1,171 |
| Campbell's Eye, Ear, Nose and Throat Hospital.... | EENT | Indiv | 10 | 2 | .. | No | ... | 1,000 |
| Elizabeth Goss Mem. Hosp.■ | Gen | Indiv | 20 | 6 | .. | No | ... | ..... |
| Jones Eye, Ear, Nose and Throat Hospital......... | EENT | Indiv | 17 | 9 | .. | No | ... | ..... |
| Kingsport, 11,914—Sullivan Co. | | | | | | | | |
| Kingsport General Hosp.■ | Gen | Part | 16 | 4 | 4 | No | 42 | 1,784 |
| Marsh Clinic and Hosp.■.. | Gen | Indiv | 20 | 8 | 3 | Yes | 15 | 319 |
| Knoxville, 105,802—Knox Co. | | | | | | | | |
| Beverly Hills Sanatorium■ | TB | Indep | 170 | 133 | .. | No | ... | 164 |
| Dr. H. E. Christenbery Eye, Ear, Nose and Throat Infirmary ............... | EENT | Indiv | 12 | 6 | .. | No | ... | 445 |

## TENNESSEE—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Eastern State Hospital | N&M | State | 1,200 | 1,275 | .. | No | ... | 366 |
| Ft. Sanders Hospital◊■ | Gen | Indep | 160 | 79 | 10 | No | 325 | 3,237 |
| Knoxville Gen. Hosp.★+◊■ | Gen | City | 261 | 140 | 20 | Yes | 374 | 4,888 |
| St. Mary's Memorial Hosp. | Gen | Church | 63 | 27 | 12 | No | 108 | 849 |
| Lawrenceburg, 3,102—Lawrence Co. | | | | | | | | |
| Lawrenceburg Rural Sanitarium and Hospital | Gen | Indep | 20 | 8 | 2 | No | ... | ..... |
| Lebanon, 4,656—Wilson Co. | | | | | | | | |
| Lillard's Infirmary | Gen | Indiv | 18 | ... | 3 | No | ... | ..... |
| McFarland Hospital■ | Gen | Indiv | 10 | 7 | .. | No | 6 | 435 |
| Lewisburg, 3,112—Marshall Co. | | | | | | | | |
| Wheat's Hospital | Gen | Indiv | 30 | 8 | 1 | No | ... | 225 |
| Loudon, 2,578—Loudon Co. | | | | | | | | |
| J. J. Harrison, Jr. Sanit. | Gen | Indiv | 25 | 8 | .. | No | ... | ..... |
| Madison, 89—Davidson Co. | | | | | | | | |
| Madison Rural Sanit.◊ | Gen | Indep | 84 | 53 | 6 | No | 6 | 608 |
| Maryville, 4,958—Blount Co. | | | | | | | | |
| Carson's Hospital■ | Gen | Indiv | 20 | 9 | .. | No | ... | 330 |
| McMinnville, 3,914—Warren Co. | | | | | | | | |
| McMinnville Infirmary | Gen | Indiv | 10 | 4 | .. | No | ... | 95 |
| Memphis, 253,143—Shelby Co. | | | | | | | | |
| Baptist Memorial Hosp.★+◊ | Gen | Church | 400 | 308 | 20 | No | 614 | 13,392 |
| Collins Chapel Connectional Hospital (col.)◊ | Gen | Indep | 50 | 12 | 10 | Yes | 12 | 450 |
| Crippled Children's Hospital School | Ortho | Indep | 36 | 32 | .. | No | ... | 120 |
| Gartly-Ramsay Hospital◊ | Gen | Indep | 42 | 22 | 8 | No | 102 | 995 |
| Hosp. for Crippled Adults | Ortho | Indep | 60 | 31 | .. | No | ... | 280 |
| Jane Terrell Baptist Hospital (col.)◊ | Gen | Church | 25 | 10 | .. | Yes | ... | ..... |
| Lynnhurst Sanitarium | N&M | Indiv | 20 | 7 | .. | No | ... | 29 |
| Memphis Eye, Ear, Nose and Throat Hospital+■ | EENT | Indep | 65 | 13 | .. | Yes | ... | 2,203 |
| Memphis Gen. Hosp.★+◊■ | Gen | City | 353 | 353 | 47 | Yes | 923 | 8,271 |
| Methodist Hospital★◊ | Gen | Church | 160 | 122 | 30 | No | 710 | 4,762 |
| St. Joseph's Hospital★◊ | Gen | Church | 225 | 118 | 37 | Yes | 610 | 4,754 |
| U. S. Marine Hospital■ | Gen | USPHS | 65 | 64 | .. | Yes | ... | 537 |
| Veterans Admin. Hospital■ | Gen | VetAd | 360 | 287 | .. | Yes | ... | 3,716 |
| Wallace Sanitarium | N&M | Part | 50 | 26 | .. | No | ... | 434 |
| Willis C. Campbell Clinic | Ortho | Part | 50 | 35 | .. | Yes | ... | 853 |
| Monterey, 1,731—Putnam Co. | | | | | | | | |
| Officer Sanatorium | TB | Indiv | 12 | 4 | .. | No | ... | 20 |
| Morristown, 7,305—Hamblen Co. | | | | | | | | |
| Morristown Gen. Hosp.◊ | Gen | Indep | 30 | 7 | 3 | No | 35 | 260 |
| Murfreesboro, 7,993—Rutherford Co. | | | | | | | | |
| Rutherford Hospital■ | Gen | Indep | 42 | 19 | 8 | Yes | 61 | 862 |
| Nashville, 153,866—Davidson Co. | | | | | | | | |
| Barr Infirmary◊ | Gen | Indiv | 25 | 15 | .. | No | ... | ..... |
| Central State Hospital | N&M | State | 1,500 | 1,395 | .. | No | ... | 380 |
| City View Sanitarium◊ | N&M | Indiv | 60 | 38 | .. | No | ... | ..... |
| Davidson County Tuberculosis Hospital+◊■ | TB | County | 275 | 233 | .. | Yes | ... | 269 |
| Geo. W. Hubbard Hospital (col.)★◊ | Gen | Indep | 140 | 90 | 10 | Yes | 239 | 2,073 |
| Millie E. Hale Hosp. (col.)◊ | Gen | Indep | 50 | 25 | 10 | Yes | 22 | 600 |
| Nashville Gen. Hosp★+◊■ | Gen | City | 152 | 125 | 18 | Yes | 522 | 4,853 |
| Protestant Hospital◊ | Gen | Indep | 125 | 62 | 16 | No | 168 | 2,476 |
| St. Thomas Hospital★◊ | Gen | Church | 200 | 115 | 25 | No | 524 | 4,915 |
| Vanderbilt University Hospital★+◊■ | Gen | Indep | 195 | 168 | 20 | Yes | 304 | 4,305 |
| Newport, 2,989—Cocke Co. | | | | | | | | |
| E. E. Northcutt Infirmary | Gen | Indiv | 12 | 4 | 1 | Yes | 2 | 326 |
| Oakville, 163—Shelby Co. | | | | | | | | |
| Oakville Memorial Sanat.■ | TB | Cy&Co | 250 | 247 | .. | No | ... | 410 |
| Paris, 8,164—Henry Co. | | | | | | | | |
| McSwain Clinic | Gen | Indiv | 16 | 9 | 4 | No | 19 | 385 |
| Wiggins Clinic■ | Gen | Indiv | 15 | 5 | 4 | Yes | 25 | 250 |
| Pleasant Hill, 165—Cumberland Co. | | | | | | | | |
| "Uplands" Cumberland Mountain Sanatorium | Gen | Indep | 16 | 9 | 3 | Yes | 10 | 71 |
| Pressmen's Home, 160—Hawkins Co. | | | | | | | | |
| International Printing Pressmen and Assistants' Union Sanatorium | TB | Indep | 45 | 41 | .. | Yes | ... | 18 |
| Pulaski, 3,367—Giles Co. | | | | | | | | |
| Pulaski Hospital■ | Gen | Indiv | 32 | 10 | 2 | No | 16 | 412 |
| Ridgetop, 196—Robertson Co. | | | | | | | | |
| Watauga Sanitarium | TB | Indep | 40 | 24 | .. | No | ... | 56 |
| Rockwood, 3,898—Roane Co. | | | | | | | | |
| Chamberlain Mem. Hosp.◊■ | Gen | Indep | 40 | 20 | 5 | No | 29 | 646 |
| Rogersville, 1,590—Hawkins Co. | | | | | | | | |
| Lyons Private Hospital | Gen | Indiv | 10 | 4 | .. | No | 8 | 104 |
| Sewanee, 530—Franklin Co. | | | | | | | | |
| Emerald-Hodgson Memorial Hospital◊■ | Gen | Church | 50 | 16 | 12 | Yes | 85 | 749 |
| Shelbyville, 5,010—Bedford Co. | | | | | | | | |
| Bedford County Hospital | Gen | Indep | 25 | 11 | 3 | No | 15 | 450 |
| Sweetwater, 2,271—Monroe Co. | | | | | | | | |
| Sweetwater Hospital■ | Gen | Indiv | 18 | 4 | 4 | No | 6 | 210 |

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Alcoa, 5,255—Blount Co. | | | | | | | | |
| Mountain View Sanatorium | TB | Indep | 19 | 15 | .. | No | ... | 27 |
| Chattanooga, 119,798—Hamilton Co. | | | | | | | | |
| William L. Bork Mem. Hosp. | N&M | County | 104 | 95 | .. | No | ... | 97 |
| Copperhill, 1,050—Polk Co. | | | | | | | | |
| Tennessee Copper Company's Hospital | Indus | Indus | 10 | 1 | .. | No | 1 | 24 |
| Donelson, 110—Davidson Co. | | | | | | | | |
| Tennessee Home and Training School for Feeble-minded Persons | MenDef | State | 500 | 500 | .. | ... | ... | ..... |
| Ducktown, 1,526—Polk Co. | | | | | | | | |
| Kimsey-Guinn Hospital | Gen | Indiv | 7 | 5 | .. | No | ... | ..... |
| Etowah, 4,209—McMinn Co. | | | | | | | | |
| Etowah Hospital | Surg | Indiv | 8 | 3 | .. | No | ... | 84 |
| Fayetteville, 3,822—Lincoln Co. | | | | | | | | |
| Lincoln County Hospital | Gen | County | 20 | 12 | 3 | No | 8 | 289 |
| Fountain Head, 180—Sumner Co. | | | | | | | | |
| Fountain Head Sanitarium and Hospital | Conv | Indep | 25 | 10 | .. | Yes | ... | 125 |
| Hermitage, 62—Davidson Co. | | | | | | | | |
| Confederate Soldiers' Home | Inst | State | 18 | 6 | .. | No | ... | 25 |
| Johnson City, 25,080—Washington Co. | | | | | | | | |
| Veterans Admin. Home■▲ | Inst | VetAd | 666 | 603 | .. | No | ... | 2,561 |
| Knoxville, 105,802—Knox Co. | | | | | | | | |
| Reaves-Leach Infirmary | EENT | Part | 6 | ... | .. | Yes | ... | ..... |
| Tennessee School for Deaf | Inst | State | 20 | 1 | .. | No | ... | 396 |
| Univ. of Tennessee Infirm. | Inst | State | 10 | ... | .. | Yes | ... | 185 |
| Maryville, 4,958—Blount Co. | | | | | | | | |
| Burchfield's Eye, Ear and Throat Hospital | EENT | Indiv | 6 | 1 | .. | Yes | ... | 246 |
| Maryville College Hospital | Inst | Indep | 12 | ... | .. | ... | ... | 160 |
| Memphis, 253,143—Shelby Co. | | | | | | | | |
| Ella Oliver Home | Mater | Indep | 36 | 16 | 12 | No | 42 | 68 |
| Shelby County Emergency and Pellagra Hospital | Iso | County | 120 | 120 | .. | No | ... | 250 |
| Shelby County Hospital■▲ | Inst | County | 600 | 594 | .. | No | ... | 689 |
| Nashville, 153,866—Davidson Co. | | | | | | | | |
| Davidson County Hosp.■ | N&M | County | 550 | 525 | .. | No | ... | 225 |
| Davidson County Isolation Hospital | Iso | County | 50 | 12 | .. | No | ... | ..... |
| Tennessee Industrial School | Inst | State | 85 | 12 | .. | No | ... | 520 |
| Tennessee State Prison Hospital■ | Inst | State | 130 | 25 | .. | Yes | ... | ..... |
| Raleigh, 287—Shelby Co. | | | | | | | | |
| Cheerfield Farm Preventor | TB | Cy&Co | 50 | 50 | .. | ... | ... | 50 |
| Hayes Sanatorium | N&M | Indiv | 30 | 10 | .. | No | ... | 40 |
| Richard City, 522—Marion Co. | | | | | | | | |
| Dixie Hospital | Gen | Indiv | 8 | 3 | 2 | No | ... | ..... |

Summary for Tennessee:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 84 | 9,847 | 7,727 | 95,822 |
| Related institutions | 25 | 3,090 | 2,619 | 6,061 |
| Totals | 109 | 12,937 | 10,346 | 101,883 |
| Refused registration | 9 | 149 | | |

## TEXAS

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Abilene, 23,175—Taylor Co. | | | | | | | | |
| Abilene State Hospital | Epil | State | 1,000 | 900 | .. | No | ... | 172 |
| West Texas Baptist Sanitarium◊■ | Gen | Church | 67 | 35 | 8 | No | 159 | 1,851 |
| Alice, 4,239—Jim Wells Co. | | | | | | | | |
| Alice Hospital■ | Gen | Part | 12 | New | 2 | Yes | 1 | 6 |
| Amarillo, 43,132—Potter Co. | | | | | | | | |
| Northwest Texas Hosp.◊■ | Gen | County | 75 | 53 | 10 | No | 242 | 1,856 |
| St. Anthony's Hospital◊■ | Gen | Church | 100 | 45 | 15 | No | 170 | 1,805 |
| Archer City, 1,512—Archer Co. | | | | | | | | |
| Archer Hospital | Gen | Indiv | 14 | 7 | 4 | No | 20 | 300 |
| Austin, 53,120—Travis Co. | | | | | | | | |
| Austin City Hospital◊■ | Gen | City | 149 | 43 | 16 | Yes | 274 | 1,616 |
| Austin State Hospital | N&M | State | 1,750 | 1,995 | .. | No | ... | 234 |
| St. David's Hospital◊ | Gen | Church | 65 | 35 | 11 | No | 170 | 1,610 |
| Seton Infirmary◊■ | Gen | Church | 88 | 46 | 12 | No | 132 | 1,707 |
| Ballinger, 4,187—Runnels Co. | | | | | | | | |
| Halley and Love Sanit. | Gen | Part | 20 | 7 | 5 | Yes | 40 | ..... |
| Bastrop, 1,895—Bastrop Co. | | | | | | | | |
| F. A. Orgain Mem. Hosp. | Gen | Indep | 30 | 8 | 10 | No | ... | ..... |
| Bay City, 4,070—Matagorda Co. | | | | | | | | |
| Dr. Loos' Hospital | Gen | Indiv | 15 | 5 | 4 | No | 31 | 357 |
| Beaumont, 57,732—Jefferson Co. | | | | | | | | |
| Beaumont General Hosp. | Gen | Indep | 60 | 24 | 10 | No | 113 | 1,326 |
| Hotel Dieu Hospital★◊■ | Gen | Church | 175 | 90 | 14 | No | 351 | 3,082 |
| Jefferson Co. Tuber. Hosp. | TB | County | 70 | 57 | .. | No | ... | 95 |
| Jefferson County Tuberculosis Hospital (col.) | TB | County | 20 | 16 | .. | No | ... | 47 |
| Belton, 3,779—Bell Co. | | | | | | | | |
| Belton General Hospital | Gen | Part | 14 | 6 | 2 | No | 50 | 500 |
| Big Spring, 13,735—Howard Co. | | | | | | | | |
| Big Spring Hospital■ | Gen | Indep | 35 | 11 | 6 | No | 105 | 1,061 |
| Bivings and Barcus Hosp. | Gen | Part | 19 | 6 | 6 | No | 41 | 339 |
| Bonham, 5,655—Fannin Co. | | | | | | | | |
| S. B. Allen Mem. Hosp.◊ | Gen | Indep | 30 | 9 | 4 | No | 30 | 438 |
| Borger, 6,532—Hutchinson Co. | | | | | | | | |
| Clutter and Draper Hosp. | Gen | Part | 15 | 4 | 4 | No | 45 | ..... |
| Hutchinson County Hosp.■ | Gen | County | 20 | 17 | 4 | No | 96 | 658 |
| Bowie, 3,131—Montague Co. | | | | | | | | |
| Bowie Clinic Hospital | Gen | Indep | 20 | 7 | 5 | No | 15 | 281 |
| Brackettville, 1,822—Kinney Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 25 | 12 | 2 | Yes | 11 | 369 |
| Brady, 3,983—McCulloch Co. | | | | | | | | |
| Brady Sanitarium◊■ | Gen | Part | 50 | 16 | 5 | No | 84 | 701 |
| Breckenridge, 7,569—Stephens Co. | | | | | | | | |
| West Side Hospital■ | Gen | Indep | 25 | 8 | 4 | No | ... | 1,112 |
| Brenham, 5,974—Washington Co. | | | | | | | | |
| Brenham Hospital | Gen | Church | 26 | 6 | 4 | Yes | 21 | 336 |
| Sarah B. Milroy Memorial Hospital | Gen | Indep | 25 | New | 3 | No | ... | ..... |
| Brownsville, 22,021—Cameron Co. | | | | | | | | |
| Mercy Hospital | Gen | Church | 50 | 20 | 6 | No | 20 | 650 |
| Station Hospital■ | Gen | Army | 50 | 5 | .. | Yes | ... | 326 |

Key to symbols and abbreviations is on page 2078

## TEXAS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Brownwood, 12,789—Brown Co. | | | | | | | | |
| Bellevue Hospital■ | Gen | Indiv | 12 | 5 | 2 | No | 6 | 100 |
| Central Texas Hospital◊ | Gen | Indiv | 35 | 15 | 2 | No | 46 | 735 |
| Medical Arts Hospital■ | Gen | Indep | 36 | 9 | 4 | No | 28 | 609 |
| Bryan, 7,814—Brazos Co. | | | | | | | | |
| Wilkerson Memorial Clinic | Gen | Indiv | 10 | 5 | 2 | Yes | 8 | 80 |
| Cameron, 4,565—Milam Co. | | | | | | | | |
| Cameron Hospital◊■ | Gen | Part | 35 | 23 | 4 | No | 60 | 815 |
| [illegible] | | | | | | | | |
| [illegible] | Gen | Indiv | 12 | 4 | 2 | No | 16 | 190 |
| [illegible] | | | | | | | | |
| [illegible] Sanitarium■ | Gen | Indiv | 12 | 2 | 1 | No | 4 | 100 |
| Warren Hospital | Gen | Part | 12 | 3 | 1 | No | 10 | 125 |
| Childress, 7,163—Childress Co. | | | | | | | | |
| Jeter-Townsend Hospital | Gen | Part | 28 | 5 | 2 | No | ... | ..... |
| Cisco, 6,027—Eastland Co. | | | | | | | | |
| Graham Sanitarium | Gen | Indiv | 26 | 8 | 4 | No | 30 | 2,920 |
| Cleburne, 11,539—Johnson Co. | | | | | | | | |
| Cleburne Sanitarium■ | Gen | Indiv | 20 | 10 | 5 | No | ... | ..... |
| Coleman, 6,078—Coleman Co. | | | | | | | | |
| Overall Memorial Hospital | Gen | Cy&Co | 30 | 15 | 2 | No | 75 | 589 |
| Colorado, 4,671—Mitchell Co. | | | | | | | | |
| C. L. Root Hospital■ | Gen | Indiv | 20 | 6 | 3 | No | 25 | 300 |
| Conroe, 2,457—Montgomery Co. | | | | | | | | |
| Mary Swain Sanitarium■ | Gen | Indiv | 18 | 6 | 4 | No | 14 | 400 |
| Corpus Christi, 27,741—Nueces Co. | | | | | | | | |
| Fred Roberts Mem. Hosp.◊■ | Gen | Indep | 55 | 19 | 10 | No | 60 | 821 |
| Medical-Professional Hosp. | Gen | Indep | 33 | 6 | 5 | ... | 15 | 650 |
| Spohn Hospital◊■ | Gen | Church | 56 | 40 | 12 | No | 124 | 1,425 |
| Corsicana, 15,202—Navarro Co. | | | | | | | | |
| Corsicana Hosp. & Clinic◘ | Gen | Indep | 20 | 3 | 2 | No | 8 | 126 |
| Navarro Clinic | Gen | Indep | 16 | 11 | 4 | No | 36 | 418 |
| Physicians and Surgeons Hospital◊■ | Gen | County | 60 | 15 | 6 | No | 65 | 848 |
| Cuero, 4,672—DeWitt Co. | | | | | | | | |
| Burns Hospital◘ | Gen | Indep | 35 | 15 | 1 | No | 17 | 446 |
| Lutheran Hospital◘ | Gen | Church | 35 | 10 | 2 | Yes | 14 | 387 |
| Dallas, 260,475—Dallas Co. | | | | | | | | |
| Baylor Hospital★+◊■ | Gen | Church | 300 | 250 | 34 | Yes | 1,100 | 11,985 |
| Bradford Memorial Hospital for Babies⊙ | Chil | Indep | 60 | 29 | 5 | Yes | ... | 534 |
| Carrell-Driver-Girard Clinic and Dallas Ortho. Hosp. | Ortho | Indep | 25 | 15 | .. | No | ... | ..... |
| Dallas Medical and Surgical Clinic Hospital | Gen | Part | 27 | 18 | .. | No | ... | 922 |
| Dallas Methodist Hosp.◊ | Gen | Church | 82 | 51 | 18 | Yes | 495 | 2,154 |
| Jones Eye, Ear, Nose and Throat Hosp. and Clinic | EENT | Part | 11 | 3 | .. | No | ... | 526 |
| McMillan Sanit. (col.) | Gen | Indiv | 16 | 3 | 1 | No | 12 | 150 |
| Parkland Hospital★+◊◘ | Gen | Cy&Co | 264 | 214 | 34 | Yes | 991 | 6,101 |
| Pinkston Clinic (col.) | Gen | Indiv | 15 | 7 | 2 | No | 15 | 266 |
| Rushing Clinic and Sanit. | Gen | Indiv | 25 | 18 | 2 | Yes | 22 | 530 |
| St. Paul's Hospital★◊◘ | Gen | Church | 271 | 170 | 29 | Yes | 620 | 5,920 |
| Texas Scottish Rite Hosp. for Crippled Children+ | Ortho | Frat | 58 | 54 | .. | Yes | ... | 580 |
| Timberlawn Sanitarium | N&M | Indep | 40 | 19 | .. | No | ... | 120 |
| Woodlawn Sanatorium | TB | Cy&Co | 120 | 115 | .. | No | ... | 285 |
| Denison, 13,850—Grayson Co. | | | | | | | | |
| Denison City Hospital◘ | Gen | Indep | 20 | 11 | 3 | No | 30 | 396 |
| Mercy Hospital (col.)◊ | Gen | Frat | 25 | 9 | 3 | No | 18 | 227 |
| M. K. & T. Railroad Employees Hospital■ | Indus | Indus | 60 | 43 | .. | Yes | ... | 869 |
| Denton, 9,587—Denton Co. | | | | | | | | |
| Denton Hosp. and Clinic | Gen | Part | 32 | 8 | 10 | No | 47 | 312 |
| Eagle Pass, 5,059—Maverick Co. | | | | | | | | |
| Gates' Hospital | Gen | Indiv | 12 | 5 | 1 | No | ... | ..... |
| Edinburg, 4,821—Hidalgo Co. | | | | | | | | |
| Ponton-Brown Clinic Hospital■ | Gen | Part | 100 | 6 | 10 | No | 14 | 247 |
| Electra, 6,712—Wichita Co. | | | | | | | | |
| Parmley-Ogden Hospital■ | Gen | Part | 23 | 4 | 4 | No | 22 | 251 |
| El Paso, 102,421—El Paso Co. | | | | | | | | |
| El Paso City-County Hospital■ | Gen | Cy&Co | 100 | 97 | 8 | Yes | 180 | 2,242 |
| El Paso Masonic Hosp.◊■ | Gen | Frat | 46 | 40 | 16 | Yes | 328 | 1,635 |
| Hendricks-Laws Sanat. | TB | Part | 88 | 30 | .. | No | ... | 56 |
| Homan Sanatorium+ | TB | Part | 110 | 70 | .. | Yes | ... | 46 |
| Hotel Dieu, Sisters Hosp.◊◘ | Gen | Church | 100 | 64 | 23 | No | 218 | 2,159 |
| Long Sanatorium | TB | Indiv | 40 | 20 | .. | No | ... | ..... |
| Price Sanatorium | TB | Indiv | 20 | 10 | .. | No | ... | ..... |
| Providence Hospital■ | Gen | Indiv | 50 | 26 | 6 | No | 60 | 950 |
| St. Joseph's Sanatorium | TB | Church | 75 | 50 | .. | No | ... | 73 |
| Southern Baptist Sanat. | TB | Church | 80 | 45 | .. | No | ... | 117 |
| William Beaumont General Hospital★◘▲ | Gen | Army | 512 | 332 | 7 | Yes | 41 | 3,998 |
| Ennis, 7,069—Ellis Co. | | | | | | | | |
| Municipal Hospital■ | Gen | City | 15 | 6 | 4 | No | 23 | 222 |
| Floresville, 1,581—Wilson Co. | | | | | | | | |
| Oxford-Archer Hospital | Gen | Part | 12 | 4 | 1 | No | 6 | 320 |
| Floydada, 2,637—Floyd Co. | | | | | | | | |
| Drs. Smith & Smith Sanitarium◘ | Gen | Part | 12 | 3 | .. | Yes | ... | ..... |
| Forney, 1,216—Kaufman Co. | | | | | | | | |
| Forney Sanitarium■ | Gen | Indep | 20 | 4 | 4 | Yes | 9 | 150 |
| Ft. Worth, 163,477—Tarrant Co. | | | | | | | | |
| All Saints Episcopal Hosp.◊ | Gen | Church | 75 | 33 | 15 | No | 260 | 1,398 |
| Arlington Heights Sanit. | N&M | Indep | 40 | 25 | .. | No | ... | 81 |
| Baptist Hospital | Gen | Church | 60 | 30 | 11 | No | ... | ..... |
| City and County Hosp.★+◊■ | Gen | Cy&Co | 119 | 107 | 15 | Yes | 365 | 2,456 |
| W. I. Cook Mem. Hosp. | Gen | Indep | 34 | 30 | 6 | No | 78 | 923 |
| Ft. Worth Children's Hospital⊙ | Chil | Indep | 35 | 22 | .. | No | ... | 360 |
| Harris' Clinic-Hospital★◊■ | Gen | Indiv | 90 | 53 | 16 | Yes | 58 | ..... |
| Harrison Clinic & Hosp.■ | Gen | Indiv | 40 | 29 | 7 | Yes | 64 | 822 |
| St. Joseph's Hospital★◊■ | Gen | Church | 165 | 82 | 16 | No | 243 | 3,123 |

Key to symbols and abbreviations is on page 2078

## TEXAS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Freeport, 3,162—Brazoria Co. | | | | | | | | |
| Freeport Hospital■ | Gen | Indus | 18 | 6 | 4 | Yes | 60 | 2,000 |
| Gainesville, 8,915—Cooke Co. | | | | | | | | |
| Gainesville Sanitarium◊ | Gen | Indep | 25 | 15 | 6 | No | ... | ..... |
| Galveston, 52,938—Galveston Co. | | | | | | | | |
| Galveston State Psychopathic Hospital | N&M | State | 48 | New | .. | No | ... | 12 |
| John Sealy Hospital★◊◘ | Gen | City | 350 | 269 | 24 | Yes | 444 | 5,675 |
| St. Mary's Infirmary★◊◘ | Gen | Church | 150 | 126 | 15 | No | 270 | 2,070 |
| Station Hospital■ | Gen | Army | 25 | 14 | .. | Yes | ... | 442 |
| U. S. Marine Hospital★◘ | Gen | USPHS | 100 | New | .. | Yes | ... | ..... |
| Georgetown, 3,583—Williamson Co. | | | | | | | | |
| Martin Hospital | Gen | Part | 18 | 6 | 4 | No | ... | ..... |
| Gilmer, 1,963—Upshur Co. | | | | | | | | |
| Elmwood Sanitarium■ | Gen | Indiv | 15 | 4 | 2 | No | 20 | 73 |
| Oaklawn Sanitarium■ | Gen | Indiv | 15 | 3 | 3 | No | 30 | 170 |
| Gonzales, 3,859—Gonzales Co. | | | | | | | | |
| Holmes Hospital■ | Gen | Indep | 25 | 10 | 5 | No | 25 | 310 |
| Gorman, 1,154—Eastland Co. | | | | | | | | |
| Blackwell Sanitarium | Gen | Part | 22 | 10 | 2 | No | 42 | ..... |
| Graham, 4,981—Young Co. | | | | | | | | |
| Graham Hospital | Gen | Indep | 17 | 9 | 2 | No | 78 | 503 |
| Greenville, 12,407—Hunt Co. | | | | | | | | |
| Dr. E. P. Becton's Hosp. | Surg | Indiv | 16 | 6 | .. | No | ... | 200 |
| Cantrell Hospital | Gen | Indiv | 25 | 10 | 4 | No | ... | ..... |
| Dr. Joe Becton's Hospital | Surg | Indiv | 17 | 3 | .. | No | ... | 89 |
| Groesbeck, 2,059—Limestone Co. | | | | | | | | |
| Dr. Cox's Hospital | Gen | Indiv | 12 | 3 | 3 | No | 10 | 800 |
| Gulf, 725—Matagorda Co. | | | | | | | | |
| Texas Gulf Sulphur Company Hospital | Gen | Indus | 14 | 3 | 1 | No | 30 | 206 |
| Hallettsville, 1,406—Lavaca Co. | | | | | | | | |
| Renger Hospital■ | Gen | Indiv | 15 | 8 | 3 | Yes | 18 | 116 |
| Hamilton, 2,084—Hamilton Co. | | | | | | | | |
| Hamilton Sanitarium◊ | Gen | Part | 45 | 20 | 6 | No | 30 | 488 |
| Harlingen, 12,124—Cameron Co. | | | | | | | | |
| Valley Baptist Hospital◘ | Gen | Church | 34 | 19 | 5 | No | 148 | 856 |
| Henderson, 2,932—Rusk Co. | | | | | | | | |
| Henderson Hospital | Gen | Indep | 30 | 16 | 4 | No | 65 | 590 |
| Hereford, 2,458—Deaf Smith Co. | | | | | | | | |
| Deaf Smith County Hosp. | Gen | County | 13 | 4 | 4 | No | 29 | 229 |
| Hillsboro, 7,823—Hill Co. | | | | | | | | |
| Boyd Sanitarium | Gen | Indiv | 25 | 9 | 2 | No | ... | ..... |
| Houston, 292,352—Harris Co. | | | | | | | | |
| Autry Memorial Hosp...(Children's Dept. of the Houston Tuber. Hosp.) | | | | | | | | |
| Dr. Greenwood's Sanit. | N&M | Indep | 35 | 27 | .. | No | ... | 105 |
| Heights Clinic | Gen | Indep | 28 | 9 | 5 | Yes | 182 | 549 |
| Hermann Hospital★+◊■ | Gen | Indep | 176 | 131 | 20 | Yes | 382 | 3,320 |
| Houston Eye, Ear, Nose and Throat Hospital | EENT | Indep | 25 | 8 | .. | No | ... | 1,603 |
| Houston Negro Hospital◊ | Gen | Indep | 50 | 19 | 3 | No | 20 | 678 |
| Houston Tuber. Hospital■ | TB | Cy&Co | 176 | 148 | .. | No | ... | 352 |
| Jefferson Davis Hosp.★◊■▲ | Gen | Cy&Co | 165 | 160 | 20 | Yes | 605 | 4,558 |
| Memorial Hospital◊ | Gen | Church | 170 | 129 | 21 | No | 1,141 | 8,005 |
| Methodist Hospital◊ | Gen | Church | 88 | 63 | 12 | No | 300 | 2,664 |
| Park View Hospital | Gen | Indep | 23 | 9 | 2 | Yes | 48 | 250 |
| St. Joseph's Infirmary★◊ | Gen | Church | 207 | 140 | 18 | No | 861 | 5,674 |
| Southern Pacific Hosp.■ | Indus | Indus | 135 | 80 | .. | Yes | ... | 1,841 |
| Turner Urological Institute | Urol | Indiv | 18 | 10 | .. | Yes | ... | 482 |
| Jacksonville, 6,748—Cherokee Co. | | | | | | | | |
| Nan Travis Sanitarium■ | Gen | Indep | 38 | 21 | 5 | No | 39 | 999 |
| Jasper, 3,393—Jasper Co. | | | | | | | | |
| Hardy-Hancock Hospital | Gen | Part | 18 | 10 | .. | Yes | ... | ..... |
| Jasper General Hospital | Gen | Indiv | 31 | 4 | 2 | No | ... | ..... |
| Kelly Field,—Bexar Co. | | | | | | | | |
| Station Hospital | Gen | Army | 50 | 18 | .. | Yes | ... | 665 |
| Kerrville, 4,546—Kerr Co. | | | | | | | | |
| Kerrville Clinic and Secor Hospital | Gen | Indiv | 25 | 8 | 3 | No | 12 | 260 |
| Thompson Sanatorium | TB | Indiv | 86 | 50 | .. | No | ... | 142 |
| Kingsville, 6,815—Kleberg Co. | | | | | | | | |
| Kleberg County Hospital■ | Gen | County | 50 | 16 | 6 | No | 57 | 609 |
| Knox City, 906—Knox Co. | | | | | | | | |
| Knox County Hospital | Gen | County | 15 | 9 | 6 | No | ... | ..... |
| Lagrange, 2,354—Fayette Co. | | | | | | | | |
| Lagrange Hospital◘ | Gen | Indep | 45 | 19 | 5 | No | 25 | 495 |
| Lamesa, 3,528—Dawson Co. | | | | | | | | |
| Lamesa Sanitarium | Gen | Part | 15 | ... | 4 | No | 20 | 160 |
| Loveless & Bennett Hosp.■ | Gen | Part | 14 | 3 | 2 | No | 11 | 241 |
| Laredo, 32,618—Webb Co. | | | | | | | | |
| Mercy Hospital◊■ | Gen | Church | 85 | 21 | 6 | No | 58 | 951 |
| Station Hospital | Gen | Army | 25 | 8 | 1 | Yes | 1 | 258 |
| Legion, 819—Kerr Co. | | | | | | | | |
| Veterans Admin. Hospital | TB | VetAd | 433 | 300 | .. | No | ... | 776 |
| Livingston, 1,165—Polk Co. | | | | | | | | |
| Bergman Hospital | Gen | Indiv | 16 | 6 | 3 | No | 10 | 217 |
| Lockhart, 4,367—Caldwell Co. | | | | | | | | |
| Lockhart Sanitarium■ | Gen | Indep | 18 | 7 | 1 | No | 14 | 287 |
| Longview, 5,036—Gregg Co. | | | | | | | | |
| Hurst Eye, Ear, Nose and Throat Hospital | EENT | Indiv | 14 | 4 | .. | No | ... | 400 |
| Markham Sanitarium | Gen | Indiv | 40 | ... | 4 | No | ... | ..... |
| Lubbock, 20,520—Lubbock Co. | | | | | | | | |
| Lubbock Sanitarium◊■ | Gen | Indep | 85 | 66 | 15 | No | 128 | 3,062 |
| West Texas Hospital◊■ | Gen | Indep | 60 | 29 | 5 | No | 62 | 2,170 |
| Lufkin, 7,311—Angelina Co. | | | | | | | | |
| Angelina County Hosp.◊■ | Gen | County | 35 | 22 | 4 | No | 62 | 780 |
| Luling, 5,970—Caldwell Co. | | | | | | | | |
| Luling Hospital■ | Gen | Indiv | 14 | 5 | 4 | No | 36 | 463 |
| Marfa, 3,909—Presidio Co. | | | | | | | | |
| Station Hospital | Gen | Army | 54 | 12 | .. | Yes | ... | 300 |
| Marlin, 5,338—Falls Co. | | | | | | | | |
| Buie-Allen Hospital | Gen | Indiv | 20 | 12 | 2 | No | 20 | ..... |
| Shaw Clinic and Hospital | Gen | Indiv | 10 | 3 | 2 | Yes | 13 | 140 |
| Torbett Sanatorium | Gen | Indep | 42 | 20 | 4 | Yes | 31 | 650 |

## TEXAS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Marshall, 16,203—Harrison Co. | | | | | | | | |
| Kahn Memorial Hospital■ | Gen | Indep | 28 | 10 | 7 | No | 30 | 416 |
| McCamey, 3,446—Upton Co. | | | | | | | | |
| Humble Hospital........ | Gen | Indus | 11 | 5 | 1 | Yes | ... | ..... |
| McKinney, 7,307—Collin Co. | | | | | | | | |
| Burton Eye, Ear, Nose and Throat Sanitarium...... | EENT | Indiv | 12 | 5 | .. | No | ... | 218 |
| McKinney City Hospital◊■ | Gen | City | 36 | 14 | 4 | Yes | 42 | 460 |
| Memphis, 4,257—Hall Co. | | | | | | | | |
| Memphis Hospital......... | Gen | Indiv | 15 | 4 | 1 | No | 9 | 168 |
| Mercedes, 6,608—Hidalgo Co. | | | | | | | | |
| Mercedes General Hosp.■.. | Gen | Frat | 22 | 13 | 4 | No | 36 | 504 |
| Mexia, 6,579—Limestone Co. | | | | | | | | |
| Brown Hospital■......... | Gen | Indiv | 20 | 7 | 3 | No | 30 | 349 |
| Midland, 5,484—Midland Co. | | | | | | | | |
| Midland Clinic-Hospital■.. | Gen | Indiv | 13 | 7 | 1 | No | 12 | 254 |
| Mineral Wells, 5,986—Palo Pinto Co. | | | | | | | | |
| Nazareth Hospital■........ | Gen | Church | 40 | 10 | 4 | No | 10 | 191 |
| Nacogdoches, 5,687—Nacogdoches Co. | | | | | | | | |
| City Memorial Hospital■. | Gen | City | 25 | 6 | 2 | No | 12 | 406 |
| Navasota, 5,128—Grimes Co. | | | | | | | | |
| Brazos Valley Sanitarium■ | Gen | Indiv | 20 | 6 | 4 | No | 18 | 290 |
| New Braunfels, 6,242—Comal Co. | | | | | | | | |
| Comal Sanitarium......... | Gen | Indiv | 35 | 6 | .. | No | ... | ..... |
| New Braunfels Hospital■.. | Gen | City | 14 | 8 | 3 | No | 4 | ..... |
| Olney, 4,138—Young Co. | | | | | | | | |
| Hamilton Hospital■....... | Gen | Indiv | 20 | 8 | .. | No | 43 | 860 |
| Orange, 7,913—Orange Co. | | | | | | | | |
| Frances Ann Lutcher Hosp.◊ | Gen | Indep | 60 | 32 | 7 | Yes | ... | ..... |
| Paducah, 2,802—Cottle Co. | | | | | | | | |
| W. Q. Richards Mem. Hosp. | Gen | City | 40 | 10 | 10 | No | ... | ..... |
| Palestine, 11,445—Anderson Co. | | | | | | | | |
| International and Great Northern Railroad Employees Hospital■........ | Gen | Indus | 73 | 22 | 2 | Yes | 10 | 610 |
| Palestine Sanitarium■...... | Gen | Indep | 12 | 5 | .. | No | ... | 270 |
| Speegle-DuPuy Hosp. and Clinic■ .................. | Gen | Indep | 15 | 5 | .. | No | ... | ..... |
| Pampa, 10,470—Gray Co. | | | | | | | | |
| Worley Hospital■......... | Gen | Indiv | 32 | 18 | 6 | Yes | 64 | 753 |
| Paris, 15,649—Lamar Co. | | | | | | | | |
| Lamar County Hospital■. | Gen | County | 50 | 19 | 9 | No | 30 | 489 |
| St. Joseph's Infirmary◊... | Gen | Church | 50 | 20 | 6 | No | 29 | 706 |
| Sanitarium of Paris◊...... | Gen | Indep | 62 | 40 | 4 | No | 37 | 1,331 |
| Pecos, 3,304—Reeves Co. | | | | | | | | |
| Camp and Camp Hosp.■ | Gen | Part | 20 | 5 | 4 | No | 32 | 309 |
| Perryton, 2,824—Ochiltree Co. | | | | | | | | |
| Plaza Hospital .......... | Gen | Part | 25 | 5 | 2 | No | 20 | 252 |
| Plainview, 8,834—Hale Co. | | | | | | | | |
| Plainview Sanitarium and Clinic◊■ ................ | Gen | Indiv | 48 | 20 | 5 | No | 58 | 1,261 |
| Pt. Arthur, 50,902—Jefferson Co. | | | | | | | | |
| St. Mary's Hospital, Gates Memorial■ ........ .... | Gen | Church | 150 | 73 | 12 | No | 165 | 1,657 |
| Prairie View,—Waller Co. | | | | | | | | |
| Prairie View Hospital◊■.. | Gen | State | 50 | 20 | 6 | Yes | 23 | 547 |
| Quanah, 4,464—Hardeman Co. | | | | | | | | |
| Quanah Hospital■......... | Gen | Part | 40 | 20 | 6 | No | 37 | 806 |
| Ranger, 6,208—Eastland Co. | | | | | | | | |
| City-County Hospital■..... | Gen | Cy&Co | 30 | 10 | 3 | No | ... | 400 |
| West Texas Clinic Hosp.. | Gen | Indep | 18 | 14 | 2 | No | 24 | 367 |
| Riogrande, 2,283—Starr Co. | | | | | | | | |
| Station Hospital■......... | Gen | Army | 30 | 7 | .. | Yes | 5 | 366 |
| Rosenberg, 1,941—Ft. Bend Co. | | | | | | | | |
| Rosenberg Hospital■... ... | Gen | Indiv | 14 | 1 | 1 | No | 12 | 524 |
| Rusk, 3,859—Cherokee Co. | | | | | | | | |
| Rusk State Hospital....... | N&M | State | 2,000 | 1,479 | .. | No | ... | 490 |
| San Angelo, 25,308—Tom Green Co. | | | | | | | | |
| The Bungalows............ | TB | Indiv | 28 | 15 | .. | No | ... | ..... |
| Rush, Schulkey and Wall Clinic Hospital■.......... | Gen | Part | 25 | 15 | 4 | Yes | 60 | 800 |
| St. John's Hospital◊■..... | Gen | Church | 32 | 18 | 6 | No | 75 | 515 |
| San Angelo Hospital◊■.... | Gen | Church | 50 | 31 | 9 | No | 83 | 884 |
| San Antonio, 231,542—Bexar Co. | | | | | | | | |
| Baylor Hospital.......... | Gen | Indep | 65 | 40 | 16 | No | 124 | 1,669 |
| Eye, Ear, Nose and Throat Hospital ............... | EENT | Indep | 35 | 10 | .. | Yes | ... | ..... |
| Dr. Farmer's Sanatorium. | TB | Indiv | 20 | 10 | .. | No | ... | 40 |
| Grace Lutheran Sanat..... | TB | Church | 50 | 35 | .. | No | ... | 102 |
| Dr. Kenney's Sanatorium■ | Gen | Indiv | 70 | 25 | 12 | Yes | 52 | 1,101 |
| Lee Surgical Hospital..... | Gen | Indep | 30 | 14 | 10 | No | 80 | 645 |
| Medical & Surg. Hosp.★◊■ | Gen | Indep | 115 | 43 | 16 | No | 230 | 2,375 |
| Medical Arts Hospital.... | Gen | Indep | 34 | 19 | 4 | No | 42 | 1,873 |
| Dr. Moody's Sanitarium... | N&M | Indep | 50 | 30 | .. | No | ... | 166 |
| Nix Hospital.............. | Gen | Indep | 160 | 32 | 24 | No | ... | 1,578 |
| P. and S. Hosp'tal◊........ | Gen | Indep | 75 | 43 | 12 | No | 188 | 2,076 |
| Robert B. Green Memorial Hospital★◊■ ............ | Gen | Cy&Co | 210 | 174 | 25 | Yes | 658 | 5,793 |
| San Antonio State Hospital+◊ .................. | N&M | State | 2,220 | 2,213 | .. | No | ... | 495 |
| Santa Rosa Hospital★◊■.. | Gen | Church | 342 | 129 | 44 | Yes | 580 | 6,179 |
| Station Hospital.......... | Gen | Army | 40 | 18 | .. | Yes | ... | 808 |
| Station Hospital★■......... | Gen | Army | 750 | 588 | 17 | Yes | 203 | 6,544 |
| Woodmen of the World War Memorial Hospital | TB | Frat | 180 | 183 | .. | No | ... | 289 |
| Sanatorium, 463—Tom Green Co. | | | | | | | | |
| State Tuberculosis Sanat. | TB | State | 662 | 662 | .. | No | ... | 1,317 |
| San Marcos, 5,134—Hays Co. | | | | | | | | |
| Soldiers' and Sailors' Memorial Hospital■......... | Gen | Cy&Co | 20 | 3 | 4 | No | 20 | 175 |
| Santa Anna, 1,883—Coleman Co. | | | | | | | | |
| Sealy Hospital◊........... | Gen | Indiv | 30 | 17 | 3 | Yes | 61 | 825 |
| Sealy, 1,640—Austin Co. | | | | | | | | |
| Sealy Hospital............ | Gen | Indiv | 12 | 3 | 1 | No | 15 | 201 |
| Sequin, 5,225—Guadalupe Co. | | | | | | | | |
| Sequin Hospital■.......... | Gen | Indep | 22 | 8 | 3 | No | 30 | 306 |

## TEXAS—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Seymour, 2,626—Baylor Co. | | | | | | | | |
| Baylor County Hospital■. | Gen | County | 15 | 3 | 1 | No | 31 | 139 |
| Shamrock, 3,780—Wheeler Co. | | | | | | | | |
| Dr. Beach Sanitarium..... | Gen | Indiv | 20 | 8 | 4 | No | 24 | 198 |
| Shamrock General Hospital | Gen | Indiv | 40 | 10 | 5 | No | 42 | 397 |
| Sherman, 15,713—Grayson Co. | | | | | | | | |
| St. Vincent's Sanitarium◊■ | Gen | Church | 75 | 26 | 6 | No | 43 | 898 |
| Wilson N. Jones Hosp.◊■. | Gen | Indep | 66 | 36 | 6 | No | 46 | 1,265 |
| Shiner, 1,372—Lavaca Co. | | | | | | | | |
| Dr. Wagner's Hospital■... | Gen | Indiv | 18 | 8 | 1 | No | 8 | 216 |
| Silsbee, 3,060—Hardin Co. | | | | | | | | |
| Kirby Hospital............ | Indus | Indep | 22 | 6 | .. | Yes | ... | 267 |
| Slaton, 3,876—Lubbock Co. | | | | | | | | |
| Mercy Hospital■.......... | Gen | Church | 50 | 9 | 6 | No | 11 | 347 |
| Spur, 1,899—Dickens Co. | | | | | | | | |
| Nichols Sanitarium........ | Gen | Indiv | 20 | 4 | 4 | No | 10 | 170 |
| Stamford, 4,095—Jones Co. | | | | | | | | |
| Stamford Sanitarium◊■.... | Gen | Indep | 40 | 26 | 5 | Yes | 89 | 793 |
| Stephenville, 3,944—Erath Co. | | | | | | | | |
| Stephenville Hospital...... | Gen | Indiv | 28 | 14 | 1 | No | 22 | 527 |
| Sugar Land, 2,019—Ft. Bend Co. | | | | | | | | |
| Laura Eldridge Memorial Hospital ............... | Gen | Indep | 30 | 3 | 2 | No | ... | ..... |
| Sweetwater, 10,848—Nolan Co. | | | | | | | | |
| Sweetwater Clinic Hosp... | Gen | Part | 16 | 2 | 6 | No | 11 | 113 |
| Taylor, 7,463—Williamson Co. | | | | | | | | |
| Doak and Stromberg Clinic and Hospital.............. | Gen | Indiv | 25 | 19 | .. | ... | 20 | ..... |
| Taylor Sanitarium◊■....... | Gen | Indep | 25 | 10 | 3 | No | 29 | 376 |
| Teague, 3,509—Freestone Co. | | | | | | | | |
| Davidson Sanitarium■..... | Gen | Indiv | 25 | 12 | 3 | No | 17 | 437 |
| Temple, 15,345—Bell Co. | | | | | | | | |
| Gulf, Colorado and Santa Fe Hospital (Affil.)★■... | Indus | Indus | 150 | 43 | .. | Yes | ... | 1,332 |
| King's Daughters Clinic and Hospital★◊.......... | Gen | Indep | 107 | 52 | 8 | Yes | 51 | 2,530 |
| Scott and White Hosp.★◊. | Gen | Indep | 182 | 111 | 8 | Yes | 95 | 3,337 |
| Woodson Eye, Ear, Nose and Throat Hospital.... | EENT | Part | 13 | 8 | .. | ... | ... | 1,165 |
| Terrell, 8,795—Kaufman Co. | | | | | | | | |
| Alexander-Holton Hosp.■.. | Gen | Part | 30 | 6 | 3 | No | 8 | [illegible] |
| Terrell State Hospital..... | N&M | State | 2,000 | 2,005 | .. | No | ... | [illegible] |
| Texarkana, 16,602—Bowie Co. | | | | | | | | |
| Texarkana Hospital◊■..... | Gen | Indep | 50 | 20 | 5 | No | 60 | [illegible] |
| Tyler, 17,113—Smith Co. | | | | | | | | |
| Tyler General Hospital.... | Gen | Indep | 15 | 11 | .. | No | 47 | [illegible] |
| Vernon, 9,137—Wilbarger Co. | | | | | | | | |
| King Hospital and Maternity Home■............. | Gen | Indiv | 25 | 11 | 4 | No | 50 | [illegible] |
| Moore Brothers' Hospital■ | Gen | Part | 20 | 9 | 4 | Yes | 36 | [illegible] |
| Victoria, 7,421—Victoria Co. | | | | | | | | |
| Victoria Hospital■......... | Gen | Indep | 18 | 8 | 6 | No | 44 | [illegible] |
| Von Ormy, 213—Bexar Co. | | | | | | | | |
| Von Ormy Cottage Sanit.. | TB | Indep | 50 | 27 | .. | No | ... | [illegible] |
| Waco, 52,848—McLennan Co. | | | | | | | | |
| Central Texas Baptist Sanitarium◊■ ............... | Gen | Church | 90 | 41 | 10 | No | 101 | 1,3 |
| Colgin Hosp. and Clinic■. | Gen | Indep | 40 | 14 | 3 | No | 27 | 6 |
| Providence Sanitarium★◊.. | Gen | Church | 141 | 80 | 9 | Yes | 222 | 2,7 |
| Veterans Admin. Hospital | N&M | VetAd | 308 | New | .. | No | ... | .... |
| Waxahachie, 8,012—Ellis Co. | | | | | | | | |
| Waxahachie Sanitarium.... | Gen | Indep | 32 | 12 | 4 | No | 49 | 53 |
| Wellington, 3,570—Collingsworth Co. | | | | | | | | |
| Wellington Hospital....... | Gen | Indiv | 15 | 8 | 2 | No | ... | 300 |
| Wharton, 2,691—Wharton Co. | | | | | | | | |
| Caney Valley H[illegible].... | Gen | Indiv | 25 | 7 | .. | No | ... | ..... |
| [illegible] Co. | | | | | | | | |
| [illegible]........ | Gen | Indus | 12 | 3 | 4 | Yes | 26 | 1,090 |
| [illegible]a Falls, 43,690—Wichita Co. | | | | | | | | |
| Hargrave-Walker Hospital and Clinic............... | Gen | Indep | 36 | 4 | 8 | No | 24 | 266 |
| Wichita Falls Clinic-Hosp. | Gen | Part | 72 | 39 | 8 | Yes | 120 | 1,721 |
| Wichita Falls State Hosp.+ | N&M | State | 1,825 | 1,605 | .. | No | ... | 832 |
| Wichita General Hosp.◊■.. | Gen | Cy&Co | 120 | 46 | 12 | Yes | 206 | 1,905 |
| Wink, 3,963—Winkler Co. | | | | | | | | |
| General Hospital.......... | Gen | Indiv | 22 | 14 | 3 | ... | ... | ..... |
| Yoakum, 5,656—Lavaca Co. | | | | | | | | |
| Huth Memorial Hospital■ | Gen | City | 35 | 7 | 7 | No | 75 | 430 |
| Yorktown, 1,882—De Witt Co. | | | | | | | | |
| Allen Hospital■............ | Gen | Indiv | 12 | 9 | 3 | No | 5 | ..... |
| **Related Institutions** | | | | | | | | |
| Arlington, 3,661—Tarrant Co. | | | | | | | | |
| Knights Templar Hospital | Inst | Frat | 25 | 15 | .. | No | ... | 78 |
| Austin, 53,120—Travis Co. | | | | | | | | |
| Austin State School...... | MenDef | State | 1,040 | 1,025 | .. | No | ... | ..... |
| Oaks Sanitarium.......... | N&M | Indep | 25 | 17 | .. | No | ... | 60 |
| Texas Confederate Home Hospital ............... | Inst | State | 145 | 70 | .. | No | ... | ..... |
| Texas Confederate Woman's Home ................. | Inst | State | 107 | 105 | .. | No | ... | ..... |
| Texas School for Blind... | Inst | State | 36 | 7 | .. | Yes | ... | ..... |
| Texas School for Deaf.... | Inst | State | 41 | 6 | .. | No | ... | ..... |
| Bellville, 1,533—Austin Co. | | | | | | | | |
| Bellville Hospital.......... | Gen | Part | 8 | 2 | 2 | No | 5 | 178 |
| College Station, 40—Brazos Co. | | | | | | | | |
| Agricultural and Mechanical College Hospital........ | Inst | Indep | 80 | 10 | .. | Yes | ... | 724 |
| Comfort, 713—Kendall Co. | | | | | | | | |
| Hillcrest Sanitarium and Private Hospital........ | Gen | Indiv | 6 | 1 | .. | No | ... | ..... |
| Crowell, 1,946—Foard Co. | | | | | | | | |
| Foard County Hospital... | Gen | Indep | 10 | 2 | .. | No | 4 | ..... |
| Crystal City, 6,609—Zavala Co. | | | | | | | | |
| Crystal Hospital.......... | Gen | Indiv | 8 | 4 | 2 | No | ... | 85 |

Key to symbols and abbreviations is on page 2078

## TEXAS—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Dallas, 260,475—Dallas Co. | | | | | | | | |
| "The Cedars" Maternity Sanitarium and Home | Mater | Indiv | 20 | 7 | 3 | No | 40 | ..... |
| Southern Conv. Sanit. | Conv | Indiv | 30 | 20 | .. | No | ... | ..... |
| Union Hospital | Iso | Cy&Co | 50 | 2 | .. | No | ... | 37 |
| Virginia K. Johnson Home | Mater | Church | 10 | 2 | 10 | No | 31 | 60 |
| El Paso, 102,421—El Paso Co. | | | | | | | | |
| El Paso Smelter Hospital | Indus | Indus | 12 | 1 | .. | No | ... | 16 |
| Falfurrias, 1,825—Brooks Co. | | | | | | | | |
| Falfurrias Hospital | Gen | Indiv | 20 | 8 | .. | ... | ... | ..... |
| Ft. Worth, 163,477—Tarrant Co. | | | | | | | | |
| Howard Sanitarium | Conv | Indiv | 8 | 6 | .. | ... | ... | 50 |
| Masonic Home and School Hospital | Inst | Frat | 40 | 8 | .. | No | ... | ..... |
| Tarrant County Home for the Aged | Inst | County | 27 | 25 | .. | No | ... | ..... |
| [illegible] | [illegible] | Part | 8 | 1 | .. | ... | ... | ..... |
| [illegible] School■ | Inst | State | 40 | 20 | .. | No | ... | 900 |
| Greenville, 12,407—Hunt Co. | | | | | | | | |
| Dr. A. S. McBride's Hosp. | N&M | Indiv | 20 | 4 | .. | No | ... | ..... |
| Hallettsville, 1,406—Lavaca Co. | | | | | | | | |
| Hallettsville Hospital | Gen | Indiv | 8 | 5 | 1 | No | 5 | 50 |
| [illegible]■ | Inst | State | 60 | 40 | .. | Yes | ... | 510 |
| [illegible] | Conv | Cy&Co | 217 | 161 | .. | No | ... | 85 |
| Iraan,—Pecos Co. | | | | | | | | |
| Iraan Hospital | Gen | Indiv | 10 | 2 | 2 | No | 25 | 144 |
| Mason, 1,100—Mason Co. | | | | | | | | |
| Mason Sanitarium | Gen | Part | 8 | 2 | .. | No | 4 | 100 |
| Midland, 5,484—Midland Co. | | | | | | | | |
| Mid-West Hospital-Clinic■ | Gen | Indiv | 8 | 3 | 1 | No | 12 | 60 |
| Mineral Wells, 5,986—Palo Pinto Co. | | | | | | | | |
| City Hospital | Gen | Part | 8 | 3 | 3 | ... | 13 | 312 |
| Myra, 417—Cooke Co. | | | | | | | | |
| Mercy Hospital | Gen | Indiv | 6 | 2 | 4 | No | 14 | 100 |
| Nixon, 1,037—Gonzales Co. | | | | | | | | |
| Crest View Hospital■ | Gen | Indiv | 8 | 2 | 2 | No | 12 | 125 |
| Pearsall, 2,536—Frio Co. | | | | | | | | |
| Dr. Beall's Day Hospital | Gen | Indiv | 8 | 3 | 2 | No | 24 | 75 |
| Pecos, 3,304—Reeves Co. | | | | | | | | |
| Pecos Sanitarium■ | Gen | Part | 12 | 3 | 4 | No | 18 | 36 |
| Poteet, 1,231—Atascosa Co. | | | | | | | | |
| Community Hospital■ | Gen | Indiv | 7 | 1 | 1 | No | 9 | 95 |
| San Antonio, 231,542—Bexar Co. | | | | | | | | |
| Salvation Army Women's Home and Hospital | Mater | Church | 10 | 3 | 15 | No | 63 | 115 |
| Southton, 89—Bexar Co. | | | | | | | | |
| Bexar County Home for Aged and Tuber. Colony | Inst,TB | County | 70 | 65 | .. | No | ... | ..... |
| Strawn, 1,429—Palo Pinto Co. | | | | | | | | |
| Strawn Hospital■ | Gen | Part | 12 | 3 | 2 | No | 25 | 95 |
| Taylor, 7,463—Williamson Co. | | | | | | | | |
| Dr. Floeckinger's Sanit. | Gen | Indiv | 7 | 2 | 2 | No | 12 | 67 |
| Wichita Falls, 43,690—Wichita Co. | | | | | | | | |
| Dr. White's Sanitarium | N&M | Indep | 20 | 7 | .. | No | ... | 50 |
| Winters, 2,423—Runnels Co. | | | | | | | | |
| Winters Sanitarium | Gen | Part | 8 | 3 | 3 | No | 5 | 114 |

| Summary for Texas: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 263 | 26,338 | 18,982 | 224,836 |
| Related institutions | 42 | 2,263 | 1,633 | 4,261 |
| Totals | 305 | 28,601 | 20,615 | 229,097 |
| Refused registration | 21 | 559 | | |

## UTAH

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bingham Canyon, 3,248—Salt Lake Co. | | | | | | | | |
| Bingham Canyon Hospital | Gen | Indep | 40 | 22 | 5 | No | 34 | 562 |
| Brigham, 5,093—Box Elder Co. | | | | | | | | |
| Cooley Hospital■ | Gen | Indiv | 10 | 3 | 4 | Yes | 49 | 1,215 |
| Cedar City, 3,615—Iron Co. | | | | | | | | |
| Iron County Hospital | Gen | County | 20 | 10 | 6 | No | 111 | 612 |
| Ft. [illegible] | | | | | | | | |
| St [illegible]■ | Gen | Army | 30 | 14 | .. | Yes | ... | 297 |
| Ft. Duchesne, 100—Uintah Co. | | | | | | | | |
| Uintah and Ouray Agency [illegible] | Gen | Indian | 16 | 6 | .. | Yes | 22 | 122 |
| [illegible] | Gen | Part | 14 | 2 | 6 | No | 28 | 48 |
| Lehi, 2,826—Utah Co. | | | | | | | | |
| Lehi Hospital | Gen | Indiv | 15 | 5 | .. | No | ... | ..... |
| Logan, 9,979—Cache Co. | | | | | | | | |
| Cache Valley General Hosp. | Gen | Indep | 24 | 10 | .. | No | 63 | 500 |
| Wm. Budge Mem. Hosp.◊ | Gen | Indep | 57 | 37 | 10 | Yes | 140 | 1,643 |
| Milford, 1,517—Beaver Co. | | | | | | | | |
| Milford Hospital | Gen | Indiv | 12 | 6 | 5 | No | 54 | 154 |
| Moab, 853—Grand Co. | | | | | | | | |
| Grand County Public Hosp. | Gen | County | 10 | 5 | 2 | No | ... | ..... |
| Ogden, 40,272—Weber Co. | | | | | | | | |
| Thomas D. Dee Memorial Hospital★◊□ | Gen | Church | 155 | 91 | 30 | Yes | 853 | 3,830 |
| Park City, 4,281—Summit Co. | | | | | | | | |
| Park City Miners' Hosp.■ | Gen | Indus | 50 | 16 | 10 | No | 80 | 600 |

## UTAH—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Price, 4,084—Carbon Co. | | | | | | | | |
| Price City Hospital | Gen | City | 25 | 16 | .. | Yes | ... | 768 |
| Provo, 14,766—Utah Co. | | | | | | | | |
| Aird Hospital | Gen | Indiv | 16 | ... | .. | No | ... | ..... |
| Utah State Hospital | N&M | State | 677 | 880 | .. | No | ... | 426 |
| St. George, 2,434—Washington Co. | | | | | | | | |
| [illegible] | Gen | Indep | 17 | 5 | 4 | No | 38 | 197 |
| [illegible] | Gen | Part | 20 | 6 | .. | No | 43 | 264 |
| [illegible]ake Co. | | | | | | | | |
| Dr. W. H. Groves Latter-Day Saints' Hospital★◊■ | Gen | Church | 396 | 207 | 32 | No | 1,091 | 5,877 |
| Holy Cross Hospital★◊■ | Gen | Church | 227 | 126 | 45 | No | 861 | 3,797 |
| Latter-Day Saints Children's Hospital | Ortho | Church | 40 | 30 | .. | No | ... | ..... |
| St. Mark's Hospital★◊□ | Gen | Church | 137 | 100 | 13 | Yes | 193 | 2,523 |
| Salt Lake General Hosp.★◊□ | Gen | County | 184 | 162 | 16 | Yes | 344 | 2,690 |
| Shriners' Hospital for Crippled Children | (Uses Wards in St. Mark's Hospital) | | | | | | | |
| Spanish Fork, 3,727—Utah Co. | | | | | | | | |
| Hughes Memorial Hospital | Gen | Indiv | 12 | 4 | 3 | No | 25 | 150 |
| Vernal, 1,744—Uintah Co. | | | | | | | | |
| Vernal Hospital | Gen | Indiv | 12 | 5 | 3 | No | ... | ..... |
| **Related Institutions** | | | | | | | | |
| American Fork, 3,047—Utah Co. | | | | | | | | |
| Utah State Training School | MenDef | State | 200 | ... | .. | ... | ... | ..... |
| Brigham, 5,093—Box Elder Co. | | | | | | | | |
| Pearse Private Hospital | Gen | Indiv | 12 | 3 | 2 | No | ... | ..... |
| Fillmore, 1,374—Millard Co. | | | | | | | | |
| Fillmore Hospital | Gen | Indiv | 6 | 2 | .. | No | 5 | 30 |
| Hiawatha, 939—Carbon Co. | | | | | | | | |
| U. S. Fuel Company Hosp.■ | Gen | Indus | 6 | 1 | 1 | No | 30 | 200 |
| Murray, 5,172—Salt Lake Co. | | | | | | | | |
| Cottonwood State Maternity Hospital | Mater | Church | 28 | 7 | 14 | No | 236 | 260 |
| Murray Clinic Hospital | Gen | Indiv | 10 | 2 | .. | Yes | ... | 200 |
| Ogden, 40,272—Weber Co. | | | | | | | | |
| Utah School for the Deaf and Blind | Inst | State | 18 | 3 | .. | No | ... | ..... |
| Richfield, 3,067—Sevier Co. | | | | | | | | |
| Richfield General Hospital | Gen | Indiv | 6 | 2 | .. | No | ... | 49 |
| Salt Lake City, 140,267—Salt Lake Co. | | | | | | | | |
| Mountain View Sanitarium | N&M | Indiv | 6 | ... | .. | No | ... | ..... |

| Summary for Utah: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 25 | 2,215 | 1,768 | 26,335 |
| Related institutions | 9 | 292 | 20 | 739 |
| Totals | 34 | 2,507 | 1,788 | 27,074 |
| Refused registration | 0 | | | |

## VERMONT

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Barre, 11,307—Washington Co. | | | | | | | | |
| Barre City Hospital◊■ | Gen | Indep | 38 | 35 | 12 | Yes | 167 | 1,208 |
| Washington County Hosp. | TB | County | 47 | 42 | .. | No | ... | 79 |
| Bellows Falls, 3,930—Windham Co. | | | | | | | | |
| Rockingham General Hosp.◊ | Gen | Indep | 36 | 25 | 7 | Yes | 71 | 829 |
| Bennington, 7,390—Bennington Co. | | | | | | | | |
| Henry W. Putnam Memorial Hospital■ | Gen | Indep | 86 | 39 | 20 | No | 189 | 903 |
| Brattleboro, 8,709—Windham Co. | | | | | | | | |
| Brattleboro Mem. Hosp.◊ | Gen | Indep | 55 | 27 | 5 | No | 29 | 1,198 |
| [illegible] | N&M | Indep | 500 | 621 | .. | Yes | ... | 196 |
| [illegible]enden Co. | | | | | | | | |
| [illegible] Hospital◊■ | Gen | Church | 112 | 72 | 10 | No | 179 | 2,477 |
| Green Mountain Sanat. | Gen | Indiv | 14 | 2 | .. | Yes | ... | 105 |
| Lak[illegible] | N&M | Indep | 25 | 16 | .. | No | ... | ..... |
| Ma[illegible]■ | Gen | Indep | 135 | 100 | 15 | Yes | 277 | 4,126 |
| Ft. E[illegible] Co. | | | | | | | | |
| Sta[illegible]■ | Gen | Army | 62 | 19 | 1 | Yes | 2 | 887 |
| Hardwick, 1,667—Caledonia Co. | | | | | | | | |
| Hardwick Hospital■ | Gen | Indep | 12 | 5 | 6 | No | 30 | 176 |
| [illegible] | Gen | Indep | 45 | 11 | 10 | No | 37 | 470 |
| [illegible] Co. | | | | | | | | |
| [illegible] | Gen | Indep | 70 | 56 | 8 | No | 157 | 1,461 |
| [illegible]■ | Gen | Indep | 26 | 17 | 6 | Yes | 71 | 501 |
| Pittsford, 637—Rutland Co. | | | | | | | | |
| Vermont Sanatorium | TB | State | 75 | 50 | .. | No | ... | 93 |
| P[illegible] | | | | | | | | |
| [illegible]■ | Gen | Indus | 33 | 10 | 7 | Yes | 67 | 407 |
| Randolph, 1,957—Orange Co. | | | | | | | | |
| [illegible] | Gen | Indep | 50 | 18 | 10 | No | 40 | 525 |
| [illegible]■ | Gen | Indiv | 12 | 5 | 7 | No | 80 | 199 |
| [illegible] | Gen | Indep | 110 | 62 | 16 | Yes | 207 | 1,961 |
| St. Albans Hospital◊ | Gen | Indep | 45 | 38 | 5 | Yes | 101 | 1,100 |
| Sherwood Sanitarium | Gen | Indiv | 10 | 8 | .. | No | ... | 100 |
| St. Johnsbury, [illegible] Co. | | | | | | | | |
| Brig[illegible]■ | Gen | Indep | 53 | 36 | 12 | No | 95 | 1,086 |
| St. [illegible] | Gen | Church | 30 | 15 | .. | No | ... | 321 |

Key to symbols and abbreviations is on page 2078

## VERMONT—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Springfield, 4,943—Windsor Co. | | | | | | | | |
| Springfield Hospital■ | Gen | Indep | 33 | 16 | 6 | No | 111 | 559 |
| Waterbury, 1,776—Washington Co. | | | | | | | | |
| Vermont State Hospital for the Insane | N&M | State | 900 | 908 | .. | No | ... | 212 |
| Winooski, 5,308—Chittenden Co. | | | | | | | | |
| Fanny Allen Hospital◊ | Gen | Church | 75 | 33 | 9 | No | 138 | 1,184 |
| **Related Institutions** | | | | | | | | |
| Bennington, 7,390—Bennington Co. | | | | | | | | |
| Vermont Soldiers' Home Hospital | Inst | State | 30 | 7 | .. | No | ... | 26 |
| Brandon, 2,891—Rutland Co. | | | | | | | | |
| Brandon State School | MenDef | State | 300 | 246 | .. | Yes | ... | 45 |
| Northfield, 2,075—Washington Co. | | | | | | | | |
| Ainsworth Infirmary | Inst | Indep | 7 | 4 | .. | No | ... | ..... |
| Pittsford, 637—Rutland Co. | | | | | | | | |
| Caverly Preventorium■ | TB | Indep | 44 | 43 | .. | No | ... | 95 |
| Vergennes, 1,705—Addison Co. | | | | | | | | |
| Vermont State Industrial School | Inst | State | 40 | 10 | .. | Yes | ... | ..... |
| Windsor, 3,689—Windsor Co. | | | | | | | | |
| Vermont State Prison Hospital■ | Inst | State | 7 | 3 | .. | No | ... | 74 |

Summary for Vermont:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 27 | 2,689 | 2,286 | 22,363 |
| Related institutions | 6 | 428 | 309 | 240 |
| Totals | 33 | 3,117 | 2,595 | 22,603 |
| Refused registration | 0 | | | |

## VIRGINIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Abingdon, 2,877—Washington Co. | | | | | | | | |
| George Ben Johnston Memorial Hospital◊■ | Gen | Indep | 57 | 40 | 6 | Yes | 35 | 1,012 |
| Alexandria, 24,149—Arlington Co. | | | | | | | | |
| Alexandria Hospital◊■ | Gen | Indep | 50 | 50 | 12 | Yes | 314 | 1,882 |
| Appalachia, 3,595—Wise Co. | | | | | | | | |
| Appalachia Masonic Hosp.■ | Gen | Frat | 12 | 2 | 2 | No | 11 | 143 |
| Bristol, 8,840—Washington Co. | | | | | | | | |
| King's Mountain Memorial Hospital | Gen | Indep | 50 | 22 | 6 | Yes | 113 | 974 |
| Brook Hill, 18—Henrico Co. | | | | | | | | |
| Pine Camp Hospital | TB | City | 112 | 98 | .. | Yes | ... | 86 |
| Burkeville, 755—Nottoway Co. | | | | | | | | |
| Piedmont Sanat. (col.)◊ | TB | State | 150 | 145 | .. | No | ... | 277 |
| Catawba Sanatorium, 55—Roanoke Co. | | | | | | | | |
| Catawba Sanatorium◊ | TB | State | 345 | 333 | .. | No | ... | 422 |
| Charlottesville, 15,245—Albemarle Co. | | | | | | | | |
| Blue Ridge Sanatorium◊ | TB | State | 270 | 265 | .. | No | ... | 342 |
| Martha Jefferson Hospital | Gen | Indep | 50 | 30 | 10 | No | 132 | 1,410 |
| Christiansburg, 1,970—Montgomery Co. | | | | | | | | |
| New Altamont Hospital | Gen | Indep | 25 | 8 | 6 | Yes | 16 | 353 |
| Clifton Forge, 6,839—Allegheny Co. | | | | | | | | |
| Chesapeake and Ohio Railway Hospital◊■ | Gen | Indus | 105 | 64 | 5 | Yes | 75 | 2,345 |
| Clintwood, 729—Dickenson Co. | | | | | | | | |
| Dickenson County Hospital | Gen | Indiv | 30 | 6 | 2 | No | 20 | 230 |
| Sutherland's Hospital | Gen | Indiv | 12 | 3 | 2 | No | ... | ..... |
| Coeburn, 784—Wise Co. | | | | | | | | |
| Coeburn Hospital | Gen | Indep | 30 | 15 | .. | No | 20 | ..... |
| Dante, 811—Russell Co. | | | | | | | | |
| Clinchfield Hospital■ | Gen | Indus | 25 | 11 | 2 | No | ... | ..... |
| Danville, 22,247—Pittsylvania Co. | | | | | | | | |
| Hilltop Sanatorium | TB | Indep | 65 | 55 | .. | No | ... | 120 |
| Memorial Hospital◊ | Gen | Indep | 100 | 54 | 10 | Yes | 263 | 2,670 |
| Providence Hosp. (col.) | Gen | Indiv | 32 | 12 | 2 | No | ... | 273 |
| Farmville, 3,133—Prince Edward Co. | | | | | | | | |
| Southside Community Hospital■ | Gen | Indep | 50 | 17 | 10 | Yes | 32 | 706 |
| Floyd, 450—Floyd Co. | | | | | | | | |
| Floyd Hospital■ | Gen | Indiv | 10 | 3 | 4 | No | 10 | ..... |
| Ft. Humphreys,—Fairfax Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 20 | 11 | .. | Yes | ... | 568 |
| Ft. Monroe, 1,265—Elizabeth City Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 90 | 39 | 6 | Yes | 54 | 562 |
| Ft. Myer, 1,050—Arlington Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 61 | 22 | .. | Yes | ... | 1,000 |
| Franklin, 2,930—Southampton Co. | | | | | | | | |
| Raiford Hospital■ | Gen | Indiv | 22 | 12 | 1 | No | 12 | 225 |
| Fredericksburg, 6,819—Spotsylvania Co. | | | | | | | | |
| Mary Washington Hosp.◊■ | Gen | Indep | 70 | 44 | 10 | No | 93 | 1,540 |
| Galax, 2,544—Grayson Co. | | | | | | | | |
| Galax Hospital and Clinic■ | Gen | Indiv | 22 | 9 | 3 | No | 12 | 271 |
| Hampton, 6,382—Elizabeth City Co. | | | | | | | | |
| Hampton Training School for Nurses, and Dixie Hospital◊■ | Gen | Indep | 65 | 24 | 9 | No | 83 | 933 |
| Harrisonburg, 7,232—Rockingham Co. | | | | | | | | |
| Rockingham Mem. Hosp.◊■ | Gen | Cy&Co | 90 | 61 | 10 | No | 122 | 2,715 |
| Hopewell, 11,327—Prince George Co. | | | | | | | | |
| Community Hospital■ | Gen | Indep | 30 | 8 | 3 | No | ... | 343 |
| Hot Springs, 1,010—Bath Co. | | | | | | | | |
| Community Hospital■ | Gen | Indep | 14 | 6 | 4 | No | 34 | 162 |

## VIRGINIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Hurley, 220—Buchanan Co. | | | | | | | | |
| Knox Creek Hospital■ | Gen | Indep | 20 | 10 | .. | No | 15 | ..... |
| Langley Field,—Elizabeth City Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 50 | 3 | .. | Yes | ... | 902 |
| Lebanon, 560—Russell Co. | | | | | | | | |
| St. Ann's Hospital | Gen | Indiv | 14 | 8 | 3 | No | ... | ..... |
| Leesburg, 1,640—Loudoun Co. | | | | | | | | |
| Loudoun County Hosp.■ | Gen | Indep | 30 | 12 | 6 | No | 43 | 606 |
| Lexington, 3,752—Rockbridge Co. | | | | | | | | |
| Stonewall Jackson Memorial Hospital■ | Gen | Indep | 42 | 24 | 8 | No | 60 | 956 |
| Luray, 1,459—Page Co. | | | | | | | | |
| Page Memorial Hospital■ | Gen | Indep | 12 | 3 | 3 | No | 18 | 115 |
| Lynchburg, 40,661—Campbell Co. | | | | | | | | |
| Guggenheimer Mem. Hosp. (Child. Dept. of Marshall Lodge Mem. Hosp.) | | | | | | | | |
| Lynchburg General Hosp.◊■ | Gen | City | 88 | 70 | 11 | Yes | 111 | 1,996 |
| Marshall Lodge Memorial Hospital◊ | Gen | Frat | 135 | 59 | 12 | No | 159 | 2,113 |
| Virginia Baptist Hosp.◊ | Gen | Church | 102 | 35 | 16 | No | 151 | 1,157 |
| Marion, 4,156—Smyth Co. | | | | | | | | |
| Southwestern State Hosp. | N&M | State | 1,100 | 1,049 | .. | Yes | ... | ..... |
| Martinsville, 7,705—Henry Co. | | | | | | | | |
| Shackelford Hospital | Gen | Indiv | 52 | 22 | 4 | No | ... | ..... |
| Nassawadox, 475—Northampton Co. | | | | | | | | |
| Northampton-Accomac Memorial Hospital■ | Gen | County | 50 | 22 | 5 | Yes | 40 | 801 |
| Newport News, 34,417—Warwick Co. | | | | | | | | |
| Elizabeth Buxton Hosp.◊■ | Gen | Indiv | 90 | 58 | 10 | No | 103 | 2,098 |
| Riverside Hospital◊■ | Gen | Indep | 76 | 38 | 8 | No | 215 | 1,608 |
| Whittaker Memorial Hospital (col.) | Gen | Indep | 50 | 8 | 4 | No | 20 | 296 |
| Norfolk, 129,710—Norfolk Co. | | | | | | | | |
| Children's Visiting Nurse Service and Clinic (Kings Daughters) | Chil | Indep | 26 | 16 | .. | Yes | ... | ..... |
| Hospital of St. Vincent de Paul★◊■ | Gen | Church | 228 | 141 | 22 | Yes | 279 | 3,682 |
| Memorial Hospital◊ | Gen | Indep | 50 | 28 | 8 | No | 140 | 1,214 |
| Norfolk Protestant Hosp.★◊ | Gen | Church | 175 | 100 | 25 | Yes | 486 | 4,073 |
| Sarah Leigh Hospital◊ | Gen | Indep | 75 | 48 | 15 | No | 96 | 1,507 |
| U. S. Marine Hospital★■ | Gen | USPHS | 251 | 224 | .. | Yes | ... | 2,606 |
| Norton, 3,077—Wise Co. | | | | | | | | |
| Norton Hospital | Gen | Indep | 30 | 14 | 2 | No | ... | ..... |
| Pearisburg, 668—Giles Co. | | | | | | | | |
| St. Elizabeth's Gen. Hosp. | Gen | Indep | 20 | 11 | 2 | No | ... | ..... |
| Pennington Gap, 1,553—Lee Co. | | | | | | | | |
| Lee General Hospital | Gen | Indep | 25 | New | 2 | Yes | ... | ..... |
| Petersburg, 28,564—Dinwiddie Co. | | | | | | | | |
| Central State Hosp. (col.) | N&M | State | 2,200 | 2,655 | .. | No | ... | 569 |
| Medical Center Hospital... (Included in Central State Hospital) | | | | | | | | |
| Petersburg Hospital◊■ | Gen | Indep | 75 | 51 | 7 | No | 92 | 1,818 |
| Portsmouth, 45,704—Norfolk Co. | | | | | | | | |
| Kings' Daughters Hosp.◊■ | Gen | Church | 68 | 37 | 12 | Yes | 121 | 1,197 |
| Norfolk Naval Hospital★■▲ | Gen | Navy | 817 | 494 | .. | No | ... | 5,117 |
| Parrish Memorial Hosp.◊■ | Gen | Indep | 40 | 24 | 10 | No | 119 | 1,093 |
| Pulaski, 7,168—Pulaski Co. | | | | | | | | |
| Pulaski Hospital◊■ | Gen | Indep | 35 | 18 | 5 | Yes | 53 | 624 |
| Radford, 6,227—Montgomery Co. | | | | | | | | |
| St. Alban's Sanatorium | N&M | Indiv | 35 | 23 | .. | No | ... | ..... |
| Richlands, 1,355—Tazewell Co. | | | | | | | | |
| Mattie Williams Hospital◊ | Gen | Indiv | 25 | 14 | 5 | No | 29 | ..... |
| Richmond, 182,929—Henrico Co. | | | | | | | | |
| Crippled Children's Hosp.. (Included in Med. Coll. of Va., Hosp. Div.) | | | | | | | | |
| Dooley Hospital... (Included in Med. Coll. of Va., Hosp. Div.) | | | | | | | | |
| Grace Hospital◊ | Gen | Indep | 42 | 34 | 8 | No | 103 | 2,061 |
| Johnston-Willis Hospital★◊ | Gen | Indep | 112 | 73 | 15 | Yes | 346 | 3,109 |
| Medical College of Virginia Hospital Division★+◊■ | Gen | Indep | 424 | 280 | 32 | Yes | 317 | 7,561 |
| Memorial Hospital... (Included in Med. Coll. of Va., Hosp. Div.) | | | | | | | | |
| Northside General Hospital Sanitarium | Gen | Indep | 30 | 12 | 1 | No | ... | ..... |
| Retreat for the Sick◊■ | Gen | Indep | 90 | 34 | 10 | No | 95 | 1,608 |
| St. Elizabeth's Hospital+◊ | Gen | Indiv | 56 | 43 | .. | Yes | ... | 1,302 |
| St. Luke's Hospital◊ | Gen | Indep | 81 | 65 | .. | Yes | ... | 1,934 |
| St. Philip Hospital (col.). (Included in Med. Coll. of Va., Hosp. Div.) | | | | | | | | |
| Sheltering Arms Hosp.◊ | Gen | Indep | 71 | 55 | 5 | No | 95 | 1,103 |
| Stuart Circle Hospital★◊ | Gen | Indep | 92 | 64 | 18 | Yes | 342 | 2,782 |
| Tucker Sanatorium | Gen | Indep | 52 | 27 | .. | No | ... | 398 |
| Westbrook Sanatorium | N&M | Indep | 146 | 123 | .. | No | ... | 244 |
| Roanoke, 69,206—Roanoke Co. | | | | | | | | |
| Burrell Mem. Hosp. (col.)◊ | Gen | Indep | 40 | 20 | 4 | Yes | 26 | 543 |
| Gill Memorial Eye, Ear and Throat Hospital | EENT | Indiv | 25 | 3 | .. | Yes | ... | ..... |
| Jefferson Hospital★+◊ | Gen | Part | 110 | 66 | 9 | Yes | 123 | 2,389 |
| Lewis-Gale Hospital◊ | Gen | Indep | 65 | 56 | 6 | Yes | 57 | 1,935 |
| Roanoke Hospital◊ | Gen | Indep | 98 | 55 | 13 | Yes | 159 | 1,849 |
| Shenandoah Hospital◊ | Gen | Indep | 50 | 25 | 10 | No | 95 | 1,199 |
| Salem, 4,833—Roanoke Co. | | | | | | | | |
| Mount Regis Sanatorium◊ | TB | Indep | 65 | 42 | .. | Yes | ... | 83 |
| Saltville, 2,964—Smyth Co. | | | | | | | | |
| Mathieson Hospital■ | Gen | Indus | 12 | 5 | 2 | Yes | 7 | 208 |
| South Boston, 4,841—Halifax Co. | | | | | | | | |
| Halcyon Hospital■ | Gen | Indep | 24 | 10 | 6 | No | 17 | 550 |
| South Boston Hospital■ | Gen | Indiv | 36 | 16 | 4 | No | 18 | 312 |
| Staunton, 11,990—Augusta Co. | | | | | | | | |
| King's Daughters Hosp.◊■ | Gen | Indep | 72 | 42 | 8 | No | 135 | 1,423 |
| Suffolk, 10,271—Nansemond Co. | | | | | | | | |
| Lakeview Hospital | Gen | Indep | 50 | 27 | 4 | No | 47 | 926 |
| Virginia General Hosp.■ | Gen | Indep | 25 | 6 | 10 | No | 33 | 336 |
| University, 1,125—Albemarle Co. | | | | | | | | |
| University of Virginia Hospital★+◊■ | Gen | State | 312 | 241 | 30 | Yes | 461 | 6,188 |
| Victoria, 1,568—Lunenburg Co. | | | | | | | | |
| Kendig Brothers Hospital■ | Gen | Part | 15 | 5 | 2 | No | 10 | 150 |

Key to symbols and abbreviations is on page 2078

## VIRGINIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Warrenton, 1,450—Fauquier Co. | | | | | | | | |
| Fauquier County H[illegible]■ | Gen | Indep | 30 | 17 | 4 | No | 77 | 647 |
| [illegible] ity Co. | | | | | | | | |
| [illegible] | N&M | State | 1,100 | 1,221 | .. | No | ... | 315 |
| [illegible] Co. | | | | | | | | |
| [illegible] Mem. Hosp.◊■ | Gen | Indep | 100 | 60 | 14 | No | 131 | 2,127 |
| **Related Institutions** | | | | | | | | |
| Bon Air, 62—Chesterfield Co. | | | | | | | | |
| Virginia Home and Industrial School for Girls | Inst | State | 8 | 4 | .. | No | ... | ..... |
| Clover, 251—Halifax Co. | | | | | | | | |
| Little Retreat Hospital | Gen | Indiv | 5 | 1 | 2 | No | 22 | 32 |
| Colony, 50—Amherst Co. | | | | | | | | |
| State Colony for Ep[illegible] ar[illegible] | [illegible] | State | 968 | 896 | .. | No | ... | 185 |
| Falls C[illegible] Co. | | | | | | | | |
| Gun[illegible] Home and Training School for Feebleminded | MenDef | Indiv | 80 | 70 | .. | No | ... | 7 |
| Farmville, 3,133—Prince Edward Co. | | | | | | | | |
| State Teachers' College Infirmary | Inst | State | 30 | 6 | .. | No | ... | 437 |
| Front Royal, 2,424—Warren Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 8 | 1 | .. | Yes | ... | 95 |
| Hollins, 65—Roanoke Co. | | | | | | | | |
| Susanna Memorial Infirmary of Hollins College | Inst | Indep | 30 | 3 | .. | No | ... | ..... |
| Lawrenceville, 1,629—Brunswick Co. | | | | | | | | |
| Loulie Taylor Letcher Memorial Hospital (col.) | Inst | Indep | 16 | 2 | .. | No | ... | 106 |
| Lexington, 3,752—Rockbridge Co. | | | | | | | | |
| Virginia Military Institute Hospital | Inst | State | 20 | 10 | .. | No | ... | ..... |
| Maidens, 22—Goochland Co. | | | | | | | | |
| Virginia Industrial School for Boys | Inst | State | 15 | 2 | .. | No | ... | ..... |
| National Soldiers Home, 3,875—Elizabeth City Co. | | | | | | | | |
| Veterans Admin. Home■▲ | Inst | VetAd | 810 | 755 | .. | Yes | ... | 1,209 |
| Norfolk, 129,710—Norfolk Co. | | | | | | | | |
| Florence Crittenton Home | Mater | Indep | 6 | 2 | 22 | No | 20 | 35 |
| Henry A. Wise Hospital for Contagious Diseases■ | Iso | City | 60 | 8 | .. | No | ... | 218 |
| Richmond, 182,929—Henrico Co. | | | | | | | | |
| City Home■ | Inst | City | 490 | 352 | 14 | No | 68 | 1,300 |
| Convalescent Home Hosp. | Conv | Indiv | 50 | 40 | .. | No | ... | 100 |
| Lee Camp Soldiers' Home Hospital▲ | Inst | State | 75 | 33 | .. | Yes | ... | 93 |
| Penitentiary Hospital■ | Inst | State | 36 | 16 | .. | No | ... | 363 |
| Virginia Home for Incurables | Incur | Indep | 110 | 75 | .. | No | ... | 16 |
| Staunton, 11,990—Augusta Co. | | | | | | | | |
| Western State Hospital | N&M | State | 1,950 | 1,900 | .. | No | ... | 849 |
| State Farm, 83—Goochland Co. | | | | | | | | |
| State Farm Hospital■ | Inst | State | 60 | 47 | .. | No | ... | 3,985 |
| Stonega, 251—Wise Co. | | | | | | | | |
| Stonega Hospital | Indus | Indus | 18 | 7 | .. | Yes | ... | 114 |
| Sweet Briar, 114—Amherst Co. | | | | | | | | |
| Sweet Briar College Infirmary | Inst | Indep | 20 | 4 | .. | Yes | ... | 92 |
| Toms Creek, 781—Wise Co. | | | | | | | | |
| Toms Creek Hospital■ | Indus | Indus | 20 | 4 | .. | Yes | ... | 155 |

| Summary for Virginia: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 91 | 11,575 | 9,516 | 101,084 |
| Related institutions | 23 | 4,885 | 4,234 | 9,411 |
| Totals | 114 | 16,460 | 13,750 | 110,495 |
| Refused registration | 3 | 54 | | |

## WASHINGTON

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aberdeen, 21,723—Grays Harbor Co. | | | | | | | | |
| Aberdeen General Hosp.■ | Gen | Indep | 92 | 49 | .. | Yes | ... | 1,085 |
| St. Joseph's Hospital◊■ | Gen | Church | 63 | 36 | 16 | No | 190 | 1,250 |
| American Lake,—Pierce Co. | | | | | | | | |
| Veterans Admin. Hospital | N&M | VetAd | 512 | 500 | .. | No | ... | 140 |
| Anacortes, 6,564—Skagit Co. | | | | | | | | |
| Anacortes Hospital | Gen | Indiv | 25 | 8 | 5 | No | 52 | 370 |
| Auburn, 3,906—King Co. | | | | | | | | |
| Owen Taylor Hospital | Gen | Indep | 36 | 12 | 8 | No | ... | ..... |
| Bellingham, 30,823—Whatcom Co. | | | | | | | | |
| St. Frances Hospital■ | Gen | Indiv | 17 | 4 | 4 | No | 60 | 120 |
| St. Joseph's Hospital◊■ | Gen | Church | 90 | 45 | 10 | No | 197 | 1,301 |
| St. Luke's Hospital◊ | Gen | Church | 70 | 49 | 15 | No | 248 | 1,805 |
| Bremerton, 10,170—Kitsap Co. | | | | | | | | |
| Olympic Hospital | Gen | Indep | 40 | 25 | 15 | No | 189 | ..... |
| U. S. Naval Hospital★■ | Gen | Navy | 424 | 202 | .. | Yes | ... | 2,585 |
| Burlington, 1,407—Skagit Co. | | | | | | | | |
| Burlington General Hosp. | Gen | Indiv | 30 | 14 | 7 | No | 59 | 402 |
| Cent[illegible]). | | | | | | | | |
| [illegible] | Gen | Indep | 44 | 14 | 6 | Yes | 84 | 477 |
| C[illegible], 4,90[illegible]—Lewis Co. | | | | | | | | |
| St. Helen's Hospital■ | Gen | Church | 35 | 14 | 6 | No | 76 | 552 |
| Chewelah, 1,315—Stevens Co. | | | | | | | | |
| St. Joseph's Hospital | Gen | Church | 19 | 10 | 4 | No | 27 | 203 |
| Cle Elum, 2,508—Kittitas Co. | | | | | | | | |
| Roslyn Cle Elum Beneficial Company Hospital■ | Gen | Indus | 24 | 10 | .. | Yes | 3 | 700 |
| Colfax, 2,782—Whitman Co. | | | | | | | | |
| St. Ignatius Hospital◊■ | Gen | Church | 60 | 41 | 10 | No | 95 | 1,416 |
| Colville, 1,803—Stevens Co. | | | | | | | | |
| Mt. Carmel Hospital | Gen | Part | 33 | 17 | 4 | No | 15 | 600 |
| Ellensburg, 4,621—Kittitas Co. | | | | | | | | |
| Ellensburg General Hosp. | Gen | Indep | 30 | 20 | 12 | No | 106 | 771 |
| Elma, 1,545—Grays Harbor Co. | | | | | | | | |
| Conway Hospital | Gen | Indiv | 14 | 7 | 4 | No | 42 | ..... |
| Oakhurst Sanatorium | TB | County | 65 | 63 | .. | Yes | ... | 105 |
| Everett, 30,567—Snohomish Co. | | | | | | | | |
| General Hospital◊■ | Gen | Indep | 84 | 51 | 16 | No | 289 | 1,888 |
| Providence Hospital◊ | Gen | Church | 104 | 40 | 16 | No | 178 | 1,577 |
| Ft. Lawton (Seattle P.O.),—King Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 30 | 6 | .. | Yes | ... | 246 |
| Ft. Lewis, 6,050—Pierce Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 100 | 61 | 4 | Yes | 43 | 1,920 |
| Ft. Steilacoom,—Pierce Co. | | | | | | | | |
| Western State Hospital+ | N&M | State | 1,947 | 1,723 | .. | No | ... | 410 |
| Ft. Worden (Pt. Townsend P.O.), 14—Jefferson Co. | | | | | | | | |
| Station Hospital | Gen | Army | 50 | 6 | .. | Yes | ... | 242 |
| Hoquiam, 12,766—Grays Harbor Co. | | | | | | | | |
| Hoquiam General Hosp.◊■ | Gen | Indep | 65 | 38 | 10 | Yes | 167 | 1,228 |
| Ione, 594—Pend Oreille Co. | | | | | | | | |
| Ione Hospital | Gen | Indiv | 11 | 5 | 4 | No | 25 | 185 |
| Kirkland, 1,714—King Co. | | | | | | | | |
| Kirkland Hospital | Gen | Indiv | 12 | 4 | 4 | No | 50 | 175 |
| Lakeview, 352—Pierce Co. | | | | | | | | |
| Mountain View San[illegible]■ | TB | County | 140 | 131 | .. | Yes | ... | 208 |
| [illegible] an Co. | | | | | | | | |
| [illegible]■ | Gen | Indiv | 35 | 14 | 6 | Yes | 98 | 1,460 |
| [illegible] Co. | | | | | | | | |
| [illegible] Memorial Hospital+■ | Gen | Indep | 80 | 43 | 16 | Yes | 242 | 1,624 |
| Medical Lake, 1,671—Spokane Co. | | | | | | | | |
| Eastern State Hospital | N&M | State | 1,384 | 1,387 | .. | No | ... | ..... |
| Monroe, 1,570—Snohomish Co. | | | | | | | | |
| Monroe General Hospital | Gen | Indiv | 16 | 5 | 7 | No | 49 | 1,000 |
| Mt. Vernon, 3,690—Skagit Co. | | | | | | | | |
| Mt. Vernon General Hosp.■ | Gen | Part | 30 | 15 | 5 | No | 47 | 563 |
| Newport, 1,080—Pend Oreille Co. | | | | | | | | |
| Newport Hospital | Gen | Indep | 20 | 8 | 4 | No | 36 | 278 |
| Olympia, 11,733—Thurston Co. | | | | | | | | |
| Maxwell Maternity Hosp. | Mater | Indiv | 15 | 5 | 20 | No | 84 | 175 |
| St. Peter's Hospital◊■ | Gen | Church | 115 | 47 | 15 | No | 111 | 1,375 |
| Omak, 2,547—Okanogan Co. | | | | | | | | |
| Mills Hospital | Gen | Indiv | 10 | 4 | 6 | No | 32 | 112 |
| Omak Hospital | Gen | Indiv | 12 | 5 | 3 | No | ... | ..... |
| Pasco, 3,496—Franklin Co. | | | | | | | | |
| Our Lady of Lourdes Hospital◊■ | Gen | Church | 54 | 24 | 8 | No | 98 | 805 |
| Port Angeles, 10,188—Clallam Co. | | | | | | | | |
| Port Angeles Hospital and Sanitarium◊ | Gen | Indep | 78 | 51 | 6 | Yes | 60 | 2,112 |
| Port Townsend, 3,979—Jefferson Co. | | | | | | | | |
| St. John's Hospital | Gen | Church | 89 | 40 | 6 | No | 105 | 572 |
| U. S. Marine Hospital■ | Gen | USPHS | 100 | 109 | .. | Yes | ... | 802 |
| Puyallup, 7,094—Pierce Co. | | | | | | | | |
| Puget Sound Sanatorium | N&M | Indiv | 32 | 18 | .. | No | ... | 31 |
| Raymond, 3,828—Pacific Co. | | | | | | | | |
| Riverview Hospital | Gen | Indep | 25 | 8 | 4 | No | 30 | 325 |
| Renton, 4,062—King Co. | | | | | | | | |
| Renton Hospital | Gen | Indiv | 28 | 8 | 6 | No | 112 | 360 |
| Rich[illegible] Co. | | | | | | | | |
| [illegible]■ | TB,Iso | City | 270 | 234 | .. | No | ... | 663 |
| S[illegible], [illegible]—King Co. | | | | | | | | |
| Ballard Accident and General Hospital | Gen | Indiv | 30 | 2 | 12 | No | 80 | 605 |
| Children's Orthopedic Hospital+■ | Ortho | Indep | 135 | 113 | .. | Yes | ... | 1,319 |
| Columbus Hospital★◊ | Gen | Church | 200 | 110 | 36 | No | 460 | 3,359 |
| Harborview Hospital★◊■▲ | Gen | Cy&Co | 420 | 416 | 33 | Yes | 404 | 4,902 |
| Laurel Beach Sanatorium | TB | Part | 60 | 45 | .. | No | ... | 140 |
| Martha Washington Hosp.■ | Gen | Indep | 103 | 24 | 22 | No | 31 | 432 |
| Meadows Sanatorium | N&M | Part | 40 | 21 | .. | No | ... | 142 |
| Morningside Sanitarium■ | TB | County | 150 | 137 | .. | No | ... | 284 |
| Providence Hospital★◊■ | Gen | Church | 356 | 300 | 56 | No | 890 | 8,860 |
| Riverton Sanatorium■ | TB | Indep | 60 | 40 | .. | No | ... | 148 |
| St. Luke's Hospital■ | Gen | Indep | 52 | 30 | 18 | No | 205 | 955 |
| Seattle City Hospital◊■ | Gen | City | 59 | 29 | .. | Yes | ... | 1,443 |
| Seattle General Hosp.★◊■ | Gen | Church | 115 | 101 | 20 | No | 500 | 3,285 |
| Swedish Hospital★◊ | Gen | Indep | 195 | 141 | 65 | No | 766 | 4,166 |
| Virginia Mason Hosp.★◊■ | Gen | Indep | 150 | 94 | 30 | No | 437 | 3,118 |
| Sedro Woolley, 2,719—Skagit Co. | | | | | | | | |
| Northern State Hospital | N&M | State | 1,110 | 1,432 | .. | No | ... | 269 |
| Sedro Woolley Mem. Hosp.■ | Gen | Indep | 26 | 12 | 6 | No | 35 | 354 |
| Sequim, 534—Clallam Co. | | | | | | | | |
| Sequim Prairie Hospital | Gen | Indiv | 12 | 3 | 5 | No | 25 | 500 |
| Shelton, 3,091—Mason Co. | | | | | | | | |
| Shelton General Hospital■ | Gen | Part | 34 | 11 | 5 | Yes | 35 | 351 |
| Snoh[illegible] Co. | | | | | | | | |
| [illegible] | TB | County | 40 | 37 | .. | No | ... | 40 |
| [illegible] | Gen | Indiv | 18 | 4 | 3 | No | 18 | 130 |
| [illegible]—King Co. | | | | | | | | |
| Snoqualmie Falls Hosp.■ | Gen | Indus | 30 | 22 | 6 | Yes | 68 | 580 |
| South Bend, 1,798—Pacific Co. | | | | | | | | |
| South Bend General Hosp. | Gen | Indep | 35 | 10 | 5 | No | 30 | 250 |
| Spokane, 115,514—Spokane Co. | | | | | | | | |
| Deaconess Hospital★◊■ | Gen | Church | 200 | 102 | 30 | No | 507 | 3,707 |
| Edgecliff Sanatorium | TB | County | 165 | 110 | .. | No | ... | 150 |
| Sacred Heart Hospital◊ | Gen | Church | 300 | 200 | 40 | No | 667 | 5,628 |
| St. Luke's Hospital★◊■ | Gen | Church | 151 | 93 | 24 | No | 242 | 2,906 |

## WASHINGTON—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Shriners' Hospitals for Crippled Children... | (Uses Wards in St. Luke's Hospital) | | | | | | | |
| Station Hospital■ | Gen | Army | 41 | 12 | .. | Yes | ... | 323 |
| Sumas, 647—Whatcom Co. | | | | | | | | |
| Merrilyn Cottage Hospital | Gen | Indiv | 10 | 3 | 3 | No | 19 | ..... |
| Sumas General Hospital | Gen | Indiv | 12 | 3 | 3 | No | 14 | 108 |
| Tacoma, 106,817—Pierce Co. | | | | | | | | |
| Northern Pacific Beneficial Association Hospital★■ | Gen | Indep | 116 | 65 | 5 | Yes | 30 | 2,069 |
| Pierce County Hospital★■ | Gen | County | 198 | 151 | 18 | Yes | 177 | 1,854 |
| St. Joseph's Hospital★◊■ | Gen | Church | 300 | 118 | 50 | Yes | 605 | 4,312 |
| Tacoma General Hosp.★◊■ | Gen | Indep | 200 | 102 | 36 | Yes | 587 | 4,382 |
| U. S. Tacoma Hospital | Gen | Indian | 300 | 300 | .. | Yes | ... | 1,000 |
| Tonasket, 513—Okanogan Co. | | | | | | | | |
| Tonasket Hospital■ | Gen | Indiv | 10 | 5 | 4 | No | 16 | 153 |
| Toppenish, 2,774—Yakima Co. | | | | | | | | |
| Yakima Sanitarium | TB | Indian | 40 | 30 | .. | No | ... | 135 |
| Vancouver, 15,766—Clark Co. | | | | | | | | |
| Clark General Hospital■ | Gen | Indep | 50 | 17 | 12 | No | 114 | 766 |
| St. Joseph's Hospital◊ | Gen | Church | 125 | 65 | 14 | No | 125 | 1,586 |
| Station Hospital | Gen | Army | 60 | 17 | .. | Yes | ... | 427 |
| Walla Walla, 15,976—Walla Walla Co. | | | | | | | | |
| St. Mary's Hospital◊ | Gen | Church | 115 | 48 | 10 | No | ... | ..... |
| Veterans Admin. Hospital■ | Gen | VetAd | 355 | 239 | .. | Yes | ... | 880 |
| Walla Walla Sanitarium and Hospital◊■ | Gen | Church | 50 | 18 | 9 | No | 22 | 584 |
| Wenatchee, 11,627—Chelan Co. | | | | | | | | |
| Central Washington Deaconess Hospital◊■ | Gen | Church | 47 | 45 | 10 | Yes | 230 | 1,729 |
| St. Anthony's Hospital◊■ | Gen | Church | 65 | 45 | 14 | No | 245 | 1,213 |
| Yakima, 22,101—Yakima Co. | | | | | | | | |
| St. Elizabeth's Hospital◊■ | Gen | Church | 150 | 120 | 30 | No | ... | 4,422 |
| **Related Institutions** | | | | | | | | |
| Bellingham, 30,823—Whatcom Co. | | | | | | | | |
| Normal School Isolation Hospital | Inst | State | 12 | ... | .. | No | ... | ..... |
| Chehalis, 4,907—Lewis Co. | | | | | | | | |
| State Training School for Boys■ | Inst | State | 27 | 8 | .. | No | ... | 664 |
| Friday Harbor, 601—San Juan Co. | | | | | | | | |
| Friday Harbor Hospital | Gen | Indiv | 7 | 2 | 3 | No | 7 | 24 |
| Lakeview, 352—Pierce Co. | | | | | | | | |
| Sunnycroft Sanatorium | N&M | Indiv | 10 | 4 | .. | No | ... | 15 |
| Medical Lake, 1,671—Spokane Co. | | | | | | | | |
| State Custodial School | MenDef | State | 1,200 | 1,279 | .. | No | ... | 203 |
| Monroe, 1,570—Snohomish Co. | | | | | | | | |
| Snohomish County Hospital and Farm■ | Inst | County | 30 | ... | 2 | No | ... | 112 |
| Mount Vernon, 3,690—Skagit Co. | | | | | | | | |
| Mount Vernon Maternity Hospital | Mater | Indiv | 12 | 5 | 7 | ... | ... | ..... |
| Puyallup, 7,094—Pierce Co. | | | | | | | | |
| Valley Hospital | Gen | Indiv | 30 | ... | 12 | ... | ... | ..... |
| Republic, 710—Ferry Co. | | | | | | | | |
| Republic Hospital | Gen | Indiv | 8 | 4 | 2 | No | ... | ..... |
| Retsil, 659—Kitsap Co. | | | | | | | | |
| Washington Veterans' Home and Hospital | Inst | State | 150 | 125 | .. | No | ... | ..... |
| Ritzville, 1,777—Adams Co. | | | | | | | | |
| Ritzville General Hospital | Gen | Indiv | 10 | 5 | 5 | No | ... | ..... |
| Seattle, 365,583—King Co. | | | | | | | | |
| Freedlander's Sanitarium | Conv | Indiv | 12 | 10 | .. | No | ... | 100 |
| Georgetown Hospital | Inst | County | 265 | 200 | .. | ... | ... | ..... |
| Mason Sanitarium | Conv | Indep | 25 | 10 | .. | No | ... | ..... |
| Mt. Baker Dietetic Boarding Home | Conv | Indiv | 15 | 3 | .. | No | ... | 84 |
| Rest-Haven Sanitarium | Conv | Indiv | 11 | 7 | .. | ... | ... | 87 |
| Seattle Convalescent Home■ | Conv | Indiv | 20 | 18 | .. | No | ... | 48 |
| University of Washington Health Service Infirmary■ | Inst | State | 45 | 10 | .. | Yes | ... | 898 |
| Spangle, 218—Spokane Co. | | | | | | | | |
| Spokane County Infirm.■ | Inst | County | 90 | 68 | .. | No | ... | 217 |
| Spokane, 115,514—Spokane Co. | | | | | | | | |
| Rivercrest Hospital | Iso | City | 26 | 10 | .. | No | ... | 210 |
| Salvation Army Women's Hospital and Home■ | Mater | Church | 46 | 41 | 14 | No | 137 | 197 |
| Sprague, 639—Lincoln Co. | | | | | | | | |
| Sprague Hospital | Gen | Indiv | 10 | 2 | 3 | No | 25 | 100 |
| Steilacoom, 722—Pierce Co. | | | | | | | | |
| U. S. Penitentiary■▲ | Inst | Fed | 87 | 25 | .. | Yes | ... | 391 |
| Tacoma, 106,817—Pierce Co. | | | | | | | | |
| City Contagious Hospital | Iso | City | 30 | 8 | .. | No | ... | 122 |
| White Shield Home | Mater | Indep | 30 | 14 | 10 | No | 49 | 71 |
| Tulalip, 620—Snohomish Co. | | | | | | | | |
| Tulalip Indian School Hospital | Gen | Indian | 12 | 10 | .. | Yes | ... | ..... |
| Vancouver, 15,766—Clarke Co. | | | | | | | | |
| Washington School for the Deaf | Inst | State | 24 | ... | .. | No | ... | ..... |
| Walla Walla, 15,976—Walla Walla Co. | | | | | | | | |
| Washington State Penitentiary Hospital | Inst | State | 35 | 20 | .. | Yes | ... | ..... |
| Yakima, 22,101—Yakima Co. | | | | | | | | |
| Yakima Nursing Home and Hospital | Gen | Indiv | 12 | 6 | 9 | No | 132 | ..... |

Summary for Washington:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 93 | 13,421 | 10,283 | 107,944 |
| Related institutions | 28 | 2,351 | 1,908 | 3,543 |
| Totals | 121 | 15,772 | 12,191 | 111,487 |
| Refused registration | 16 | 395 | | |

Key to symbols and abbreviations is on page 2078

## WEST VIRGINIA

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Beckley, 9,357—Raleigh Co. | | | | | | | | |
| Beckley Hospital■ | Gen | Part | 150 | 54 | 10 | No | 55 | 3,753 |
| Raleigh General Hosp.◊■ | Gen | Indep | 50 | 27 | 2 | Yes | 16 | 824 |
| Rutherford State Sanit. | TB | State | 125 | 114 | .. | No | ... | 251 |
| Bluefield, 19,339—Mercer Co. | | | | | | | | |
| Bluefield Sanitarium◊ | Gen | Indep | 100 | 51 | 6 | No | 64 | 2,300 |
| Brown's Hospital (col.)◊ | Gen | Indiv | 40 | 22 | 3 | Yes | 35 | 7,005 |
| Providence Hosp. (col.) | Gen | Indiv | 25 | 5 | 2 | Yes | 3 | 173 |
| St. Luke's Hospital◊ | Gen | Indep | 75 | 32 | 6 | No | 77 | 1,630 |
| Buckhannon, 4,374—Upshur Co. | | | | | | | | |
| St. Joseph's Hospital◊■ | Gen | Church | 31 | 20 | 5 | No | 34 | 600 |
| Charleston, 60,408—Kanawha Co. | | | | | | | | |
| Charleston Gen. Hosp.★+◊■ | Gen | Indep | 168 | 116 | 15 | Yes | 91 | 3,8 |
| Hill Crest Sanatorium | TB | Indep | 41 | 40 | .. | No | ... | [illegible] |
| Kanawha Valley Hosp.◊■ | Gen | Indep | 90 | 67 | 12 | Yes | 140 | 2,17 |
| Dr. Lewis Prichard Free Clinical Hospital■ | Gen | Church | 26 | 20 | 3 | Yes | ... | [illegible] |
| McMillan Hospital◊■ | Gen | Indep | 100 | 30 | 10 | Yes | 63 | 2,017 |
| Mountain State Hospital◊■ | Gen | Indep | 110 | 84 | 20 | No | 197 | 3,800 |
| St. Francis Hospital◊ | Gen | Church | 75 | 31 | 10 | No | 150 | 1,458 |
| Staats Hospital | Gen | Indep | 45 | 23 | .. | No | 21 | 705 |
| Charles Town, 2,434—Jefferson Co. | | | | | | | | |
| Charles Town Gen. Hosp.■ | Gen | Indep | 25 | 13 | 5 | No | ... | 495 |
| Clarksburg, 28,866—Harrison Co. | | | | | | | | |
| Mason Hospital◊ | Gen | Indep | 52 | 24 | 10 | No | 67 | 957 |
| St. Mary's Hospital◊■ | Gen | Church | 125 | 66 | 12 | No | 141 | 2,447 |
| Denmar,—Pocahontas Co. | | | | | | | | |
| State Colored Tuber. Sanit. | TB | State | 85 | 78 | .. | No | ... | 83 |
| Elkins, 7,345—Randolph Co. | | | | | | | | |
| Davis Memorial Hospital◊■ | Gen | Indep | 69 | 35 | 6 | Yes | 27 | 1,211 |
| Elkins City Hospital◊■ | Gen | Indiv | 65 | 33 | 5 | Yes | 37 | 1,028 |
| Fairmont, 23,159—Marion Co. | | | | | | | | |
| Cook Hospital◊■ | Gen | Indep | 98 | 69 | 12 | No | 93 | 2,170 |
| Fairmont Emerg. Hosp.+◊■ | Gen | State | 75 | 32 | 6 | Yes | 17 | 1,230 |
| Glen Dale, 1,493—Marshall Co. | | | | | | | | |
| Reynolds Memorial Hosp.◊■ | Gen | Church | 80 | 36 | 10 | No | 81 | 833 |
| Grafton, 7,737—Taylor Co. | | | | | | | | |
| Grafton City Hospital | Gen | City | 20 | 12 | 4 | No | ... | ..... |
| Hinton, 6,654—Summers Co. | | | | | | | | |
| Hinton Hospital◊■ | Gen | Indep | 75 | 40 | 3 | No | 12 | 1,012 |
| Holden, 2,046—Logan Co. | | | | | | | | |
| Holden Hospital■ | Gen | Indep | 40 | 12 | .. | Yes | ... | 2,030 |
| Hopemont, 2,046—Preston Co. | | | | | | | | |
| Conley Hospital | (Included in State Tuber. Sanitarium) | | | | | | | |
| State Tuberculosis Sanit. | TB | State | 475 | 414 | .. | No | ... | 550 |
| Huntington, 75,572—Cabell Co. | | | | | | | | |
| Chesapeake and Ohio Railway Hospital★+◊■ | Gen | Indus | 114 | 76 | 20 | Yes | 35 | 2,179 |
| Huntington City Hospital■ | Gen | City | 36 | 16 | 6 | Yes | 27 | 5,751 |
| Huntington Eye, Ear and Throat Hospital | EENT | Indiv | 10 | 3 | .. | No | ... | 353 |
| Huntington Mem. Hosp.◊■ | Gen | Indep | 150 | 46 | 6 | Yes | 35 | 1,236 |
| Huntington Ortho. Hosp. | Ortho | Indep | 50 | 45 | .. | Yes | ... | 275 |
| St. Mary's Hospital◊ | Gen | Church | 100 | 47 | 16 | No | 194 | 1,827 |
| Kenova, 3,650—Wayne Co. | | | | | | | | |
| Rife-Ferguson Hospital | Gen | Part | 10 | 6 | 2 | No | 18 | 230 |
| Keyser, 6,248—Mineral Co. | | | | | | | | |
| Potomac Valley Hospital◊ | Gen | Indep | 55 | 20 | 6 | No | 38 | 861 |
| Kimball, 1,467—McDowell Co. | | | | | | | | |
| Henrietta Dismukes Hospital (col.) | Gen | Indiv | 40 | 25 | 2 | No | ... | ..... |
| Lakin,—Mason Co. | | | | | | | | |
| Lakin State Hosp. (col.)+ | N&M | State | 450 | 351 | .. | No | ... | 76 |
| Logan, 4,396—Logan Co. | | | | | | | | |
| Hatfield-Lawson Hospital◊ | Gen | Indep | 105 | 69 | 10 | Yes | ... | ..... |
| Marlinton, 1,586—Pocahontas Co. | | | | | | | | |
| Pocahontas Mem. Hospital | Gen | County | 35 | 15 | 2 | ... | ... | ..... |
| Martinsburg, 14,857—Berkeley Co. | | | | | | | | |
| City Hospital◊■ | Gen | Indep | 42 | 26 | 8 | No | 31 | 728 |
| King's Daughters Hosp.◊■ | Gen | Indep | 65 | 31 | 7 | Yes | 74 | 838 |
| McKendree, 117—Fayette Co. | | | | | | | | |
| McKendree Hosp. No. 2◊■ | Gen | State | 75 | 38 | 8 | Yes | 22 | 2,953 |
| Montgomery, 2,906—Fayette Co. | | | | | | | | |
| Coal Valley Hospital◊ | Gen | Indep | 65 | 54 | 5 | Yes | 32 | 3,242 |
| Morgantown, 16,186—Monongalia Co. | | | | | | | | |
| City Hospital◊■ | Gen | Indiv | 35 | 15 | 10 | No | 38 | 632 |
| Eastmont Tuber. Sanat. | TB | Indep | 30 | 33 | .. | No | ... | ..... |
| Monongalia County Hosp.◊ | Gen | County | 72 | 53 | 8 | No | 99 | 1,629 |
| Moundsville, 14,411—Marshall Co. | | | | | | | | |
| Grand View Sanatorium | TB | County | 35 | 24 | .. | Yes | ... | 39 |
| Mullens, 2,356—Wyoming Co. | | | | | | | | |
| Mullens Hospital■ | Gen | Indiv | 30 | 13 | 2 | No | 20 | 1,002 |
| New Martinsville, 2,814—Wetzel Co. | | | | | | | | |
| Wetzel County Hospital■ | Gen | County | 20 | 4 | 3 | No | 9 | 2,800 |
| Oak Hill, 2,076—Fayette Co. | | | | | | | | |
| Oak Hill Hospital | Gen | Part | 50 | 22 | 5 | No | 40 | 1,347 |
| Parkersburg, 29,623—Wood Co. | | | | | | | | |
| Camden-Clark Memorial Hospital◊■ | Gen | City | 60 | 31 | 12 | No | 160 | 1,316 |
| St. Joseph's Hospital◊■ | Gen | Church | 100 | 54 | 10 | No | 134 | 1,541 |
| Princeton, 6,955—Mercer Co. | | | | | | | | |
| Mercer Memorial Hosp.◊■ | Gen | Indep | 45 | 22 | 4 | Yes | 22 | 658 |
| Princeton Hospital◊■ | Gen | Indep | 40 | 25 | 4 | Yes | 18 | 1,076 |
| Richwood, 5,720—Nicholas Co. | | | | | | | | |
| McClung Hospital◊ | Gen | Indiv | 45 | 19 | 5 | Yes | 136 | 726 |
| Sacred Heart Hospital◊ | Gen | Church | 30 | 14 | 6 | No | 36 | 543 |
| Ronceverte, 2,254—Greenbrier Co. | | | | | | | | |
| Greenbrier Valley Hosp.◊■ | Gen | Indep | 50 | 26 | 2 | Yes | 15 | 684 |
| Sistersville, 3,072—Tyler Co. | | | | | | | | |
| Sistersville General Hosp.■ | Gen | Indep | 20 | 10 | 3 | No | 15 | 210 |
| South Charleston, 5,904—Kanawha Co. | | | | | | | | |
| Dunn Hospital | Gen | Indiv | 15 | 6 | 9 | No | 30 | 151 |
| Welch, 5,376—McDowell Co. | | | | | | | | |
| Grace Hospital | Gen | Indep | 60 | 25 | 6 | No | 33 | 950 |
| Stevens Clinic Hospital■ | Gen | Indus | 76 | 37 | 4 | Yes | 35 | 1,765 |
| Welch Emergency Hosp.◊■ | Gen | State | 125 | 49 | 5 | Yes | 25 | 2,203 |

## WEST VIRGINIA—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Weston, 8,646—Lewis Co. | | | | | | | | |
| City Hospital◘ | Gen | Part | 25 | 11 | 6 | Yes | 31 | 813 |
| General Hospital■ | Gen | Indiv | 20 | 18 | 5 | Yes | 31 | 400 |
| Wheeling, 61,659—Ohio Co. | | | | | | | | |
| Ohio Valley General Hospital★◊ | Gen | Indep | 240 | 173 | 30 | Yes | 363 | 4,457 |
| Wheeling Hospital★◊■ | Gen | Church | 300 | 129 | 25 | Yes | 301 | 4,020 |
| Williamson, 9,410—Mingo Co. | | | | | | | | |
| Williamson Mem. Hosp.◊■ | Gen | Indep | 57 | 40 | 4 | No | 44 | 1,396 |
| **Related Institutions** | | | | | | | | |
| Elm Grove,—Ohio Co. | | | | | | | | |
| Ohio County Home Hosp.◘ | Inst | County | 48 | 48 | .. | No | ... | 100 |
| Huntington, 75,572—Cabell Co. | | | | | | | | |
| Huntington State Hospital | N&M | State | 1,000 | 990 | .. | No | ... | 228 |
| Salvation Army Hospital■ | Gen | Church | 10 | 3 | 6 | Yes | 13 | 251 |
| Milton, 1,305—Cabell Co. | | | | | | | | |
| Morris Memorial Hospital for Crippled Children | Ortho | Indep | 30 | 20 | .. | No | ... | ..... |
| Moundsville, 14,411—Marshall Co. | | | | | | | | |
| West Virginia Penitentiary Hospital■ | Inst | State | 64 | 62 | .. | No | ... | ..... |
| | Inst | State | 15 | ... | .. | No | ... | ..... |
| Spencer, 2,493—Roane Co. | | | | | | | | |
| Spencer State Hospital | N&M | State | 750 | 833 | .. | No | ... | ..... |
| Weston, 8,646—Lewis Co. | | | | | | | | |
| Weston State Hospital | N&M | State | 1,278 | 1,481 | .. | No | ... | 327 |
| Wheeling, 61,659—Ohio Co. | | | | | | | | |
| Ohio County Tuberculosis Sanatorium | TB | County | 16 | 16 | .. | No | ... | 23 |

Summary for West Virginia:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums | 69 | 5,476 | 3,298 | 91,276 |
| Related institutions | 9 | 3,211 | 3,463 | 929 |
| Totals | 78 | 8,687 | 6,761 | 92,205 |
| Refused registration | 2 | 60 | | |

## WISCONSIN

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| | Gen | Indep | 10 | 4 | 4 | No | 9 | 135 |
| | Gen | Indep | 15 | 5 | 5 | No | 47 | 242 |
| *Antigo, 8,610—Langlade Co.* | | | | | | | | |
| Antigo Hospital | Gen | Indiv | 12 | 8 | 6 | No | ... | 300 |
| City Hospital | Gen | Indiv | 25 | 8 | .. | No | ... | ..... |
| Appleton, 25,267—Outagamie Co. | | | | | | | | |
| St. Elizabeth Hospital★ | Gen | Church | 200 | 100 | 50 | No | 552 | 3,175 |
| Ashland, 10,622—Ashland Co. | | | | | | | | |
| Ashland General Hospial◊■ | Gen | Indep | 67 | 46 | 8 | No | 93 | 1,115 |
| St. Joseph's Hospital★◊◘ | Gen | Church | 134 | 86 | 16 | No | 149 | 2,345 |
| Baraboo, 5,545—Sauk Co. | | | | | | | | |
| St. Mary's Ringling Hosp. | Gen | Church | 25 | 17 | 7 | No | 105 | 641 |
| Barron, 1,863—Barron Co. | | | | | | | | |
| River Side Hospital | Gen | Part | 12 | 7 | 6 | No | 48 | 252 |
| Beaver Dam, 9,867—Dodge Co. | | | | | | | | |
| Lutheran Deaconess Hosp. | Gen | Church | 30 | 21 | 8 | No | 156 | 895 |
| Beloit, 23,611—Rock Co. | | | | | | | | |
| Beloit Municipal Hosp.■ | Gen | City | 58 | 38 | 12 | Yes | 294 | 1,942 |
| Berlin, 4,106—Green Lake Co. | | | | | | | | |
| Yates Memorial Hospital | Gen | Indep | 16 | 7 | 3 | No | 28 | 206 |
| Boscobel, 1,762—Grant Co. | | | | | | | | |
| Brookside-Parker Hosp.■ | Gen | Part | 22 | .10 | 4 | No | 41 | 361 |
| Burlington, 4,114—Racine Co. | | | | | | | | |
| Burlington Mem. Hosp.■ | Gen | Indep | 25 | 14 | 10 | No | 153 | 687 |
| Chippewa Falls, 9,539—Chippewa Co. | | | | | | | | |
| St. Joseph's Hospital■ | Gen | Church | 185 | 139 | 17 | No | 332 | 2,818 |
| Columbus, 2,514—Columbia Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 40 | 22 | 6 | Yes | 85 | 553 |
| Cumberland, 1,532—Barron Co. | | | | | | | | |
| Cumberland Hospital | Gen | Part | 30 | 18 | 6 | No | 57 | 446 |
| Dodgeville, 1,937—Iowa Co. | | | | | | | | |
| Dodgeville General Hosp. | Gen | Indep | 24 | 12 | 5 | No | 97 | 838 |
| St. Joseph's Hospital | Gen | Church | 62 | 33 | 10 | No | 99 | 1,110 |
| Eau Claire, 26,287—Eau Claire Co. | | | | | | | | |
| Luther Hospital★◊■ | Gen | Indep | 147 | 85 | 20 | No | 258 | 2,570 |
| Mt. Washington Sanat. | TB | County | 58 | 55 | .. | No | ... | 109 |
| Sacred Heart Hospital◊■ | Gen | Church | 219 | 114 | 16 | Yes | 393 | 3,709 |
| Edgerton, 2,906—Rock Co. | | | | | | | | |
| Edgerton Memorial Hospital◘ | Gen | City | 16 | 7 | 6 | No | 79 | 448 |
| Elkhorn, 2,340—Walworth Co. | | | | | | | | |
| Walworth County Hosp. | Gen | County | 30 | 20 | 11 | No | 183 | ..... |
| Fond du Lac, 26,449—Fond du Lac Co. | | | | | | | | |
| St. Agnes Hosptial★◊■ | Gen | Church | 225 | 161 | 25 | No | 536 | 4,760 |
| Ft. Atkinson, 5,793—*Jefferson Co.* | | | | | | | | |
| Ft. Atkinson Gen. Hosp. | Gen | Indiv | 15 | 7 | 5 | No | 76 | 432 |
| Frederic, 680—Polk Co. | | | | | | | | |
| Frederic Hospital◘ | Gen | Indiv | 12 | 8 | 5 | No | 40 | 402 |
| Grantsburg, 777—Burnett Co. | | | | | | | | |
| Community Hospital | Gen | Indep | 15 | 9 | 4 | No | 39 | 289 |

## WISCONSIN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Green Bay, 37,415—Brown Co. | | | | | | | | |
| Bellin Memorial Hospital◊ | Gen | Indep | 92 | 55 | 8 | No | 171 | 2,315 |
| St. Mary's Mothers' and Infants' Home and St. Mary's Hospital◊■ | Gen | Church | 105 | 62 | 20 | No | 408 | 2,750 |
| St. Vincent's Hospital | Gen | Church | 204 | 176 | 14 | No | 397 | 6,074 |
| Hartford, 3,754—Washington Co. | | | | | | | | |
| St. Joseph's Hospital◘ | Gen | Church | 50 | 16 | 7 | Yes | 68 | 860 |
| | TB | County | 100 | 80 | .. | No | ... | ..... |
| | Gen | Indiv | 25 | 12 | 5 | Yes | 47 | 595 |
| | Gen | Indiv | 35 | 20 | 2 | No | 15 | 147 |
| Janesville, 21,628—Rock Co. | | | | | | | | |
| | Gen | Church | 120 | 80 | 30 | No | 343 | 1,778 |
| | TB | County | 70 | 60 | .. | No | ... | 73 |
| Jc | | | | | | | | |
| Forest Lawn Sanatorium | TB | County | 52 | 46 | .. | Yes | ... | 46 |
| Kenosha, 50,262—Kenosha Co. | | | | | | | | |
| Kenosha Hospital◊■ | Gen | Indep | 150 | 50 | 30 | Yes | 414 | 916 |
| St. Catherine's Hospital and Sanitarium◘ | Gen | Church | 45 | 44 | 15 | Yes | 239 | 1,179 |
| Willowbrook Sanatorium■ | TB | County | 38 | 38 | .. | No | ... | 61 |
| Keshena, 270—Shawano Co. | | | | | | | | |
| Keshena Indian Hospital | Gen | Indian | 60 | 22 | .. | Yes | ... | 688 |
| La Crosse, 39,614—La Crosse Co. | | | | | | | | |
| Grandview Hospital◊■ | Gen | Indep | 106 | 72 | 10 | Yes | 102 | 1,928 |
| La Crosse Lutheran Hospital★ | Gen | Church | 140 | 96 | 9 | Yes | 165 | 3,350 |
| Methodist Hospital◘ | Gen | Church | 40 | 37 | 10 | No | 139 | 1,459 |
| St. Francis Hospital★◊■ | Gen | Church | 275 | 167 | 40 | Yes | 581 | 4,558 |
| Ladysmith, 3,493—Rusk Co. | | | | | | | | |
| St. Mary's Hospital◊■ | Gen | Church | 35 | 18 | 8 | No | 91 | 707 |
| Lancaster, 2,432—Grant Co. | | | | | | | | |
| Doolittle Hospital | Gen | Indiv | 15 | 8 | 2 | No | 35 | 241 |
| Laona, 1,709—Forest Co. | | | | | | | | |
| Ovitz Hospital | Gen | Indus | 16 | 13 | 4 | No | 51 | 278 |
| Little Chute, 2,833—Outagamie Co. | | | | | | | | |
| Riverview Sanatorium | TB | County | 64 | 64 | .. | Yes | ... | 82 |
| Madison, 57,899—Dane Co. | | | | | | | | |
| Lake View Sanatorium■ | TB | County | 100 | 98 | .. | Yes | ... | 185 |
| Madison General Hosp.★◊◘ | Gen | Indep | 165 | 92 | 21 | No | 416 | 4,192 |
| Madison Sanit. and Hosp. | Gen | Indep | 42 | 20 | 3 | Yes | 16 | 768 |
| Methodist Hospital★◊■ | Gen | Church | 110 | 62 | 10 | No | 154 | 2,685 |
| Morningside Sanatorium | TB | Indep | 35 | 25 | .. | No | ... | ..... |
| Normandale | N&M | Indep | 30 | 20 | .. | No | ... | ..... |
| St. Mary's Hospital★◊ | Gen | Church | 145 | 104 | 30 | Yes | 831 | 4,006 |
| State of Wisconsin General Hospital★+◊■▲ | Gen | State | 600 | 586 | 20 | Yes | 178 | 7,869 |
| Wisconsin Orthopedic Hospital for Children | (Included in State of Wisconsin Gen. Hosp.) | | | | | | | |
| Manitowoc, 22,963—Manitowoc Co. | | | | | | | | |
| Holy Family Hospital◊◘ | Gen | Church | 125 | 61 | 25 | No | 276 | 2,249 |
| Marinette, 13,734—Marinette Co. | | | | | | | | |
| Marinette and Menominee Hospital■ | Gen | Indep | 54 | 28 | 12 | Yes | 190 | 1,126 |
| | Gen | Church | 160 | 93 | 15 | No | 229 | 3,347 |
| | Gen | Indep | 50 | 18 | 7 | No | 58 | 470 |
| ■ | Gen | Indep | 34 | 10 | 8 | Yes | 21 | 418 |
| Wisconsin Memorial Hosp. | N&M | State | 300 | 279 | .. | No | ... | 47 |
| Wisconsin State Hospital for Insane | N&M | State | 860 | 764 | .. | Yes | ... | 609 |
| Menomonie, 5,595—Dunn Co. | | | | | | | | |
| Menomonie City Hospital | Gen | City | 22 | 14 | 7 | No | 72 | 603 |
| Merrill, 8,458—Lincoln Co. | | | | | | | | |
| Holy Cross Hospital◘ | Gen | Church | 50 | 21 | 11 | No | 88 | 763 |
| Lincoln County Hospital | Gen | County | 30 | 29 | 4 | No | 20 | 112 |
| Milwaukee, 578,249—Milwaukee Co. | | | | | | | | |
| Columbia Hospital★◊■ | Gen | Indep | 160 | 65 | 25 | Yes | 324 | 2,497 |
| Evangelical Deaconess Hospital★◊■ | Gen | Church | 139 | 108 | 26 | No | 839 | 4,155 |
| Johnston Emergency Hospital+⊙ | Emerg | City | 25 | 19 | 4 | No | 4 | 7,000 |
| Lincoln Hospital | Gen | Indiv | 25 | 9 | .. | No | ... | ..... |
| Dr. Lynch's Sanatorium | Diab | Indiv | 15 | 6 | .. | Yes | ... | 500 |
| Milwaukee Children's Hospital+⊙■ | Chil | Indep | 155 | 144 | .. | Yes | ... | 3,393 |
| Milwaukee Co. Gen. Hosp., Disp.-Emergency Unit | (Included in Milwaukee County General Hospital, Wauwatosa) | | | | | | | |
| Milwaukee Gen. Hosp.★◊■ | Gen | Indep | 165 | 87 | 35 | Yes | 797 | 2,336 |
| Milwaukee Hospital "The Passavant"★◊■ | Gen | Church | 210 | 186 | 36 | Yes | 710 | 4,959 |
| Misericordia Hospital★◊ | Gen | Church | 110 | 58 | 40 | No | 797 | 3,024 |
| Mt. Sinai Hospital★◊◘ | Gen | Indep | 140 | 133 | 28 | Yes | 799 | 4,064 |
| Roger Williams Hospital | Gen | Church | 40 | 26 | 6 | No | 62 | 647 |
| Sacred Heart Sanitarium▲ | Gen | Church | 320 | 200 | .. | No | ... | 2,336 |
| St. Anthony's Hospital■ | Gen | Church | 42 | New | 10 | Yes | ... | 363 |
| St. Joseph's Hosp.★+◊■ | Gen | Church | 325 | 151 | 70 | No | 987 | 4,706 |
| St. Luke's Hospital★◘ | Gen | Church | 100 | 45 | 19 | No | 348 | 1,462 |
| St. Mary's Hill Sanit. | N&M | Church | 120 | 97 | .. | No | ... | 411 |
| St. Mary's Hospital★◊ | Gen | Church | 226 | 100 | 40 | Yes | 674 | 5,375 |
| Shorewood Hospital-Sanit. | N&M | Indep | 65 | 33 | .. | Yes | ... | 197 |
| South Side Hospital◘ | Gen | Indep | 30 | 10 | 10 | Yes | 64 | 366 |
| South View Isolation Hospital+◘ | Iso | City | 250 | 76 | .. | No | ... | 892 |
| West Side Hospital■ | Gen | Indep | 25 | 11 | 5 | Yes | 27 | 457 |
| Monroe, 5,015—Green Co. | | | | | | | | |
| Evangelical Deaconess Hospital | Gen | Church | 30 | 20 | 12 | No | 159 | 779 |
| Mt. Horeb, 1,425—Dane Co. | | | | | | | | |
| Buckner Hospital | Gen | Indiv | 12 | 4 | 6 | No | 42 | 182 |

## WISCONSIN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Neenah, 9,151—Winnebago Co. | | | | | | | | |
| Theda Clark Mem. Hosp.◊■ | Gen | Indep | 55 | 45 | 17 | No | 281 | 1,627 |
| New London, 4,661—Waupaca Co. | | | | | | | | |
| Borchardt Clinic and Memorial Hospital | Gen | Indiv | 16 | 10 | 7 | No | 14 | 380 |
| New London Community Hospital | Gen | Church | 50 | 12 | 8 | No | 33 | 227 |
| Niagara, 2,033—Marinette Co. | | | | | | | | |
| Niagara Hospital | Gen | Indus | 12 | 6 | 4 | No | 72 | 120 |
| Oconomowoc, 4,190—Waukesha Co. | | | | | | | | |
| Oconomowoc Health Resort | N&M | Indep | 75 | 56 | .. | No | ... | 108 |
| Oconto, 5,030—Oconto Co. | | | | | | | | |
| Oconto Co. and City Hosp. | Gen | Indep | 20 | 12 | 6 | No | 36 | 635 |
| Oconto Falls, 1,921—Oconto Co. | | | | | | | | |
| Oconto Falls Hospital | Gen | Indep | 10 | 4 | 3 | No | 32 | 202 |
| Onalaska, 1,408—La Crosse Co. | | | | | | | | |
| Oak Forest Sanatorium | TB | County | 60 | 50 | .. | No | ... | 79 |
| Oshkosh, 40,108—Winnebago Co. | | | | | | | | |
| Mercy Hospital◊ | Gen | Church | 135 | 75 | .. | No | ... | 2,689 |
| St. Mary's Hospital⊙■ | Gen | Church | 100 | 62 | 25 | No | 386 | 918 |
| Park Falls, 3,036—Price Co. | | | | | | | | |
| Park Falls Hospital | Gen | Indiv | 25 | 12 | 4 | No | 25 | 485 |
| Pewaukee, 1,067—Waukesha Co. | | | | | | | | |
| Oak Sanatorium | TB | County | 38 | 35 | .. | Yes | ... | 39 |
| Platteville, 4,047—Grant Co. | | | | | | | | |
| Andrew Hospital | Gen | Indiv | 15 | 7 | 4 | No | 24 | 187 |
| Buck Hospital | Gen | Indiv | 12 | 5 | 4 | No | 25 | 75 |
| Wilson Cunningham Hosp. | Gen | Indiv | 23 | 10 | 7 | No | 39 | 292 |
| Plymouth, 3,882—Sheboygan Co. | | | | | | | | |
| Plymouth Hospital | Gen | Indep | 30 | 18 | 8 | No | 119 | 609 |
| Rocky Knoll Sanatorium | TB | County | 84 | 84 | .. | No | ... | 102 |
| Portage, 6,308—Columbia Co. | | | | | | | | |
| St. Saviors General Hosp.■ | Gen | Church | 65 | 30 | 7 | Yes | 102 | 1,082 |
| Poynette, 672—Columbia Co. | | | | | | | | |
| Poynette Hospital | Gen | Indiv | 11 | 2 | 2 | No | 16 | 131 |
| Prairie du Chien, 3,943—Crawford Co. | | | | | | | | |
| Prairie du Chien Sanitarium-Hospital◊ | Gen | Indep | 70 | 32 | 6 | No | 83 | 1,100 |
| Prescott, 755—Pierce Co. | | | | | | | | |
| Dr. Louis Jones' Hospital | Gen | Indiv | 20 | 14 | 4 | No | 10 | 71 |
| Purcair, (Bayfield P.O.)—Bayfield Co. | | | | | | | | |
| Purcair Sanatorium⊙ | TB | County | 72 | 68 | .. | No | ... | 67 |
| Racine, 67,542—Racine Co. | | | | | | | | |
| St. Luke's Hospital◊■ | Gen | Church | 120 | 66 | 38 | No | 608 | 3,651 |
| St. Mary's Hospital■ | Gen | Church | 90 | 60 | 22 | No | 405 | 3,086 |
| Sunny Rest Sanatorium | TB | County | 50 | 48 | .. | No | ... | 51 |
| Rhinelander, 8,019—Oneida Co. | | | | | | | | |
| St. Mary's Hospital■ | Gen | Church | 65 | 25 | 12 | No | 130 | 1,178 |
| Rice Lake, 5,177—Barron Co. | | | | | | | | |
| Lakeside Methodist Hosp.■ | Gen | Church | 33 | 16 | 5 | No | 125 | 778 |
| St. Joseph's Hospital | Gen | Church | 30 | 10 | 4 | No | 44 | 650 |
| Richland Center, 3,632—Richland Co. | | | | | | | | |
| Richland Hospital | Gen | Indep | 40 | 25 | 8 | No | 60 | 1,590 |
| River Falls, 2,363—Pierce Co. | | | | | | | | |
| City Hospital | Gen | City | 14 | 5 | 4 | No | 57 | 250 |
| Shawano, 4,188—Shawano Co. | | | | | | | | |
| Shawano Municipal Hosp.■ | Gen | Cy&Co | 31 | New | 8 | No | ... | ..... |
| Sheboygan, 39,251—Sheboygan Co. | | | | | | | | |
| St. Nicholas Hospital■ | Gen | Church | 134 | 79 | 27 | No | 352 | 2,317 |
| Shullsburg, 1,041—Lafayette Co. | | | | | | | | |
| Dr. Ennis' Hospital | Gen | Indiv | 15 | 4 | 2 | No | ... | 114 |
| South Milwaukee, 10,706—Milwaukee Co. | | | | | | | | |
| South Milwaukee Hospital | Gen | Indiv | 13 | 1 | 7 | No | 58 | 367 |
| Sparta, 4,949—Monroe Co. | | | | | | | | |
| St. Mary's Hospital◊ | Gen | Church | 75 | 50 | 11 | No | 168 | 1,788 |
| Stanley, 1,988—Chippewa Co. | | | | | | | | |
| Victory Hospital■ | Gen | Indep | 16 | 5 | 4 | No | 43 | 224 |
| Statesan, 90—Waukesha Co. | | | | | | | | |
| Wisconsin State Sanat.+ | TB | State | 228 | 180 | .. | No | ... | 246 |
| Stevens Point, 13,623—Portage Co. | | | | | | | | |
| River Pines Sanatorium | TB | Indep | 50 | 43 | .. | No | ... | 66 |
| St. Michael's Hospital | Gen | Church | 80 | 48 | 14 | Yes | 148 | 1,287 |
| Stoughton, 4,497—Dane Co. | | | | | | | | |
| Stoughton Community Hospital | Gen | Indep | 21 | 12 | 8 | No | 120 | 450 |
| Sturgeon Bay, 4,983—Door Co. | | | | | | | | |
| Egeland Hospital | Gen | Indiv | 25 | 10 | 2 | No | 40 | 464 |
| Lensum Hospital | Gen | Indiv | 15 | 7 | 3 | No | ... | 298 |
| Superior, 36,113—Douglas Co. | | | | | | | | |
| Good Samaritan Hospital | Gen | Church | 12 | 8 | 8 | No | 133 | 294 |
| St. Francis Hospital■ | Gen | Church | 50 | 30 | .. | No | ... | 693 |
| St. Mary's Hospital◊■ | Gen | Church | 100 | 63 | 18 | Yes | 302 | 1,923 |
| Tomahawk, 2,919—Lincoln Co. | | | | | | | | |
| Sacred Heart Hospital■ | Gen | Church | 48 | 16 | 1 | No | 10 | 565 |
| Two Rivers, 10,083—Manitowoc Co. | | | | | | | | |
| Two Rivers Municipal Hospital | Gen | City | 37 | 25 | 10 | No | 121 | 959 |
| Washburn, 2,238—Bayfield Co. | | | | | | | | |
| Washburn Hospital | Gen | Indep | 14 | 5 | 5 | Yes | 15 | 153 |
| Watertown, 10,613—Jefferson Co. | | | | | | | | |
| St. Mary's Hospital | Gen | Church | 50 | 34 | 10 | No | 187 | 1,325 |
| Waukesha, 17,176—Waukesha Co. | | | | | | | | |
| The Spa■ | Rheu | Indep | 75 | 40 | .. | No | ... | 712 |
| Waukesha Municipal Hosp. | Gen | City | 60 | 30 | 12 | No | 249 | 1,877 |
| Waukesha Springs Sanit. | N&M | Indep | 40 | 30 | .. | No | ... | 53 |
| Waupaca, 3,131—Waupaca Co. | | | | | | | | |
| Dr. P. J. Christofferson Hospital | Gen | Indiv | 10 | 4 | .. | No | ... | 150 |
| Waupun, 5,768—Fond du Lac Co. | | | | | | | | |
| Central State Hospital for Insane | N&M | State | 302 | 260 | .. | No | ... | 57 |
| Wausau, 23,758—Marathon Co. | | | | | | | | |
| "Mount View" Marathon Co. Tuberculosis Sanat.⊙ | TB | County | 66 | 63 | .. | No | ... | 54 |
| St. Mary's Hospital◊ | Gen | Church | 120 | 73 | 18 | No | 291 | 3,268 |
| Wausau Memorial Hosp.◊ | Gen | Indep | 95 | 55 | 15 | No | 181 | 1,841 |

Key to symbols and abbreviations is on page 2078

## WISCONSIN—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Wauwatosa, 21,194—Milwaukee Co. | | | | | | | | |
| Milwaukee Asylum for Chronic Insane | N&M | County | 1,429 | 1,355 | .. | No | ... | 23 |
| Milwaukee County General Hospital★+◊■▲ | Gen | County | 1,000 | 446 | 50 | Yes | 636 | 9,516 |
| Milwaukee Hospital for Mental Diseases | N&M | County | 767 | 763 | .. | Yes | ... | 424 |
| Milwaukee Sanitarium+ | N&M | Indep | 131 | 127 | .. | No | ... | 138 |
| Muirdale Sanatorium+■ | TB | County | 375 | 379 | .. | Yes | ... | 613 |
| West DePere, 4,300—Brown Co. | | | | | | | | |
| Hickory Grove Sanatorium | TB | County | 85 | 75 | .. | No | ... | 124 |
| Whitehall, 915—Trempealeau Co. | | | | | | | | |
| Whitehall Community Hospital◊ | Gen | Indep | 30 | 17 | 4 | No | 71 | 717 |
| Whitelaw, 269—Manitowoc Co. | | | | | | | | |
| Maple Crest Sanatorium■ | TB | County | 45 | 37 | .. | No | ... | 32 |
| Winnebago, 1,120—Winnebago Co. | | | | | | | | |
| Northern Hospital for the Insane | N&M | State | 821 | 775 | .. | No | ... | 409 |
| Sunny View Sanatorium | TB | County | 67 | 59 | .. | No | ... | 60 |
| Wisconsin Rapids, 8,726—Wood Co. | | | | | | | | |
| Riverview Hospital | Gen | Indep | 36 | 23 | 8 | No | 36 | 778 |
| **Related Institutions** | | | | | | | | |
| Antigo, 8,610—Langlade Co. | | | | | | | | |
| Dr. Bloor's Hospital | Gen | Indiv | 8 | 1 | 2 | No | 5 | 24 |
| Appleton, 25,267—Outagamie Co. | | | | | | | | |
| Outagamie County Asylum for Chronic Insane | N&M | County | 183 | 181 | .. | No | ... | 15 |
| Beloit, 23,611—Rock Co. | | | | | | | | |
| Beloit Detention Hospital | Iso | City | 10 | 5 | .. | No | ... | 11 |
| Chippewa Falls, 9,539—Chippewa Co. | | | | | | | | |
| Chippewa County Chronic Insane Asylum | N&M | County | 229 | 216 | .. | No | ... | 66 |
| Northern Wisconsin Colony and Training School | MenDef | State | 1,273 | 1,330 | .. | No | ... | 160 |
| Dodgeville, 1,937—Iowa Co. | | | | | | | | |
| Iowa County Insane Asylum | N&M | County | 130 | 126 | .. | No | ... | ..... |
| Dousman, 256—Waukesha Co. | | | | | | | | |
| Wisconsin Masonic Home and O. E. S. Hospital | Inst | Frat | 18 | 12 | .. | No | ... | ..... |
| Eau Claire, 26,287—Eau Claire Co. | | | | | | | | |
| Eau Claire County Insane Asylum | N&M | County | 200 | 185 | .. | No | ... | 17 |
| Elkhorn, 2,340—Walworth Co. | | | | | | | | |
| Walworth County Hospital (Nerv. and Mental Unit) | N&M | County | 120 | 115 | .. | ... | ... | ..... |
| Ellsworth, 1,121—Pierce Co. | | | | | | | | |
| Ellsworth Hospital | Gen | Indiv | 8 | 4 | 4 | No | 56 | 276 |
| Fond du Lac, 26,449—Fond du Lac Co. | | | | | | | | |
| Fond du Lac County Insane Asylum | N&M | County | 245 | 234 | .. | No | ... | 22 |
| Green Bay, 37,415—Brown Co. | | | | | | | | |
| Brown Co. Insane Asylum | N&M | County | 165 | 142 | .. | No | ... | 19 |
| Wisconsin State Reformatory Hospital■ | Inst | State | 24 | 5 | .. | No | ... | 228 |
| Itasca, 315—Douglas Co. | | | | | | | | |
| Douglas County Asylum, Home and Sanatorium | N&M | County | 200 | 202 | .. | No | ... | 12 |
| Janesville, 21,628—Rock Co. | | | | | | | | |
| Detention Hospital■ | Iso | City | 8 | ... | .. | No | ... | 6 |
| Rock County Hospital | N&M | County | 210 | 195 | .. | No | ... | 25 |
| Jefferson, 2,639—Jefferson Co. | | | | | | | | |
| Jefferson County Asylum for Chronic Insane | N&M | County | 190 | 178 | .. | No | ... | 7 |
| St. Coletta Institute | MenDef | Church | 40 | 12 | .. | No | ... | ..... |
| Juneau, 1,154—Dodge Co. | | | | | | | | |
| Dodge County Insane Asylum and Poor House | N&M | County | 185 | 167 | .. | No | ... | 1 |
| Kewaunee, 2,409—Kewaunee Co. | | | | | | | | |
| Dana and Dockry Hospital | Gen | Part | 8 | 2 | 2 | No | 11 | ..... |
| Lake Geneva, 3,073—Walworth Co. | | | | | | | | |
| Crane Farms Sanat[illegible] | Conv | Indus | 18 | 8 | .. | No | ... | 96 |
| Lake Tom[illegible] Co. | | | | | | | | |
| [illegible]ates- | TB | State | 40 | 30 | .. | No | ... | 43 |
| Lancaster, 2,432—Grant Co. | | | | | | | | |
| Godfrey Hospital | Gen | Part | 7 | 4 | 2 | No | ... | ..... |
| Grant County Asylum | N&M | County | 250 | 205 | .. | No | ... | 25 |
| Madison, 57,899—Dane Co. | | | | | | | | |
| East Washington Hosp.■ | Iso | City | 50 | 10 | .. | No | ... | 196 |
| Manitowoc, 22,963—Manitowoc Co. | | | | | | | | |
| Manitowoc County Insane Asylum | N&M | County | 200 | 200 | .. | No | ... | ..... |
| Marshfield, 8,778—Wood Co. | | | | | | | | |
| Wood County Asylum for Chronic Insane | N&M | County | 215 | 212 | .. | No | ... | 19 |
| Menomonie, 5,595—Dunn Co. | | | | | | | | |
| Dunn County Asylum | N&M | County | 140 | 131 | .. | No | ... | 7 |
| Milwaukee, 578,249—Milwaukee Co. | | | | | | | | |
| Layton Home | Incur | Church | 32 | 32 | .. | No | ... | 8 |
| Ogden Hospital | Gen | Indiv | 20 | ... | .. | ... | ... | ..... |
| St. Camillus Hospital and Invalid's Home | Incur | Church | 19 | 19 | .. | ... | ... | 16 |
| Veterans Admin. Home■▲ | Inst | VetAd | 821 | 689 | .. | Yes | ... | 4,089 |
| Mondovi, 1,623—Buffalo Co. | | | | | | | | |
| Mondovi Hospital | Gen | Indiv | 6 | 2 | .. | No | ... | 65 |
| Monroe, 5,015—Green Co. | | | | | | | | |
| Green County Asylum | N&M | County | 192 | 162 | .. | No | ... | 8 |
| New Richmond, 2,112—St. Croix Co. | | | | | | | | |
| St. Croix County Asylum for Chronic Insane | N&M | County | 160 | 145 | .. | Yes | ... | ..... |
| Oshkosh, 40,108—Winnebago Co. | | | | | | | | |
| Alexian Brothers Hospital | N&M | Church | 85 | 50 | .. | No | ... | 16 |

## WISCONSIN—Continued

| Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Owen, 1,102—Clark Co.<br>Clark County Asylum..... | N&M | County | 300 | 230 | .. | ... | ... | ..... |
| Peshtigo, 1,579—Marinette Co.<br>Marinette County Insane Asylum ........... | N&M | County | 194 | 193 | .. | No | ... | 5 |
| Racine, 67,542—Racine Co.<br>Lincoln Mem. Hosp. for Communicable Diseases■. | Iso | City | 54 | 33 | .. | No | ... | 317 |
| Racine County Asylum.... | N&M | County | 232 | 237 | .. | No | ... | 28 |
| Reedsburg, 2,967—Sauk Co.<br>Sauk County Asylum...... | N&M | County | 191 | 172 | .. | No | ... | 160 |
| Richland Center, 3,632—Richland Co.<br>Richland County Asylum for Chronic Insane...... | N&M | County | 142 | 117 | .. | No | ... | 5 |
| Shawano, 4,188—Shawano Co.<br>Shawano Co. Insane Asy.. | N&M | County | 179 | 179 | .. | No | ... | 7 |
| Sheboygan, 39,251—Sheboygan Co.<br>Sheboygan County Asylum | N&M | County | 206 | 202 | .. | No | ... | 15 |
| Sparta, 4,949—Monroe Co.<br>Monroe Co. Insane Asylum | N&M | County | 102 | 100 | .. | No | ... | 5 |
| Superior, 36,113—Douglas Co.<br>Isolation Hospital......... | Iso | City | 28 | 1 | .. | No | ... | 56 |
| Taycheedah, 1,465—Fond du Lac Co.<br>Wisconsin Industrial Home for Women■ ............ | Inst | State | 8 | 1 | 12 | No | 12 | 36 |
| Tomah, 3,354—Monroe Co.<br>Tomah Indian School Hosp. | Gen | Indian | 15 | 7 | .. | No | ... | 474 |
| Union Grove, 755—Racine Co.<br>Southern Wisconsin Colony and Training School..... | MenDef | State | 468 | 577 | .. | No | ... | 106 |
| Verona, 455—Dane Co.<br>Dane County Asylum for Chronic Insane........... | N&M | County | 277 | 230 | .. | No | ... | ..... |
| Viroqua, 2,792—Vernon Co.<br>Vernon County Asylum... | N&M | County | 128 | 117 | .. | No | ... | 11 |
| Wabeno, 2,168—Forest Co.<br>Wabeno-Soperton Hosp.■.. | Gen | Part | 10 | 3 | 3 | No | 13 | 90 |
| Watertown, 10,613—Jefferson Co.<br>Bethesda Lutheran Home for Feebleminded and Epileptics ...................... | MenDef | Church | 300 | 300 | .. | No | ... | ..... |
| Waukesha, 17,176—Waukesha Co.<br>Milwaukee Children's Hosp. Convalescent Home□..... | Conv | Indep | 50 | 40 | .. | No | ... | 116 |
| Waukesha County Asylum for Chronic Insane....... | N&M | County | 216 | 208 | .. | No | ... | 11 |
| Wisconsin Industrial School for Boys■................ | Inst | State | 16 | ... | .. | No | ... | ..... |
| Waupun, 5,768—Fond du Lac Co.<br>Drs. Clark and Swartz Hospital ...................... | Gen | Part | 8 | 5 | 3 | No | 25 | 138 |
| Wisconsin State Prison Hospital■ ..................... | Inst | State | 20 | 10 | .. | No | ... | ..... |
| Wausau, 23,758—Marathon Co.<br>Marathon County Asylum for Chronic Insane...... | N&M | County | 189 | 192 | .. | No | ... | 21 |
| Marathon County Home and Hospital.............. | Inst | County | 50 | 45 | .. | No | ... | ..... |
| Wauwatosa, 21,194—Milwaukee Co.<br>Blue Mound Preventorium■ | TB | County | 116 | 112 | .. | Yes | ... | ..... |
| Milwaukee County Home for Children.............. | Inst | County | 60 | 54 | .. | No | ... | 916 |
| Salvation Army Rescue Home ...................... | Mater | Church | 50 | 24 | 35 | No | 108 | ..... |
| West Bend, 4,760—Washington Co.<br>Washington Co. Asylum for Chronic Insane...... | N&M | County | 150 | 149 | .. | No | ... | 12 |
| West Salem, 1,011—La Crosse Co.<br>La Crosse County Asylum for Insane............... | N&M | County | 245 | 230 | .. | No | ... | 16 |
| Weyauwega, 1,067—Waupaca Co.<br>Waupaca Co. Insane Asylum | N&M | County | 150 | 144 | .. | No | ... | ..... |
| Whitehall, 915—Trempealeau Co.<br>Trempealeau Co. Asylum for Chronic Insane...... | N&M | County | 134 | 116 | .. | No | ... | 4 |
| Winnebago, 1,120—Winnebago Co.<br>Winnebago County Asylum | N&M | County | 237 | 238 | .. | No | ... | 20 |
| Wisconsin Veterans' Home, 117—Waupaca Co.<br>Grand Army Home for Veterans ..................... | Inst | State | 210 | 165 | .. | No | ... | 258 |
| Wyocena, 490—Columbia Co.<br>Columbia County Asylum. | N&M | County | 150 | 135 | .. | No | ... | 9 |

| Summary for Wisconsin: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 160 | 17,288 | 12,328 | 197,295 |
| Related institutions......... | 69 | 10,519 | 9,489 | 8,302 |
| Totals...................... | 229 | 27,807 | 21,817 | 205,597 |
| Refused registration......... | 10 | 365 | | |

## WYOMING

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Basin, 903—Big Horn Co.<br>Basin Hospital■............ | Gen | Indep | 15 | 3 | 2 | No | 13 | 95 |
| Wyoming Tuber. Sanat.■. | TB | State | 33 | 22 | .. | No | ... | 22 |
| Burns, 216—Laramie Co.<br>Burns Hospital■............ | Gen | Part | 15 | 4 | 5 | No | 35 | 155 |
| Casper, 16,619—Natrona Co.<br>Memorial Hospital of Natrona County◊■.......... | Gen | County | 88 | 31 | 12 | No | 179 | 1,542 |
| Cheyenne, 17,361—Laramie Co.<br>Memorial Hospital of Laramie County◊........... | Gen | County | 132 | 67 | 15 | No | 248 | 2,380 |

## WYOMING—Continued

| Hospitals and Sanatoriums | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Douglas, 1,917—Converse Co.<br>Douglas Hospital.......... | Gen | Indiv | 18 | 8 | 4 | No | 30 | 316 |
| Evanston, 3,075—Uinta Co.<br>Wyoming State Hospital.. | N&M | State | 450 | 443 | .. | No | ... | 84 |
| Ft. Warren, 22—Laramie Co.<br>Station Hospital■.......... | Gen | Army | 150 | 49 | 4 | Yes | 17 | 1,634 |
| Ft. Washakie, 62—Fremont Co.<br>Shoshone Indian Hospital. | Gen | Indian | 35 | 11 | 2 | Yes | 27 | 337 |
| Gebo, 894—Hot Springs Co.<br>Gebo Hospital□............ | Gen | Indep | 12 | 6 | 3 | Yes | 15 | ..... |
| Hanna, 1,483—Carbon Co.<br>Hanna Hospital........... | Gen | Indus | 20 | 5 | 3 | Yes | ... | ..... |
| Jackson, 533—Teton Co.<br>St. John's Hospital■...... | Gen | Church | 30 | 17 | 4 | Yes | 32 | 355 |
| Kemmerer, 1,884—Lincoln Co.<br>Lincoln Co. Miners Hosp.□ | Gen | Indep | 35 | 11 | 5 | No | 25 | 400 |
| Lander, 1,826—Fremont Co.<br>Bishop Randall Hospital■ | Gen | Church | 20 | 7 | 6 | No | 29 | 337 |
| Midwest, 2,122—Natrona Co.<br>Midwest Hospital.......... | Gen | Indus | 25 | 12 | 3 | No | 76 | 432 |
| Powell, 1,156—Park Co.<br>Whitlock Hospital□........ | Gen | Indiv | 24 | 5 | 5 | No | 30 | 320 |
| Rock Springs, 8,440—Sweetwater Co.<br>Wyoming General Hosp.◊□ | Gen | State | 92 | 45 | 8 | Yes | 143 | 1,800 |
| Sheridan, 8,536—Sheridan Co.<br>Sheridan Co. Mem. Hosp.◊■ | Gen | County | 60 | 40 | 12 | No | 223 | 1,199 |
| Veterans Admin. Hospital. | N&M | VetAd | 438 | 443 | .. | No | ... | 124 |
| Shoshoni, 263—Fremont Co.<br>Dr. Jewell's Hospital...... | Gen | Indiv | 11 | 3 | 3 | No | 12 | 61 |
| Thermopolis, 2,129—Hot Springs Co.<br>Hopewell Hospital......... | Gen | Indep | 65 | 10 | 10 | Yes | ... | ..... |
| Wheatland, 1,997—Platte Co.<br>Wheatland General Hosp.. | Gen | Indep | 55 | 50 | 7 | Yes | 59 | 1,407 |
| Worland, 1,461—Washakie Co.<br>Dr. Gray's Hospital■...... | Gen | Indiv | 10 | 3 | 2 | No | 76 | 96 |
| **Related Institutions** | | | | | | | | |
| Cheyenne, 17,361—Laramie Co.<br>Laramie County Isolation Hospital■ ................ | Iso | County | 6 | ... | .. | No | ... | 10 |
| Greybull, 1,806—Big Horn Co.<br>St. Luke's Hospital....... | Gen | Indiv | 10 | 3 | 2 | No | 25 | 186 |
| Lander, 1,826—Fremont Co.<br>Wyoming State Training School ................... | MenDef | State | 168 | 194 | .. | No | ... | 27 |
| Lovell, 1,857—Big Horn Co.<br>Lovell Hospital............. | Gen | Indiv | 6 | 3 | 2 | No | 22 | 172 |
| Thermopolis, 2,129—Hot Springs Co.<br>Carter General Hospital.. | Gen | Indiv | 10 | ... | 1 | No | ... | ..... |
| McGannon Sanitarium..... | Gen | Indiv | 20 | ... | .. | ... | ... | ..... |

| Summary for Wyoming: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals and sanatoriums.. | 23 | 1,833 | 1,295 | 13,096 |
| Related institutions......... | 6 | 220 | 212 | 395 |
| Totals...................... | 29 | 2,053 | 1,507 | 13,491 |
| Refused registration......... | 2 | 85 | | |

## ALASKA

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Akiak, 228<br>U. S. Hosp. for Natives... | Gen | Fed | 11 | 5 | 1 | Yes | 4 | 63 |
| Anchorage, 2,277<br>Anchorage Base Hospital. | Gen | Fed | 41 | 21 | 6 | No | ... | ..... |
| Cordova, 980<br>Cordova General Hospital■ | Gen | Indiv | 20 | 8 | 4 | Yes | 17 | 230 |
| Fairbanks, 2,101<br>St. Joseph's Hospital...... | Gen | Church | 40 | 15 | .. | ... | ... | ..... |
| Ft. Yukon, 304<br>Hudson Stuck Mem. Hosp. | Gen | Church | 30 | 20 | 1 | Yes | 3 | ..... |
| Goddard, 10<br>Sitka Hot Springs Hospital and Health Resort....... | Gen | Indiv | 26 | 10 | .. | ... | ... | ..... |
| Haines, 344<br>Station Hospital■.......... | Gen | Army | 12 | 5 | .. | Yes | ... | 147 |
| Juneau, 4,043<br>St. Ann's Hospital......... | Gen | Church | 55 | 32 | 8 | Yes | ... | ..... |
| U. S. Hosp. for Natives.... | Gen,TB | Fed | 53 | 16 | 5 | Yes | ... | ..... |
| Kennecott, 217<br>Kennecott Copper Corporation Hospital............ | Gen | Indus | 12 | 6 | 2 | Yes | 4 | 146 |
| Ketchikan, 3,796<br>Ketchikan General Hosp.■ | Gen | Church | 40 | 11 | 8 | No | 70 | 900 |
| Nome, 1,213<br>Maynard-Columbus Hosp.. | Gen | Church | 20 | 15 | .. | Yes | ... | ..... |
| Petersburg, 1,252<br>Petersburg General Hosp.□ | Gen | City | 8 | 2 | 2 | No | 17 | 82 |
| Point Barrow, 82<br>Presbyterian Hospital..... | Gen | Church | 12 | 10 | 4 | Yes | ... | 76 |
| Sitka, 1,056<br>Alaska Pioneers' Home.... | Inst | Territ | 25 | 22 | .. | No | ... | 52 |
| Tanana, 185<br>U. S. Government Hospital | Gen | Fed | 20 | 11 | .. | Yes | 11 | 89 |
| Wrangell, 948<br>Wrangell General Hospital | Gen | Church | 20 | 9 | 4 | ... | ... | ..... |

| Summary for Alaska: | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions........ | 17 | 445 | 218 | 1,785 |

Key to symbols and abbreviations is on page 2078

# REGISTERED HOSPITALS

## CANAL ZONE

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Ancon, 1,629 | | | | | | | | |
| Gorgas Hospital★■ | Gen | Fed | 866 | 442 | 24 | Yes | 493 | 11,629 |
| Balboa, 3,199 | | | | | | | | |
| Palo Seco Leper Colony■ | Leprosy | Fed | 105 | 97 | .. | No | ... | 11 |
| Station Hospital | Gen | Army | 22 | 17 | .. | Yes | ... | ..... |
| Corozal, 1,645 | | | | | | | | |
| Corozal Hospital■ | N&M | Fed | 700 | 626 | .. | No | ... | 296 |
| Station Hospital | Gen | Army | 50 | 30 | .. | Yes | ... | ..... |
| Cristobal, 644 | | | | | | | | |
| Colon Hospital■ | Gen | Fed | 130 | 110 | 16 | Yes | 489 | 4,669 |
| Ft. Randolph (Coco Solo P.O.), 670 | | | | | | | | |
| Station Hospital | Gen | Army | 12 | 6 | .. | Yes | ... | ..... |
| Ft. Sherman, 766 | | | | | | | | |
| Station Hospital | Gen | Army | 27 | 15 | .. | Yes | ... | ..... |
| France Field, 942 | | | | | | | | |
| Station Hospital | Gen | Army | 14 | 8 | .. | Yes | ... | ..... |
| Gatun, 2,338 | | | | | | | | |
| Station Hospital | Gen | Army | 60 | 45 | .. | Yes | ... | ..... |

Summary for Canal Zone:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 10 | 1,936 | 1,396 | 16,605 |

## GUAM

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Agana,— | | | | | | | | |
| Susana Hosp. for Natives (Included in U. S. Naval Hospital) | | | | | | | | |
| U. S. Naval Hospital■ | Gen | Navy | 120 | 104 | .. | Yes | 90 | 2,777 |

Summary for Guam:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 1 | 120 | 104 | 2,777 |

## HAWAII

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aiea, 3,021—Honolulu Co. | | | | | | | | |
| Aiea Hospital | Gen | Indus | 26 | 15 | 4 | Yes | ... | 798 |
| Eleele, 312—Kauai Co. | | | | | | | | |
| McBryde Sugar Co. Hosp. | Gen | Indus | 37 | 29 | 2 | Yes | ... | ..... |
| Hilo, 19,468—Hawaii Co. | | | | | | | | |
| Hilo Memorial Hospital■ | Gen | County | 86 | 73 | 6 | No | 85 | 1,161 |
| Puumaile Home for Tuber. | TB | Territ | 100 | 77 | .. | No | ... | ..... |
| Honokaa, 1,069—Hawaii Co. | | | | | | | | |
| Honokaa Sugar Company and Pacific Sugar Mill Plantation Hospital | Indus | Indus | 25 | 10 | .. | Yes | ... | ..... |
| Honolulu, 137,582—Honolulu Co. | | | | | | | | |
| Japanese Hospital | Gen | Indep | 120 | 76 | .. | No | ... | ..... |
| Kalihi Receiving Station | Leprosy | Territ | 200 | 145 | .. | Yes | ... | ..... |
| Kapiolani Maternity Home and Gynecology Hospital | Mater | Indep | 50 | 30 | .. | ... | ... | ..... |
| Kauikeolani Children's Hospital | Chil | Indep | 60 | 33 | .. | Yes | ... | 1,413 |
| Leahi Home | TB | Indep | 410 | 360 | .. | Yes | ... | 345 |
| Queen's Hospital★■▲ | Gen | Indep | 284 | 170 | 16 | No | 388 | 6,478 |
| St. Francis Hospital■ | Gen | Church | 45 | 33 | 12 | No | 72 | 1,154 |
| Shriners Hospital for Crippled Children■ | Ortho | Frat | 28 | 25 | .. | Yes | ... | 47 |
| Tripler General Hosp.■▲ | Gen | Army | 300 | 164 | 10 | Yes | 88 | 2,974 |
| Kahuku, 1,505—Honolulu Co. | | | | | | | | |
| Kahuku Plantation Company's Hospital | Indus | Indus | 25 | 15 | .. | Yes | ... | ..... |
| Kalaupapa,—Kalawao Co. | | | | | | | | |
| Kalaupapa Hospital■ | Leprosy | Territ | 48 | 18 | 12 | Yes | 15 | 353 |
| Kaneohe, 112—Honolulu Co. | | | | | | | | |
| Territorial Hospital■ | N&M | Territ | 600 | 602 | .. | No | ... | 267 |
| Kealakekua, 350—Hawaii Co. | | | | | | | | |
| Kona County Hospital | Gen | County | 28 | 15 | 3 | No | 30 | 280 |
| Kealia, 100—Kauai Co. | | | | | | | | |
| Kealia Hospital | Gen | Indus | 25 | 14 | 3 | Yes | 14 | 316 |
| Samuel Mahelona Memorial Hospital■ | TB | County | 150 | 95 | .. | Yes | ... | 111 |
| Kilauea, 1,232—Kauai Co. | | | | | | | | |
| Kilauea Sugar Plantation Hospital | Gen | Indus | 25 | 9 | 3 | Yes | 30 | 270 |
| Kohala, 720—Hawaii Co. | | | | | | | | |
| Kohala Hospital | Gen | County | 34 | 14 | 2 | No | ... | ..... |
| Koloa, 720—Kauai Co. | | | | | | | | |
| Koloa Sugar Co. Hospital | Gen | Indus | 31 | 16 | 3 | Yes | ... | ..... |
| Kula, (Waiakoa P.O.)—Maui Co. | | | | | | | | |
| Maui County Farm and Sanitarium | TB | County | 200 | 188 | 2 | Yes | ... | ..... |
| Lahaina, 2,730—Maui Co. | | | | | | | | |
| Pioneer Mill Company's Hospital■ | Gen | Indus | 56 | 41 | 9 | Yes | 92 | 1,583 |
| Lihue, 2,399—Kauai Co. | | | | | | | | |
| Lihue Hospital | Gen | Indus | 45 | 24 | 6 | Yes | ... | ..... |
| Makaweli, 974—Kauai Co. | | | | | | | | |
| Makaweli Hospital■ | Gen | Indus | 28 | 19 | 2 | Yes | 15 | 480 |
| Olaa, 597—Hawaii Co. | | | | | | | | |
| Olaa Hospital | Indus | Indus | 30 | 11 | .. | Yes | ... | ..... |
| Ookala, 526—Hawaii Co. | | | | | | | | |
| Ookala Hospital | Indus | Indus | 8 | 5 | .. | ... | ... | ..... |
| Paauhau, 536—Hawaii Co. | | | | | | | | |
| Paauhau Plantation Co. Ltd. Hospital | Indus | Indus | 15 | 7 | .. | Yes | ... | ..... |
| Paauilo, 1,233—Hawaii Co. | | | | | | | | |
| Paauilo Hospital■ | Indus | Indus | 12 | 5 | .. | Yes | ... | 120 |
| Pahala, 290—Hawaii Co. | | | | | | | | |
| Pahala Hospital■ | Indus | Indus | 19 | 16 | 6 | Yes | ... | 665 |

Key to symbols and abbreviations is on page 2078

## HAWAII—Continued

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Pearl City, 1,071—Honolulu Co. | | | | | | | | |
| Waimano Home for Feeble-minded Persons | MenDef | Territ | 194 | 194 | .. | No | ... | ..... |
| Pearl Harbor, 200—Honolulu Co. | | | | | | | | |
| U. S. Naval Hospital■ | Gen | Navy | 228 | 89 | .. | Yes | ... | 936 |
| Pepeekeo, 520—Hawaii Co. | | | | | | | | |
| Pepeekeo Hospital | Indus | Indus | 33 | 16 | .. | ... | ... | ..... |
| Pukoo, 50—Maui Co. | | | | | | | | |
| Ualapue Hospital | Gen | County | 20 | 5 | 2 | Yes | ... | ..... |
| Puunene, 4,080—Maui Co. | | | | | | | | |
| Puunene Hospital■ | Gen | Indus | 100 | 60 | 8 | Yes | 147 | 2,667 |
| Schofield Barracks, 4,250—Honolulu Co. | | | | | | | | |
| Station Hospital | Gen | Army | 380 | 170 | 12 | Yes | ... | ..... |
| Waialua, 4,511—Honolulu Co. | | | | | | | | |
| Waialua Hospital | Gen | Indus | 36 | 20 | 2 | Yes | ... | ..... |
| Wailuku, 6,998—Maui Co. | | | | | | | | |
| Malulani Hospital■ | Gen | County | 72 | 41 | 8 | No | 81 | 998 |
| Waiohinu, 100—Hawaii Co. | | | | | | | | |
| Kauhane Memorial Hosp.■ | Gen | County | 20 | 5 | 2 | No | 5 | 158 |
| Waipahu, 5,874—Honolulu Co. | | | | | | | | |
| Oahu Sugar Company Ltd. Hospital■ | Gen | Indus | 55 | 35 | 6 | Yes | 23 | 1,056 |

Summary for Hawaii:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 42 | 4,328 | 2,932 | 24,693 |

## PHILIPPINE ISLANDS

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Bacolod, 19,350—Negros Occidental Co. | | | | | | | | |
| Maternity and Children's Hosp. of the Las Amigas de la Infancia | Mater | Indep | 17 | 4 | 18 | Yes | ... | ..... |
| Occidental Negros Provincial Hospital | Gen | Gov't | 55 | 36 | 8 | Yes | 13 | 1,237 |
| Baguio, 5,461—Benguet Co. | | | | | | | | |
| Baguio Hospital◊ | Gen | Gov't | 67 | 36 | .. | Yes | ... | ..... |
| Station Hospital | Gen | Army | 50 | 22 | .. | Yes | 45 | 317 |
| Barili, 33,481—Cebu Co. | | | | | | | | |
| Hospicio de San Jose | Incur | Gov't | 25 | 7 | .. | No | ... | ..... |
| Batangas, 41,182—Batangas Co. | | | | | | | | |
| Batangas Provincial Hospital■ | Gen | Gov't | 30 | 22 | .. | Yes | 20 | 670 |
| Barom[illegible] caya Co. | | | | | | | | |
| [illegible] | Gen | Gov't | 20 | 10 | .. | Yes | ... | ..... |
| B[illegible] ental Negros Co. | | | | | | | | |
| [illegible]agan Estate Hosp. | Indus | Indus | 10 | ... | .. | ... | ... | ..... |
| Bontoc, 60[illegible]—Mountain Co. | | | | | | | | |
| Bontoc Hospital | Gen | Gov't | 27 | 23 | .. | Yes | ... | ..... |
| Butuan, 9,790—Agusan Co. | | | | | | | | |
| Butuan Public Hospital | Gen | Gov't | 14 | 13 | .. | Yes | ... | ..... |
| Cadiz, 21,730—Occidental Negros Co. | | | | | | | | |
| Negros-Philippine Lumber Company Hospital | Indus | Indus | 12 | 5 | .. | Yes | ... | ..... |
| Cagayan, 28,161—Misamis Oriental Co. | | | | | | | | |
| Cagayan Mission Hosp.■ | Gen | Church | 60 | 15 | 6 | Yes | 10 | 570 |
| Misamis Oriental Provincial Hospital | Gen | Gov't | 24 | 15 | 2 | Yes | 50 | 583 |
| Calamba, 18,062—Laguna Co. | | | | | | | | |
| Calamba Sugar Estate Hospital | Indus | Indus | 24 | 20 | .. | ... | 26 | ..... |
| Calivo, 13,985—Capiz Co. | | | | | | | | |
| Capiz Provincial Hospital | Gen | Gov't | 30 | 20 | .. | No | 5 | 525 |
| Capiz, 21,996—Capiz Co. | | | | | | | | |
| Emmanuel Hospital◊ | Gen | Church | 65 | 36 | 5 | Yes | 30 | 1,002 |
| Cavite, 22,163—Cavite Co. | | | | | | | | |
| Station Hospital■ | Gen | Army | 150 | 72 | 5 | Yes | 172 | 2,192 |
| U. S. Naval Hospital | Gen | Navy | 150 | 101 | .. | Yes | ... | ..... |
| Cebu, 65,300—Cebu Co. | | | | | | | | |
| Cebu Maternity House | Mater | Indep | 18 | 11 | 20 | Yes | 471 | 544 |
| Chong Hou Chinese Hosp. | Gen | Indep | 22 | 12 | .. | No | ... | ..... |
| Southern Islands Hospital◊ | Gen | Fed | 91 | 83 | .. | Yes | 83 | 2,748 |
| Cotabato, 410—Cotabato Co. | | | | | | | | |
| Cotabato Public Hospital | Gen | Gov't | 50 | 23 | .. | Yes | ... | ..... |
| Culion, 4,868—Palawan Co. | | | | | | | | |
| Culion Leper Colony | Leprosy | Gov't | 500 | 500 | .. | Yes | ... | ..... |
| Culion Leper Colony | Gen | Gov't | 542 | 520 | 12 | Yes | 50 | 2,762 |
| Cuyo, 14,766—Palawan Co. | | | | | | | | |
| Cuyo Hospital | Gen | Gov't | 20 | 7 | .. | Yes | ... | ..... |
| Dagupan, 22,612—Pangasinan Co. | | | | | | | | |
| Pangasinan Provincial Hospital | Gen | Gov't | 50 | 51 | .. | Yes | ... | ..... |
| Dansalan, 5,988—Lanao Co. | | | | | | | | |
| Lanao Public Hospital | Gen | Gov't | 50 | 35 | .. | Yes | ... | ..... |
| Dapitan, 12,865—Zamboanga Co. | | | | | | | | |
| Rizal Memorial Hospital | Gen | Gov't | 50 | 7 | .. | Yes | ... | ..... |
| Davao, 13,046—Davao Co. | | | | | | | | |
| Davao Mission Hospital | Gen | Church | 50 | 40 | .. | Yes | ... | ..... |
| Davao Public Hospital | Gen | Gov't | 58 | 44 | .. | Yes | ... | ..... |
| Del Carmen,—Pampanga Co. | | | | | | | | |
| Del Carmen Hospital | Gen | Indus | 35 | 10 | 3 | Yes | 16 | 513 |
| Dipolog, 15,982—Zamboanga Co. | | | | | | | | |
| Dipolog Emergency Hosp. | Gen | Gov't | 12 | 6 | .. | Yes | ... | ..... |
| Dumaguete, 6,227—Orient[illegible]egros Co. | | | | | | | | |
| Duma[illegible] | Gen | Church | 50 | 27 | 5 | Yes | 32 | 1,088 |
| F[illegible] Co. | | | | | | | | |
| G[illegible] | Gen | Army | 70 | 35 | 4 | Yes | ... | ..... |
| Station Hospital[illegible] | Gen | Army | 220 | 78 | .. | Yes | ... | ..... |
| [illegible] Co. | | | | | | | | |
| [illegible] | Indus | Indus | 10 | 7 | .. | No | ... | 214 |

## PHILIPPINE ISLANDS—Continued

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Iloilo, 49,114—Iloilo Co. | | | | | | | | |
| Iloilo Emergency Hospital | Iso | Gov't | 40 | ... | .. | Yes | ... | ..... |
| Iloilo Mission Hospital◊■ | Gen | Church | 86 | 52 | 6 | Yes | 68 | 1,857 |
| St. Paul's Mission Hosp. | Gen | Church | 100 | ... | .. | ... | ... | ..... |
| Isabela, 2,281—Zamboanga Co. | | | | | | | | |
| Basilan Lumber Hospital | Indus | Indus | 24 | 5 | .. | Yes | ... | 192 |
| Jolo, 5,796—Sulu Co. | | | | | | | | |
| Sulu Public Hospital | Gen | Gov't | 40 | 16 | .. | Yes | ... | ..... |
| Kiangan, 276—Ifugao Co. | | | | | | | | |
| Kiangan Hospital | Gen | Gov't | 15 | 12 | .. | Yes | ... | ..... |
| Kolambugan, 1,260—Lanao Co. | | | | | | | | |
| Kolambugan Hospital | Gen | Indus | 15 | 20 | 2 | Yes | ... | ..... |
| Laoag, 38,469—Ilocos Norte Co. | | | | | | | | |
| Sallie Long Read Memorial Hospital | Gen | Church | 40 | 10 | 2 | Yes | 13 | 371 |
| Legaspi, 52,756—Albay Co. | | | | | | | | |
| Albay Provincial Hospital | Gen | Gov't | 35 | ... | 7 | Yes | 35 | ..... |
| Milwaukee Hospital■ | Gen | Church | 45 | 9 | 6 | Yes | 14 | 175 |
| Los Banos, 6,335—Laguna Co. | | | | | | | | |
| Station Hospital | Gen | Army | 75 | 30 | .. | Yes | ... | ..... |
| Lubuagan, 226—Kalinga Co. | | | | | | | | |
| Lubuagan Public Hospital | Gen | Gov't | 10 | 5 | .. | Yes | ... | ..... |
| Lucena, 11,939—Tayabas Co. | | | | | | | | |
| Tayabas Provincial Hosp. | Gen | Gov't | 76 | 55 | 4 | Yes | 33 | 2,281 |
| Malaybalay, 9,868—Bukidnon Co. | | | | | | | | |
| Bukidnon Hospital | Gen | Gov't | 10 | 8 | 1 | Yes | 2 | 294 |
| Mandaue, 21,464—Cebu Co. | | | | | | | | |
| Eversley Childs Treatment Station■ | Leprosy | Gov't | 680 | 384 | .. | No | ... | 279 |
| Manila, 285,306—Rizal Co. | | | | | | | | |
| Bilibid Hospital▲ | Inst | Gov't | 300 | 385 | .. | No | ... | 4,506 |
| Chinese Hospital◊ | Gen | Indep | 70 | 25 | .. | ... | ... | ..... |
| Hospital de San Juan de Dios◊ | Gen | Church | 236 | 214 | 20 | Yes | ... | ..... |
| Mary Chiles Hospital◊ | Gen | Church | 100 | 62 | .. | Yes | ... | ..... |
| Mary J. Johnston Memorial Hospital◊■ | Gen | Church | 77 | 75 | 34 | Yes | 570 | 1,225 |
| Philippino General Hosp.★◊ | Gen | Gov't | 596 | 482 | 52 | Yes | 2,554 | 15,318 |
| St. Joseph's Hospital | Gen | Indiv | 75 | 3 | 14 | Yes | 65 | ..... |
| St. Luke's Hospital◊■ | Gen | Church | 117 | 82 | 13 | Yes | 116 | 2,569 |
| St. Paul's Hospital◊ | Gen | Church | 140 | 65 | 12 | Yes | ... | 1,949 |
| St. Theresita's Hospital | Gen | Indiv | 65 | 20 | 12 | Yes | 235 | ..... |
| San Lazaro Hospital | GenIso | Gov't | 1,028 | 934 | .. | Yes | ... | ..... |
| Sternberg General Hosp.■▲ | Gen | Army | 300 | 194 | 9 | Yes | 53 | 3,604 |
| Margosatubig,—Zamboanga Co. | | | | | | | | |
| Margosatubig Hospital | Gen | Gov't | 18 | 6 | .. | Yes | ... | ..... |
| Mati, 6,440—Davao Co. | | | | | | | | |
| Mati Emergency Hospital | Gen | Gov't | 6 | 1 | .. | Yes | ... | 43 |
| Mintal,—Davao Co. | | | | | | | | |
| Ohta Development Company Hospital | Indus | Indus | 60 | 37 | .. | Yes | ... | ..... |
| Naga,—Camarines Sur Co. | | | | | | | | |
| Naga Hospital | Gen | Gov't | 22 | 10 | .. | Yes | ... | ..... |
| Olongapo, 1,420—Zambales Co. | | | | | | | | |
| Cammilla Simpson Hosp. | Gen | Indep | 50 | 25 | .. | Yes | ... | ..... |
| Puerto Princesa, 5,827—Palawan Co. | | | | | | | | |
| Puerto Princesa Hospital | Gen | Gov't | 16 | 6 | .. | Yes | ... | ..... |
| Sagada, 167—Mountain Co. | | | | | | | | |
| Sagada Mission Dispensary and Hospital | Gen | Church | 10 | 2 | .. | Yes | 2 | ..... |
| San Fernando, 19,885—La Union Co. | | | | | | | | |
| Mission Hospital | Gen | Church | 34 | 28 | 4 | Yes | ... | ..... |
| Pampanga Emergency Hospital | Gen | Gov't | 12 | 7 | .. | Yes | ... | ..... |
| San Juan del Monte, 3,145—Rizal Co. | | | | | | | | |
| Manila Heights Hospital | Gen | Indiv | 100 | 35 | .. | ... | ... | ..... |
| San Pablo, 31,214—Laguna Co. | | | | | | | | |
| San Pablo Hospital | Gen | City | 20 | 15 | .. | No | ... | ..... |
| San Pedro, 4,184—Rizal Co. | | | | | | | | |
| City Sanatorium of the City of Manila | N&M | City | 250 | 220 | .. | No | ... | ..... |
| Hospital Espanal de Santiago | Iso | Indep | 10 | ... | .. | ... | ... | ..... |
| San Roque,—Cavite Co. | | | | | | | | |
| San Ramon Maternity and Children's Hospital | Mater | Indiv | 14 | 5 | 10 | Yes | 90 | 96 |
| Santa Cruz, 14,131—Laguna Co. | | | | | | | | |
| Laguna Provincial Hosp. | Gen | Gov't | 35 | 17 | .. | Yes | ... | ..... |
| Santol,—Rizal Co. | | | | | | | | |
| Santol Tuberculosis Sanat. | TB | Indep | 229 | 175 | .. | Yes | ... | ..... |
| Tacloban, 15,478—Leyte Co. | | | | | | | | |
| Bethany Hospital | Gen | Church | 32 | 10 | 2 | Yes | 17 | 574 |
| Leyte Provincial Hospital | Gen | Gov't | 30 | 16 | .. | Yes | 24 | 419 |
| Tagbilaran, 12,590—Bohol Co. | | | | | | | | |
| Bohol Provincial Hospital | Gen | Gov't | 8 | 5 | 1 | Yes | 4 | ..... |
| Presbyterian Mission Hosp. | Gen | Church | 25 | 9 | 2 | Yes | ... | 879 |
| Tarlac, 23,886—Tarlac Co. | | | | | | | | |
| Tarlac Provincial Hospital | Gen | Gov't | 30 | 27 | .. | Yes | ... | ..... |
| Vigan, 17,764—Ilocos Sur Co. | | | | | | | | |
| Ilocos Sur Provincial Hospital | Gen | Gov't | 8 | 3 | .. | Yes | ... | 183 |
| Philippine Christian Institute Hospital | Gen | Church | 30 | 11 | 5 | Yes | 31 | 474 |
| Zamboanga, 30,798—Zamboanga Co. | | | | | | | | |
| Brent Hospital | Gen | Church | 35 | 24 | 9 | No | 14 | 871 |
| San Ramon Prison Hosp. | Inst | Gov't | 20 | ... | .. | ... | ... | ..... |
| Station Hospital | Gen | Army | 26 | 5 | .. | Yes | ... | ..... |
| Zamboanga General Hosp.◊ | Gen | Gov't | 80 | 62 | 10 | Yes | ... | ..... |

Summary for Philippine Islands:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 90 | 8,340 | 5,914 | 53,734 |

## PORTO RICO

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| Aguadilla, 10,952—Aguadilla Co. | | | | | | | | |
| Hospital Municipal | Gen | City | 24 | 20 | 4 | Yes | ... | ..... |
| Anasco, 3,064—Aguadilla Co. | | | | | | | | |
| Municipal Hospital■ | Gen | City | 16 | 1 | 2 | Yes | 54 | 321 |
| Arecibo, 12,863—Arecibo Co. | | | | | | | | |
| Clinica de Arecibo | Gen | Indiv | 10 | 4 | .. | ... | ... | ..... |
| Bayamon, 12,986—San Juan Co. | | | | | | | | |
| Hospital Municipal de Bayamon | Gen | City | 50 | 40 | .. | ... | ... | ..... |
| Cabo Rojo, 4,605—Mayaguez Co. | | | | | | | | |
| Hospital Municipal | Gen | City | 16 | 12 | .. | No | ... | ..... |
| Canovanas,—Humacoa Co. | | | | | | | | |
| Hosp. Municipal de Larza | Gen | City | 14 | 11 | 3 | No | ... | ..... |
| Cayey, 5,953—Guayama Co. | | | | | | | | |
| Clinica Dr. Villeneuve | Gen | Indiv | 18 | 8 | 6 | No | ... | ..... |
| Fajardo, 7,322—Humacao Co. | | | | | | | | |
| Luis Manuel Cintron Hosp. | Gen | Cy&Co | 34 | 30 | .. | Yes | ... | ..... |
| Gurabo, 3,468—Humacao Co. | | | | | | | | |
| Hospital Municipal de Gurabo■ | Gen | City | 20 | 20 | 2 | Yes | 33 | 482 |
| Humacao, 7,937—Humacao Co. | | | | | | | | |
| Ryder Memorial Hospital■ | Gen | Church | 48 | 31 | 5 | Yes | 82 | 1,333 |
| Juncos, 5,297—Humacao Co. | | | | | | | | |
| Hospital Municipal | Gen | City | 20 | 15 | .. | Yes | ... | ..... |
| Lares, 3,049—Aguadilla Co. | | | | | | | | |
| "Clinica San Jose" | Gen | Part | 10 | 6 | .. | Yes | ... | ..... |
| Hospital Municipal de Lares■ | Gen | City | 18 | 15 | 2 | Yes | 38 | 187 |
| Las Piedras, 1,335—Humacao Co. | | | | | | | | |
| Las Piedras Municipal Hospital | Gen | City | 16 | 8 | .. | Yes | ... | ..... |
| Manati, 7,449—Arecibo Co. | | | | | | | | |
| Hospital Municipal Manati | Gen | City | 25 | 20 | .. | Yes | ... | ..... |
| Maunabo, 1,117—Guayama Co. | | | | | | | | |
| Hospital "San Jose" | Gen | City | 20 | 9 | .. | No | ... | ..... |
| Mayaguez, 37,060—Mayaguez Co. | | | | | | | | |
| Mayaguez and Western Policlinic | Gen | Indiv | 30 | 27 | .. | ... | ... | ..... |
| Mayaguez Sanatorium | Gen | Part | 30 | 20 | .. | Yes | ... | ..... |
| Naguabo, 4,087—Humacao Co. | | | | | | | | |
| Hospital Municipal de Naguabo | Gen | City | 15 | 6 | .. | Yes | ... | ..... |
| Ponce, 53,430—Ponce Co. | | | | | | | | |
| St. Luke's Mem. Hosp. | Gen | ...... | 75 | 40 | .. | ... | ... | ..... |
| Santo Asilo de Damas Hospital | Gen | Church | 110 | 60 | .. | Yes | ... | ..... |
| Tricoche Municipal Hosp. | Gen | City | 100 | 75 | .. | Yes | ... | ..... |
| Quebradillas, 1,755—Aguadilla Co. | | | | | | | | |
| Hospital Municipal de Quebradillas | Gen | City | 8 | ... | .. | Yes | ... | ..... |
| Rio Piedras, 13,408—San Juan Co. | | | | | | | | |
| Psychiatric Hospital of Puerto-Rico■ | N&M | Gov't | 1,000 | 831 | .. | No | ... | 375 |
| Sanatorio de La Sociedad Espanola de Auxilio Mutuo y Beneficencia de Puerto Rico | Gen | Indep | 160 | 81 | 20 | Yes | 59 | 1,481 |
| Salinas, 2,252—Guayama Co. | | | | | | | | |
| Hospital de Salinas | Gen | City | 60 | 20 | 6 | Yes | ... | ..... |
| San Juan, 114,715—San Juan Co. | | | | | | | | |
| Hospital de la Penitenciaria | Inst | Gov't | 38 | 20 | 20 | ... | ... | ..... |
| Hospital de Maternidad y Ninos | Mater | City | 35 | 35 | .. | Yes | ... | ..... |
| Hospital Municipal | Gen | City | 106 | 70 | .. | Yes | ... | ..... |
| Insular Leper Colony | Leprosy | ...... | 40 | ... | .. | ... | ... | ..... |
| Porto Rico Sanatorium | Gen | ...... | 16 | 6 | .. | ... | ... | ..... |
| Post Hospital | Gen | Army | 100 | 60 | .. | Yes | ... | ..... |
| Presbyterian Hospital+ | Gen | Church | 63 | 67 | 7 | Yes | ... | ..... |
| Quarantine Hospital | Iso | State | 40 | ... | .. | Yes | ... | ..... |
| University Hosp. of the Sch. of Tropical Medicine+ | Gen | Indep | 48 | 20 | 2 | Yes | ... | 327 |
| Santurce,—San Juan Co. | | | | | | | | |
| Santa Rosa Clinic | Gen | Indep | 15 | 8 | 2 | Yes | ... | ..... |
| Utuado, 4,758—Arecibo Co. | | | | | | | | |
| Hosp. Municipal Catalina Figueras, In-Memoriam | Gen | City | 26 | 15 | 2 | Yes | ... | ..... |
| Vega-Baja, 4,784—Arecibo Co. | | | | | | | | |
| Vega-Baja Municipal Hospital■ | Gen | City | 38 | 25 | 2 | Yes | 10 | 254 |
| [illegible] Co. | | | | | | | | |
| [illegible]■ | Gen | City | 24 | 12 | 2 | Yes | 12 | 447 |
| Yauco, 8,607—Maya[illegible] | | | | | | | | |
| Clinica "El Amparo"■ | Gen | Indiv | 18 | 2 | 1 | Yes | 5 | 43 |

Summary for Porto Rico:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 40 | 2,554 | 1,750 | 5,250 |

## VIRGIN ISLANDS

| Hospitals, Sanatoriums and Related Institutions | Type of Service | Control | Beds, Rated Capacity | Average Patients | Bassinets | Outpatient Department | Total Births | Patients Admitted |
|---|---|---|---|---|---|---|---|---|
| St. Thomas, 7,036—St. Thomas Island | | | | | | | | |
| Municipal Hospital | Gen | City | 106 | 64 | 12 | Yes | ... | ..... |
| U. S. Naval Hospital | Gen | Navy | 22 | ... | .. | ... | ... | ..... |

Summary for Virgin Islands:

| | Number | Beds | Average Patients | Patients Admitted |
|---|---|---|---|---|
| Hospitals, sanatoriums and related institutions | 2 | 128 | 64 | ..... |

Key to symbols and abbreviations is on page 2078

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 11, 1932

## HOSPITAL SERVICE IN THE UNITED STATES

In 1873 there were apparently in the United States 178 hospitals with a total capacity of 35,604 beds. Today there are 6,613 hospitals with a total capacity of almost a million beds. The development of hospitals has been one of the most astounding growths witnessed in this country of astounding expansions. It represents, no doubt, the reply of scientific medicine and its correlated professions to the demand of an intelligent public for the best type of medical care.

Today, as revealed by the exceptionally complete report presented in this issue of THE JOURNAL, there are numerous varieties of hospitals from the points of view of management, ownership, facilities and many other aspects. The federal government has gone into the hospital business in a big way. The individual states have increased their hospital capacity in five years by more than 60,000 beds. The county hospitals have increased by 28 in number and by 15,000 beds. The city hospitals care for more patients than in 1929. Moreover, there are church hospitals, fraternal hospitals, industrial hospitals, individual and partnership hospitals, and hospitals conducted by independent associations. There are vast numbers of general hospitals, indeed, about two thirds of the total number; but there are also large numbers of hospitals for nervous and mental disease, for tuberculosis, for infectious disease and for children, for eye, ear, nose and throat, and for orthopedics. Then, too, there are convalescent and rest hospitals and industrial hospitals. These institutions are in general conducted on an exceedingly high plane. Practically every hospital of any standing whatever has its laboratory work supervised by competent physician pathologists, and more than 75 per cent of all hospitals have good x-ray departments. There was a time when a relatively small number of physicians made use of hospital facilities. There are today approximately 150,000 physicians in the United States, and more than 116,000 have hospital connections. Moreover, hospitals have inclined toward recognition as medical centers. There are almost a thousand hospitals which report that physicians see their private patients in the hospital and that they have offices or office hours in the hospital.

The careful survey made by the Council on Medical Education and Hospitals of the American Medical Association yields the names of 490 institutions which have not been admitted to the list because of alleged unethical or criminal practices, or because of admission to their staffs of members not qualified, or because of forms of practice so flagrantly beyond the principles of fair conduct that they could not be admitted to such a list or for other valid reasons. In the 490 institutions barred from recognition there are about 15,000 beds. On page 2077 of this issue of THE JOURNAL appear the essentials of a registered hospital. The careful reader will find here promulgation of a standard that has been largely responsible for bringing the hospitals of this country to their present high state.

The hospital privately owned and operated for profit has come upon sad days. The increasing cost of care for difficult or surgical cases, due to the development of modern scientific methods and the requirement of extensive personnel, has made hospitals increasingly dependent on endowment. Bed costs per day have risen from a dollar or two to four and five or even ten dollars per day in some institutions. Thus hospitals operated for profit continue to decline in number rapidly. Five years ago such institutions made available 39,118 beds; now they offer only 36,764 beds. Moreover, the average number of patients cared for dropped from 21,779 to 17,912; with such a decrease the number of individual and partnership hospitals is likely to be still further diminished during the present financial emergency.

It is no secret that, except for the charity hospitals of this country and those conducted by various governmental agencies, the hospitals of the country are suffering because of the lack of occupancy of many beds. Indeed, government hospitals may be classified in the charity group, because they occasionally accept fees or give free care to many a patient well able to pay. Some private hospitals are less than half occupied. A general average would indicate 40 per cent empty beds in most private institutions. Since such institutions are largely dependent on endowment and donations as well as on the fees coming from patients, their situation is today a serious one. The people of this country built these hospitals to meet their needs and, in many instances, have made notable sacrifices to maintain them. It would be pitiful indeed if these institutions were allowed to disappear in this time of emergency when any means could be found for maintaining them through what has been called our "predicament." Because of the emergency there has been increasing call on the facilities of federal, state, county and municipal hospitals. Many of them have been filled to the capacity of their equipment. Under these circumstances cries have come from the bureaucrats, big and little, for increased funds to be raised by taxation or by the issuing of bonds for the enlargement of such institutions. The people of our country must well consider whether it would not be for the greater good to apply available federal, state, county and municipal funds to the utilization of the vacant beds in private institutions.

## THE HISTAMINE FACTOR IN ANAPHYLAXIS

The well defined differences in the anaphylactic syndrome in different species of animals suggests the necessity of developing various antianaphylactic therapies. This, however, would not be necessary if it could be shown that the experimental symptomatologies are but quantitative variants of the same basic clinical picture. Numerous experimenters have attempted to establish this basic unity. It has been suggested, for example, that the exceptionally high development of the bronchial musculature in the guinea-pig is the reason why anaphylaxis in this animal is of the asthmatic type. The unusually developed musculature of the hepatic veins of dogs is suggested as a reason why canine anaphylaxis is of the splanchnic-congestive type. Other experimenters have emphasized basic factors in the capillary endothelium and in the circulating blood.

A convincing contribution to this theory of clinical anaphylaxis is contained in Watanabe's[1] recent quantitative determinations of the comparative topographic distribution of histamine-like substances in the organs of different animal species, and the variations in this distribution as a result of specific sensitization and specific protein shock. Alcohol-soluble, histamine-like "tissue hormones" were extracted from the organs and titrated by means of the isolated guinea-pig intestine, the titrations being recorded in terms of histamine equivalents. Watanabe reports that normal guinea-pig lungs contain the equivalent of 14.2 mg. of extractable histamine per kilogram. Normal guinea-pig liver, however, is relatively "histamine" free, yielding but 1.3 mg. per kilogram. As a result of specific sensitization (horse serum) the alcohol-extractable, histamine-like factor of the lungs increases fivefold by the twelfth to the twentieth day after injection of the sensitizing dose, but there is no parallel increase in the "histamine" content of the liver. In normal dogs, Watanabe reports the physiologic equivalent of 22.5 mg. of histamine per kilogram of pulmonary weight, with twice this amount, or 44.7 mg., in the liver. As a result of sensitization, the canine lung "histamine" is not increased. The canine liver "histamine," however, is doubled (the eighteenth to twentieth day average being 80 mg.).

The anaphylactic reaction in both animal species is accompanied by an explosive reduction in this excessive tissue "histamine." In guinea-pig lungs, for example, the extractable "histamine" falls from its sensitivity level (73 mg.) to 3 mg. per kilogram. This apparent pulmonary release of "tissue hormone" into the blood stream is sufficient to maintain the liver "histamine" at its preshock level (1.3 mg.). In dogs, the explosive release reduces the liver "histamine" from 80 mg. to 20 mg. The 60 mg. presumably given off into the blood stream is apparently sufficient to raise the pulmonary "histamine" from 20 mg. to 30 mg. per kilogram. Similar though less pronounced secondary rises are noted in the spleen and the myocardium. The large amount of histamine-like substance released from the hypersensitive hepatic parenchyma of dogs, and the absence of this release in guinea-pigs, may well account for the different symptomatologies in the two species.

That the liberation of a histamine-like tissue factor either from the lungs or from the liver is not an essential part of the anaphylactic reaction, however, is indicated by the rapid decrease in the "histamine" excess in guinea-pig lungs after the twentieth day of sensitization. By the seventieth day the "histamine" has fallen to its presensitivity level. Little reduction, however, has yet taken place in protein sensitivity. Analogous assays, however, have not yet been reported for experiments on dogs.

There is, of course, nothing new in thus regarding "explosive histaminemia" as a secondary or nonessential anaphylactic phenomenon. Perfusions, transfusions and organ transplantations in dogs have already led American investigators[2] to the same conclusion. Nevertheless, Watanabe's biochemical assays are a distinct contribution to anaphylactic study.

## THE VETERAN AND THE HOSPITAL

Our federal hospitals have today a total capacity of 69,170 beds and 391 bassinets. Of these, the hospitals of the Veterans' Administration have a total capacity of 28,454 beds. These institutions are located, as will be seen from the report on page 2064 in this issue of The Journal, in various parts of the United States. There are thirteen states which do not have any veterans' hospitals. As is stated in our editorial on hospitals, the number of vacant beds in private institutions is cause for great concern to all those associated with the maintenance of these hospitals. Previous editorials in The Journal have indicated the desirability that these beds be utilized by the Veterans' Administration for the care of veterans who are awaiting admission to its hospitals, and particularly for the care of general medical and surgical cases with a view to making available in veterans' hospitals beds for tuberculous and psychiatric cases.

The medical profession of this country does not yield to any other group in its desire to see that those who gave of their best to our country in its time of need receive the best type of medical care in their time of illness and distress. The reputation of the medical profession so far as concerns proper medical care of the poor has been established through many centuries of practice. Never has the physician hesitated to give ungrudgingly of his time and of his skill for those in need. Obviously, he would hesitate still less if called on to care for any one who had served the country in military or naval warfare. Nevertheless, it has been argued that the desire of the physician to have the Veterans' Administration use the available beds in civilian hospitals and the available services of private physicians is animated primarily by a pecuniary motive. The insinuation is intolerable because based on a misunderstanding of the motivation and particularly because it comes from those who must themselves benefit both in money and in prestige by a maintenance of the present situation. The medical profession of this country has given intensive study to the question of the provision of the best type of medical care, not only for the veteran but also for our citizenry in general. It is the opinion of the vast majority of physicians that the best type of medical care in 90 per cent of the illnesses that afflict mankind is to be had at the hands of the family physician and preferably in an institution in the community in which the sick man or his family resides. Certainly, it would seem to be well within reason that the Veterans' Administration realize the importance of this observation and that it arrange so far as general medical and surgical cases are concerned to provide the veteran in his hour of need with this type of medical care. Every one realizes the desirability of institutional care for the tuberculous and the psychiatric patient.

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[1] Watanabe, K.: Ztschr. f. Immunitätsforsch. **69**: 117, 1930; **72**: 50, 57, **73**: 149, 1931.

[2] Manwaring, W. H., and others: J. Immunology **10**: 567, 575 (May) 1925.

The defense of officials of the Veterans' Administration to the arguments here set forth has seemed inadequate to all who are familiar with the situation. It has been argued that private physicians and private hospitals exploit the veteran and that the funds necessary for such private care are beyond those necessitated by care in a veterans' hospital. Opposed to this argument is the fact that the veteran in a veterans' hospital is far removed from his home, so that the extra cost of transportation and of maintenance during transportation must be assessed in the total cost of care. Next, the veteran when he enters a veterans' hospital at once receives a total disability allowance approximating $80 a month and is kept in a veterans' hospital for a number of days beyond that required when similar cases are cared for in private institutions. Incidentally, a Civil War veteran or a Spanish-American War veteran has his compensation reduced when he enters a veterans' hospital. Here is a matter for early adjustment by Congress! Finally, even if the costs of private medical care should be shown by proper investigation to be slightly beyond those of care in a veterans' hospital, the advantages of private care in maintaining self respect, in preventing pauperization and particularly in holding together homes which are otherwise subject to dissolution are not to be weighed in dollars and cents.

The American Medical Association, through its Committee on Legislative Activity, its Board of Trustees and its officers, has endeavored to give earnest cooperation to the American Legion in reaching a mutual aim; namely, proper medical care for every veteran meriting that care. The conferences that have been held by the representatives of the American Legion, representatives of the Association and, more recently, of the Veterans' Administration, lead to the opinion that such a solution must come and it is good to know that the conferences are to be continued in the future. Moreover, legislation before Congress indicates a desire on the part of the government to restudy the situation and to work out a uniform plan that will be for the best interest not only of the veterans but also of the people and of the medical profession and hospitals of this country.

# Current Comment

## ALCOHOL IN NORMAL TISSUES

Physiologic chemistry deals in part with the chemical reactions that occur in the body in connection with the digestion of food, oxidations, metabolism and detoxication. For all these processes type equations can be written which, experience has shown, represent the main trend of the reactions. It is recognized, however, that the main biochemical transformations are generally accompanied by side reactions, which may at times assume considerable importance. Recent evidence bearing on this point has been furnished by Gettler and his co-workers,[1] who succeeded in isolating pure anhydrous ethyl alcohol from human and animal tissues. The aqueous suspension of ground tissue or of blood was distilled with steam, and the alcohol together with organic acids, bases and other volatile compounds was collected in the distillate. The recovery of the alcohol from the highly diluted solution thus obtained required the construction of special distillation flasks, condensers and rectifier, the use of which resulted after "a single distillation of a few drops of very high proof alcohol, b. p. 78 to 79°." This was dried, redistilled and finally fractionated, the contaminating compounds being removed during the procedure. The boiling point and percentage of carbon as well as the constants of two esters formed from the alcohol proved that the material was ethyl alcohol. Special care was taken to be sure that no alcohol had been used within two weeks of the time when the human tissues were taken. The quantity obtained from human brain was 0.0004 per cent, from human liver 0.0026 per cent, from human blood 0.004 per cent, and from the dog's brain, liver and blood 0.003 per cent, 0.0007 per cent and 0.0013 per cent, respectively. These studies illustrate again the possibility of securing unsuspected information when suitable methods become available. They also emphasize the intimate, normal association of alcohol with man's vital activities.

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[1] Gettler, A. O.; Niederl, J. B., and Benedetti-Pilcher, A. A.: J. Am. Chem. A. 54: 1476, 1932.

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# Association News

## MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 1:30 to 1:35 p. m. over Station WBBM (770 kilocycles, or 389.4 meters) of the Columbia Broadcasting System. The Columbia Chain Program has been discontinued for the present.

The program for the week is as follows:

June 13. How Sick Are You?
June 15. Worthwhile Week-Ends.

There is also a fifteen minute talk sponsored by the Association on Saturday from 11:15 to 11:30 a. m., over Station WBBM.

The program for the week is as follows:

June 18. Goiter.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

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# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## ARKANSAS

**Society News.**—The First Councilor District Medical Society and the Northeast Arkansas Medical Society were addressed, April 21, at Walnut Ridge, by Drs. Walter O. Parrish, Rector, on "Trend of Present Day Medicine"; Grady W. Reagan, Little Rock, "Etiology, Prevention and Treatment of Urethral Stricture," and Henry G. Hill, Memphis, "Fractures."

## CALIFORNIA

**Dr. Marriott to Lecture.**—Dr. W. McKim Marriott, dean and professor of pediatrics, Washington University School of Medicine, St. Louis, will be the lecturer at the University of California Medical School for the year 1932-1933. Dr. Marriott, who will be at the medical school early in the fall of this year, will conduct lectures and clinics.

**Changes at University Medical School.**—The following changes at the University of California Medical School have recently been announced, among others:

Dr. Francis S. Smyth, professor of pediatrics, San Francisco.
Dr. Ian Maclaren Thompson, professor of anatomy, Berkeley.
Dr. Robert O. Moody, professor of anatomy, Berkeley.
Dr. Sidney J. Shipman, associate clinical professor of medicine, San Francisco.
Dr. Robert S. Stone, associate professor of roentgenology, San Francisco.
Dr. Norman N. Epstein, assistant professor of dermatology, San Francisco.
Laurence Gahagan, assistant professor of psychology, Los Angeles.
Joseph A. Gengerelli, Ph.D., assistant professor of psychology, Los Angeles.
Dr. Lewis F. Morrison, assistant professor of otology, rhinology and laryngology, San Francisco.
Dr. Benjamin L. Friedlander, to assistant clinical professor of medicine.

**Fraudulent Reports on Veterans.**—*California and Western Medicine* has recently published newspaper reports of an alleged "racket," wherein physicians have been signing false affidavits of examination of veterans applying for disability compensation. Dr. William E. Glaeser, San Francisco, is said to have been sentenced to a year in jail and a fine of $1,000. Later, however, the judge announced that if the physician would pay $1,100, the amount obtained by the veteran in the case, he would suspend the jail sentence. The fine was paid and the physician was released. Drs. Fred H. Van Tassell and Aubrey H. Staples, both of Oakland, were sent to the county jail for one year when their probation pleas failed after they had pleaded guilty to fraud in veterans' cases. The physicians examined several veterans in 1927, it was reported, but made affidavit that they made the examinations in 1925. Dr. John R. Vasko, Alameda, and Elmer J. Johnson were sentenced on charges of fraud recently. Dr. Vasko is said to have sworn falsely to an affidavit which declared that a war veteran at Livermore contracted tuberculosis before 1925. Dr. Vasko was sentenced to a month in the Alameda County Jail and fined $500. The veteran was given three months in the county jail.

## CONNECTICUT

**State Medical Meeting.**—Dr. William A. La Field, Bridgeport, was elected president of the Connecticut State Medical Society, May 26, and Dr. Charles W. Comfort, Jr., New Haven, reelected secretary. The next annual session will be held at Hartford, May 24-25, 1933. The scientific program at the recent meeting in New Haven was given, among others, by Drs. Robert Salinger, New Haven, on "Prophylaxis of Rheumatic Fever"; Arial W. George, Boston, "Value of the Use of X-Rays in the Study of the Lower Back and Sacrum in Industrial Accident Cases"; Cornelius V. Kilbane, New York, "Radiological Aspects of Cardiac Diagnosis"; Webb W. Weeks, New York, "Operative Procedures of Choice in Secondary Glaucoma"; John McCoy, New York, "Nasal Polypi"; William F. Verdi and Charles T. Flynn, New Haven, "Tumors of the Upper Air and Food Passages"; Louis Antupit, Hartford, "Intestinal Obstruction: A New Method of Treatment"; Louis H. Nahum, New Haven, "Chemical Changes in the Heart in Coronary Occlusion"; Robert G. Urquhart, Uncas-on-Thames, Norwich, "Thoracoplasty"; Ruth F. Wadsworth, New Canaan, "Contact with the Laity Through Broadcasting, Press, and Advertising Supervision"; Charles Ricksher, Middletown, "Modern Treatment of the Insane"; Roy L. Leak, Middletown, "Commitment of the Insane"; George R. R. Hertzberg, Stamford, "Camphorated Oil in Surgery," and Arthur H. Morse, New Haven, "Female Sex Hormones." A symposium on kidney disease and pregnancy was conducted by Drs. John P. Peters and Abraham Nowell Creadick, both of New Haven. Dr. Charles C. Gildersleeve, Norwich, gave the presidential address.

## GEORGIA

**State Medical Election.**—Dr. Marvin M. Head, Zebulon, was installed as president of the Medical Association of Georgia at its annual session in Savannah, May 20, and Dr. Charles H. Richardson, Jr., Macon, was chosen president-elect. The vice presidents are Drs. Arthur A. Morrison, Savannah, and David H. Garrison, Tate. Macon was selected as the city for the next meeting of the association, May 9-12, 1933.

## IDAHO

**Annual Registration Due July 1.**—All practitioners of medicine and surgery holding licenses to practice in Idaho are required by law to be registered annually on or before July 1, with the Department of Law Enforcement, and at that time to pay a fee of $2. If a licentiate has not paid the annual registration fee by October 1, his license can be canceled and will be restored thereafter only on payment of the delinquent fees and a $10 penalty.

## ILLINOIS

**State Medical Election.**—Dr. John R. Neal, Springfield, was inducted into office as president of the Illinois State Medical Society at its annual meeting in Springfield, May 20. Dr. Philip K. Kruescher, Chicago, was named president-elect. Other officers of the society are Drs. Don W. Deal, Springfield, and Charles E. Wilkinson, Danville, vice presidents, and Drs. Harold M. Camp, Monmouth, and A. J. Markley, Belvidere, secretary and treasurer, respectively. The next annual meeting of the society will be held in Peoria.

**Personal.**—Dr. Charles L. Tegtmeier, Freeburg, has been appointed district health officer, succeeding his brother, the late Dr. Edward H. Tegtmeier, Millstadt. Dr. Tegtmeier has practiced in Freeburg for twenty-four years. He served as mayor of the city for three terms and was village health officer for fifteen years. He will have charge of state health activities in the counties of St. Clair, Madison, Monroe, Clinton, Washington, Randolph and Perry.——Dr. Martin H. Seifert has been appointed health commissioner of Wilmette, succeeding Dr. Winfred W. Hawkins, resigned.

### Chicago

**Institute Dissolves Medical Advisory Board.**—The Chicago *Tribune* reported, June 4, that the medical advisory board of the Public Health Institute had been dissolved by the board of trustees.

**Fund for the Arno B. Luckhardt Fellowship.**—Dr. Anton J. Carlson, chairman, department of physiology, Graduate School of Medicine of the Division of Biological Sciences of the University of Chicago, gave the initial contribution toward a fund of $30,000 to provide a fellowship in honor of Dr. Arno Benedict Luckhardt, professor of physiology in the school. In making the contribution, Dr. Carlson wrote to the president of the university as follows: "I have had under consideration for some time the establishment of a fellowship in recognition of Dr. Luckhardt's outstanding services in research and teaching in the medical sciences, the appointment to the fellowship to be vested in the department of physiology of the university . . . it is planned that the fellowship is not to be awarded until the fellowship fund reaches $30,000 or more so that the annual amount of the fellowship will be at least $1,500."

## INDIANA

**Course for General Practitioners.**—The Indiana State Medical Association will conduct a course of instruction for general practitioners, June 16-17, at City Hospital, Indianapolis. Among the instructors will be Drs. Charles A. Doan, professor of medical and surgical research, Ohio State University College of Medicine, Columbus, on "Mechanism of Blood Formation and Its Relationship to Diagnosis and Therapy"; Beaumont S. Cornell, Fort Wayne, "Clinical Features of Pernicious Anemia"; Leon G. Zerfas, assistant professor of medicine, Indiana University School of Medicine, Indianapolis, "Treatment of Anemia"; Roger S. Morris, professor of medicine, University of Cincinnati College of Medicine, Cincinnati, "Cardiovascular Diseases"; Floyd T. Romberger, La Fayette, "Anesthesia for the General Practitioner"; William J. Dieckmann, Chicago, "Toxemia in Pregnancy"; Williams McKim Marriott, dean and professor of pediatrics, Washington University School of Medicine, St. Louis, "Infant Feeding"; Joseph L. Miller, clinical professor of medicine, Graduate School of Medicine of the Division of Biological Sciences, University of Chicago, Chicago; Albert E. Bulson, Fort Wayne, and Henry O. Mertz, Indianapolis, a symposium on the kidney—urinalysis and blood chemistry, and William J. Moenkhaus, Ph.D., professor of physiology, Indiana University School of Medicine, Indianapolis, "Physiology of the Heart." Heart clinics will be conducted by Drs. Robert M. Moore, George S. Bond and Edgar F. Kiser, all of Indianapolis. Practical demonstrations in the treatment of fractures will be given by Dr. William R. Davidson, Evansville, and Dr. Garland D. Scott, Sullivan, and Albert Stump, Indianapolis attorney, will discuss "Medicolegal Aspects of Malpractice Suits in Fracture Cases."

## IOWA

**State Medical Election.**—Dr. William W. Bowen, Fort Dodge, elected first vice president of the Iowa State Medical Society at the annual session in Sioux City, May 6, advanced to the presidency following the death, May 7, of Dr. Bert L. Eiker, Leon, incoming president of the society. Dr. Charles B. Taylor, Ottumwa, was named president-elect at the annual session. Dr. Elliott C. Cobb, Sioux City, second vice president, will succeed Dr. Bowen as first vice president, and the second vice presidency will remain unfilled. The next annual meeting will be held in Des Moines.

## MARYLAND

**Memorial to Dr. Jones.**—A committee has been formed to arrange for a memorial to Dr. C. Hampson Jones, for many years health commissioner of Baltimore, with Dr. Huntington Williams, director of health, as chairman. Other members are Drs. John Frederick Hempel, assistant commissioner of health; George W. H. Hemmeter, Frank C. Marino and Anthony L. Rettaliata, health officers, and three lay members of the city health department. The memorial will take the form of an oil portrait of Dr. Jones, to be placed in the health department offices.

**Study of Tuberculosis in Children.**—Since 1928, a clinic at the Harriet Lane Home, Johns Hopkins Hospital, Baltimore, has been conducting a special survey of tuberculosis in children under 2 years of age, who will be kept under observation continuously until they are adults. The objectives include the sources of infection, relationship of childhood infection to outbreaks of pulmonary tuberculosis in later life, racial susceptibility, pathologic studies of the disease, incidence in healthy infants, variations in allergy over a period of years as determined by the reactivity to tuberculin, and protection of infants through the injection of dead tubercle bacilli according to the method of Langer. At present the clinic has under its charge 276 children. Those cooperating in the study include Drs. John C. Gittings, formerly professor of pediatrics, University of Pennsylvania School of Medicine; Wade H. Frost, professor of epidemiology in the school of hygiene at Johns Hopkins University School of Medicine, and Edwards A. Park, professor of pediatrics at Johns Hopkins.

## MASSACHUSETTS

**Health at Lowell.**—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended May 28, indicate that the highest mortality rate (18.3) appears for Lowell, and the rate for the group of cities as a whole, 11.2. The mortality rate for Lowell for the corresponding week last year was 10.9, and the group of cities, 11.2. The annual rate for eighty-five cities for the twenty-one weeks of 1932 was 12.3, as against a rate of 13.3 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

## MICHIGAN

**Physicians Honored.**—The Ingham County Medical Society gave a banquet, May 12, to three physicians who had been members of the organization for forty years. The physicians are Drs. Harry A. Haze, George F. Bauch and Robert E. Miller, all of Lansing. Dr. Fred J. Drolett was toastmaster at the dinner, and the speakers included Mayor Peter F. Gray, the Rev. John O'Rafferty, and Rev. Edwin W. Bishop, Lansing. A musical program was provided.

**Graduate Fortnight.**—The Michigan State Medical Society and the department of postgraduate medicine of the University of Michigan are conducting a graduate fortnight in proctology at the University Hospital, June 6-18. While emergency and office treatment, requiring a minimum of experience and equipment, will be emphasized, the announcement states, conditions that require more highly specialized methods in both diagnosis and treatment will be demonstrated. The fee for the course is $35. Further details may be obtained from the department of postgraduate medicine, University Hospital, Ann Arbor.

## MISSOURI

**State Medical Election.**—At the annual meeting of the Missouri State Medical Association, May 25, Dr. Joseph W. Love, Springfield, was installed as president, and Dr. Warren L. Allee, Eldon, was chosen president-elect. Dr. Edward J. Goodwin, St. Louis, was reelected secretary. The next annual session of the society will be held in Kansas City.

**Personal.**—Dr. William H. Allen, Rich Hill, was guest of honor at a meeting of his friends, May 1, in celebration of his birthday. Dr. Allen has practiced medicine in Rich Hill for fifty-seven years and is an honor member of the Bates County Medical Society and of the state medical association.——Mr. Frank K. Fenwick, a lawyer, has been appointed director of medical licensure to succeed Dr. Ross Hopkins, Jefferson City.

## NEBRASKA

**State Medical Election.**—Dr. Adolph Sachs, Omaha, was named president-elect of the Nebraska State Medical Association at the annual meeting in Lincoln, May 26. Dr. Arthur E. Cook, Randolph, was installed as president and Dr. Roy B. Adams, Lincoln, reelected secretary. The next annual meeting will be in Omaha.

## NEW HAMPSHIRE

**State Medical Election.**—Dr. Harry O. Chesley, Dover, was elected president of the New Hampshire Medical Society at the annual meeting in Manchester, May 18, and Dr. Robert J. Graves, Concord, vice president. Dr. Dennis E. Sullivan, Concord, was reelected secretary. The next annual session will be held at Manchester.

**Unlicensed Practitioner Fined.**—Jesse M. Solomon pleaded guilty in the municipal court of Concord, May 6, to a charge of practicing medicine without having a certificate of registration. He was fined $100, ordered to pay court costs of $35, and sentenced to three months in the house of correction. The latter sentence was suspended when he paid the fine and costs.

## NEW JERSEY

**Medal to Dr. Theobald Smith.**—The Council of the Royal Society of Tropical Medicine and Hygiene at its annual meeting, June 16, will award the Manson Medal to Dr. Theobald Smith, Princeton, director emeritus of the department of animal pathology, Rockefeller Institute for Medical Research, New York. The award is made "for fundamental observations and experiment—the first of their kind—on the transmission of a blood-inhabiting protozoon by a blood-sucking arthropod and for many contributions to knowledge which are of world-wide importance." Dr. Smith retired from the directorship of the department of animal pathology in 1929, when he reached the age of 70. He had occupied the position since 1915, having come to the institute from Harvard, where he had been professor of comparative pathology since 1896. Dr. Smith has continued his association with the Princeton laboratories of the institute.

## NEW MEXICO

**State Medical Meeting and Election.**—The semicentennial meeting of the New Mexico Medical Society was held in Santa Fe, May 19-21, under the presidency of Dr. Fred D. Vickers, Deming. Guest speakers on the program were Drs. Willis S. Lemon, Rochester, Minn., on "Biological and Clinical Aspects of Tuberculous Pleurisy with Effusion"; Cullen W. Irish, Pasadena, Calif., "Neurological Diagnostic Criteria in Abscess of the Brain"; William C. Menninger, Topeka, Kan., "Psychiatry"; William D. Sansum, Santa Barbara, Calif., "Treatment of Underweight, Indigestion and Allergy"; Earl D. McBride, Oklahoma City, "Arthritis"; Albert Soiland, Los Angeles, "Management of Cancer of the Breast"; Clarence G. Toland, Los Angeles, "Object of Formation of Cancer Commission of State Medical Societies"; Hugh T. Jones, Los Angeles, "Bone Tumors"; James W. Hendrick, Amarillo, Texas, "Adenomatous Goiter"; Robert A. Duncan, Amarillo, "Brain Abscess from the Otologist's Viewpoint." Dr. Henry A. Ingalls, Roswell, was chosen president-elect and Dr. Leo B. Cohenour, Albuquerque, secretary. The 1933 meeting will be held in Roswell.

## NEW YORK

**State Medical Election.**—Dr. Frederick H. Flaherty, Syracuse, was chosen president-elect of the Medical Society of the State of New York at the close of the annual meeting in Buffalo, May 24. Other officers elected were Drs. Arthur S. Chittenden, Binghamton, and William Ross Thomson, Warsaw, vice presidents, and Drs. Daniel S. Dougherty and Frederic E. Sondern, both of New York, reelected treasurer and secretary, respectively.

**Society News.**—Dr. Russell L. Cecil, New York, addressed the Medical Society of the County of Albany, at Albany, May 17, on "The Arthritis Problem," and Dr. Arthur Krida, New York, on "Surgical Treatment of Arthritis."——Dr. Ward J. MacNeal, New York, addressed the Madison County Medical Society, Oneida, May 21, in the afternoon, on "The Relation of Laboratory to General Medicine," and the Oswego County society at Fulton on the same subject in the evening.——Dr. Jacob M. Gershberg, New York, addressed the Saratoga chapter of the International Spanish-Speaking Association of Physicians, Dentists and Pharmacists, May 24, on longevity according to the theory of Metchnikoff.

### New York City

**Board Recommends Ban on Radium Waters.**—The medical advisory board of the city department of health, after a special meeting to consider the public health aspects of so-called radium waters, has recommended that the department issue a warning concerning their use. The administration of these waters should be watched over by a physician, who should examine the patient from time to time to make certain that there is no accumulation of radioactive minerals in the tissues, the board advised. There has been much commercial propaganda in recent years alleging the curative powers of radioactive waters. Some of these were shown to be frauds because they had no radioactivity, but a few contained radioactive minerals in solution, it was said. The majority of radium waters used by the public are those charged with radium emanations produced by various devices sold at prices ranging from $3.50 to several hundred dollars. It was the opinion of authorities who conferred with the board that the drinking of water containing radioactive minerals was extremely dangerous and that a ban should be placed on the sale of these waters to the public.

**Academy Recommends Investigation of Veterans' Legislation.**—Congressional investigation of the whole plan of veterans' relief was demanded in a statement recently issued by the committee on public relations of the New York Academy of Medicine. Declaring that the elimination of subsidies to ex-soldiers who are not suffering from war disabilities would reduce federal expenditures more than $450,000,000 a year, the committee made the following recommendations:

1. That hospitalization of veterans for nonservice-connected disabilities be discontinued.
2. That as hospital beds become vacant, the hospitals be sold to the states to be used as public institutions for persons with chronic ailments.
3. That inquiry be made as to adequacy of compensation to widows and dependents of soldiers who died or were killed in the World War or as a direct result of it.
4. That adequate compensation be continued for veterans who are actually diseased or disabled as a result of service.
5. That no compensation be paid for partial disability to those who are not in need or whose earning capacity is not materially impaired or who earn more than $1,500 a year.
6. That medical opinion decide whether disabilities are caused or favored by military service and that the type of service be considered in arriving at decisions.
7. That the operation of the Emergency Officers' Retirement Act be studied and revised to prevent existing abuses.
8. That in the formulation of future plans, Congress and the Veterans' Administration avail themselves of advice of medical organizations.
9. That civil service regulations that grant undue preference to ex-soldiers be rescinded because of the danger to the efficient conduct of the medical and public health services of the government.

The report pointed out, among other things, that a larger percentage of former medical officers are receiving pensions than other ex-officers, although some of them hold full time government positions.

## OKLAHOMA

**State Medical Meeting and Election.**—The fortieth annual session of the Oklahoma State Medical Association was held in Tulsa, May 24-26, under the presidency of Dr. Henry C. Weber, Bartlesville. Among guest speakers were Drs. Frank C. Neff, Kansas City, "Active Immunization Against Diphtheria"; Walter E. Sistrunk, Jr., Dallas, Texas, "The Gallbladder"; Arthur E. Hertzler, Halstead, Kan., "Indications for Operations for Minor Gynecological Disease"; Marcus O. Shivers, Colorado Springs, Colo., "Thyroid Problems"; Frank D. Dickson, Kansas City, "Low Back Pain with Particular Reference to the Congenital Abnormalities in the Lumbosacral Region," and James W. Hendrick, Amarillo, Texas, "Causation and Treatment of Simple Goiter." Dr. Hugh S. Cumming, Washington, D. C., addressed a general meeting, Wednesday, May 25. Dr. Tracey H. McCarley, McAlester, was named president-elect and Dr. Robert M. Anderson, Shawnee, was installed as president. The next annual session will be held in Oklahoma City.

## PENNSYLVANIA

**Society News.**—The program of the Dauphin County Medical Society, Harrisburg, June 7, included the following speakers, all of Harrisburg: Drs. William K. McBride, "Technic of the Complete Periodic Health Examination"; John A. Daugherty, "Insulin—A Historic Review"; Walter D. Hawkins, "Modern Conception of the Treatment of Diabetes"; Herbert F. Gross, "Surgical Treatment of Diabetes."——Dr. Walter F. Donaldson, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, June 2, on "Business Aspects of Medicine."

### Philadelphia

**Personal.**—Dr. Jacob D. Leebron has been appointed pediatrist to the Northern Liberties Hospital. His service will include a department for the prevention of diseases in children.——Dr. Frederick S. Baldi, medical director of county prisons since January, 1930, has been appointed superintendent and will now hold both positions. He has been acting superintendent since February.

**Fund in Memory of Dr. Deaver.**—The Aid Association of the Philadelphia County Medical Society is establishing a special perpetual fund in honor of the late Dr. John B. Deaver, the income from which will be used to afford aid to needy physicians and their families. Dr. Francis Heed Adler, 313 South Seventeenth Street, Philadelphia, is secretary of the fund, in which all friends of Dr. Deaver are invited to participate.

**Society News.**—A symposium on complications of surgery of the nose and throat was held at the meeting of the Philadelphia County Medical Society, June 8. Drs. Frank Embery discussed "Complications Associated with Intranasal Surgery"; Benjamin D. Parish, "Lung·Abscesses as a Complication Following Tonsillectomy," and John Loftus, "Complications of

Mastoidectomy."——Dr. May G. Wilson, New York, addressed the Philadelphia Pediatric Society, May 10, on "Natural History of Rheumatic Fever in Its Relation to the Evaluation of Therapeutic Measures."——Dr. Arthur W. Proetz, St. Louis, addressed the Philadelphia Laryngological Society, May 26, on "The Displacement Method of Sinus Diagnosis and Treatment."——Drs. Leon Herman and Joseph C. Birdsall addressed the Philadelphia Urological Society, May 23, on "Intermittent Hydronephrosis" and "Present Status of the Disposal of the Ureters in Carcinoma of the Bladder," respectively.

## SOUTH DAKOTA

**State Medical Meeting at Watertown.**—The fifty-first annual meeting of the South Dakota State Medical Association will be held in Watertown, June 20-22, under the presidency of Dr. Willard Allen Bates, Aberdeen. The house of delegates will meet Monday afternoon, June 20, and the scientific sessions will occupy the other two days. Tuesday morning Dr. William W. Duke, Kansas City, will hold a medical clinic and Dr. Harry M. Richter, Chicago, a surgical clinic. Wednesday morning Dr. Charles W. Pollard, Omaha, will conduct a gynecological clinic and Dr. John E. Gonce, Jr., Madison, Wis., a pediatric clinic. Guest speakers include Drs. Duke, on "The Dawn of a Specialty in Medicine—Allergy"; Richter, "Surgical Treatment of Peptic Ulcer"; Pollard, "Obstetrics"; Gonce, "Infantile Paralysis—Diagnosis and Treatment" and Leo G. Rigler, Minneapolis, "Roentgen Diagnosis in Preventive Medicine." The association dinner will be held Tuesday evening, June 21. The South Dakota Academy of Ophthalmology and Otolaryngology will hold its annual meeting, June 21, with the following speakers: Drs. Kenneth A. Phelps, Minneapolis, "Experiences in Bronchoscopy"; Joseph G. Parsons, Crookston, Minn., "Local Anesthesia"; Frederick H. Roost, Sioux City, Iowa, "Incidence of Focal Infection in Acute Sinus Diseases and Treatment" and Clarence E. Robbins, Pierre, "Acute Mastoiditis of the Hemolytic Streptococcic Type."

## TENNESSEE

**Society News.**—The forty-first annual meeting of the West Tennessee Medical and Surgical Association was held at Jackson, May 26-27. Among speakers were Drs. Willis C. Campbell, Memphis, on "Fractures About the Neck of the Femur"; Paul D. Jones, Milan, "Bacterial Heart Disease"; William I. Howell, Lexington, "Treatment of Sepsis by Stimulating Leukocytosis"; Edwin W. Cocke, Bolivar, "Constitutional Psychopathic Personality in Relation to Present-Day Crime and Delinquency," and William O. Floyd, Nashville, "Differential Diagnosis and Surgical Management of Hyperthyroidism."——Dr. Samuel R. Skillern, Jr., Philadelphia, addressed the Chattanooga and Hamilton County Medical Society, Chattanooga, May 12, on frontal sinus operations. Dr. E. Dunbar Newell, Chattanooga, spoke, June 2, on diagnosis and treatment of brain trauma.——At the meeting of the Gibson County Medical Society, Trenton, May 14, speakers were Drs. Oval N. Bryan, Nashville, "General Medicine"; Jennings C. Litzenberg, Minneapolis, "Management of Complications in Labor," and David R. Pickens, Nashville, "Diseases of the Rectum." Drs. Drew W. Luten and Theodore C. Hempelmann, St. Louis, spoke, May 30, on "Diagnosis in General Practice" and "Nose and Throat Infections of Children," respectively.——Dr. Frank H. Norman, Waynesboro, among others, addressed the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, April 26, on "Modern Methods of Treatment of Angina Pectoris."

## WYOMING

**Health Officers Meet.**—Dr. John H. Goodnough, Rock Springs, was elected president of the Wyoming association of county health officers at the annual meeting in Casper, May 5. Other officers are Drs. Maurice J. Goldberg, Kemmerer, and Victor A. Mokler, Thermopolis, vice presidents, and Walter H. Hassed, Cheyenne, state health officer, secretary. Among the speakers were Drs. William O. McDermott, Casper, on city health administration, and Nathan E. Wells, Newcastle, control of typhoid.

## GENERAL

**Ophthalmic Social Service Workers.**—The National Society for the Prevention of Blindness announces that it will sponsor two courses for medical social workers in eye hospitals and clinics next fall in cooperation with Washington University, St. Louis, and the Massachusetts Eye and Ear rmary, Boston. Social workers interested in this special- training should communicate with the Secretary, National Society for the Prevention of Blindness, 450 Seventh Avenue, New York.

**Reregistration Under the Harrison Narcotic Act.**—Physicians registered under the Harrison Narcotic Act must reregister on or before July 1. Each such physician must register with the collector of internal revenue of each district in which he maintains an office or a place for the treatment of patients. Failure to register within the time allowed by law makes a physician liable to a fine or to imprisonment, or to both, and compels him to pay a penalty of 25 per cent on his annual tax when he does register.

**Special Courses in Vienna.**—The eleventh series of intensive European summer courses will be given in Vienna, July 8-August 19, inclusive, under the direction of Dr. George W. MacKenzie, Philadelphia. Courses announced for this year are in ophthalmology and otolaryngology, as in the past ten years, and the second course in surgery, gynecology and obstetrics. Each will provide about 300 hours of instruction, and 50 additional hours will be given on the boat trips to and from Europe. Instruction will be given by Vienna teachers. Each course covers every phase of the subject, with opportunity for practical exercises. Details may be obtained from Dr. MacKenzie, 1724 Spruce Street, Philadelphia.

**Appeal for Aid for Biochemist's Family.**—An appeal to American biochemists for funds to relieve dire financial need of the daughters of the late Johann Ludwig Thudichum, German biochemist and physician, has been extended to the medical profession and workers in related fields. A committee composed of Dr. David L. Drabkin, Philadelphia, and Russell H. Chittenden, Ph.D., and Lafayette B. Mendel, Ph.D., New Haven, Conn., is circulating a memorandum asking for contributions and will transmit the collected fund to the family. Thudichum made important contributions in the field of lipoid chemistry and was a pioneer investigator of pigments. Checks may be mailed to Dr. Drabkin, Medical School of the University of Pennsylvania, Philadelphia.

**Medical Bills in Congress.**—*Changes in Status:* H. Res. 235 has passed the House, authorizing the appointment of a committee composed of five members of the House of Representatives, to investigate government competition with private enterprise. H. R. 11267 has been reported to the Senate, with amendments (S. Rep. 756). This bill, providing appropriations for the legislative branch of the government and effectuating economies in the administration of the federal government, proposes, among other things: (1) to reduce the federal contributions for vocational education during the fiscal year ending June 30, 1933; (2) that, among other things, disabled emergency officers shall not be entitled to retirement under the Disabled Emergency Officers Retirement Act for disabilities *presumptively* of service origin; (3) that, with certain exceptions, veterans of the World War shall not be entitled to hospitalization for non-service disabilities if their incomes are $1,500 or over a year, if single, or $3,500 or over a year, if married. S. Res. 219 has been agreed to, directing the United States Tariff Commission to investigate the differences in the cost of production between the domestic article or articles and the competitive foreign article or articles on the following items: optical instruments and certain other scientific and laboratory apparatus and instruments. S. 276 has passed the Senate, authorizing the construction and equipment of a hospital on the Crow Indian Reservation, Montana. S. 572 providing for "federal cooperation" with the several states in promoting the welfare and hygiene of mothers and children was reached on the Senate calendar June 1, but consideration of the bill was prevented by Senator King, Utah. S. 2987 has passed the Senate authorizing the construction and equipment of a hospital on the Black Feet Indian Reservation, Montana.

## CORRECTION

**Encephalography Under Narcosis Produced by Nonvolatile Anesthetics.**—In the article by Drs. Solomon and Epstein in The Journal, May 21, the amount of morphine sulphate mentioned at the foot of page 1795, first column, should have been 0.016 Gm.

**Medical Examinations in Kansas.**—In The Journal of April 23, a statement was made that six states, including Kansas, must offer the easiest examinations since these states had had no failures for five years. Dr. C. H. Ewing, secretary of the State Board of Medical Registration and Examination in Kansas, writes that Kansas does not permit members of any cults to take examinations of the medical board and that no applicant is permitted to take the examination who is not a graduate of a class A medical school. Hence there have been no failures.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

May 14, 1932.

### Raw Milk in the Prevention of Dental Caries

The work of Mrs. Mellanby appears to show that administration of vitamin D to children living under urban conditions diminishes the incidence of caries in teeth already formed (THE JOURNAL, Nov. 21, 1931, p. 1548; April 9, 1932, p. 1313). She has recently published evidence to show that if the diet is cereal free as well as rich in vitamin D the results are still better. But Mr. Evelyn Sprawson, director of dental studies at the London Hospital Dental School, has a somewhat different view. Before the Royal Society of Medicine he introduced evidence that raw milk, whether such as nature provides for the purpose or that of cows, has a profound influence on the development and calcification of the teeth of man and confers some immunity from caries. Since 1908 he has had under dental supervision hundreds of children in institutions. Before admission they did not receive as a rule proper care, principally on account of poverty. They showed a high percentage of dental caries. Thus in one institution there were in 1910 some 1,100 girls and 750 boys of ages ranging from 3 to 16 years. Of the girls, 78 per cent had dental caries, and 148 first permanent molars in 400 were carious at the ages of 10, 11 and 12 taken together. For the boys the figures were 86 per cent and 183 carious molars. From 1925 onward, the boys had a daily ration of a pint of raw milk (milk at no time heated to more than a few degrees above body temperature). Mr. Sprawson did not know of this, but in 1928 and increasingly afterwards he noticed a change in his work—a remarkable diminution in the number of children returning for further treatment after dental caries had once been treated. At first this was attributed to vitamin D, which exists in small amounts in milk, but experience at another institution where cod liver oil with its large content of vitamin D was freely used did not confirm the conclusion. At this institution the milk was delivered pasteurized. It might be thought that a high degree of calcification of the enamel, such as is said to be produced by vitamin D, would protect against dental caries, but Mr. Sprawson finds that this is not so. In Malay, 49 per cent of Chinese coolies, who work stripped to the waist exposed to the powerful sun, have caries. Similar observations have been made in South Africa. Mr. Sprawson therefore concluded that such a balance of vitamin content as is in raw milk, in conjunction with the calcium (which may be in a particularly suitable form) might be the cause of the diminution of children returning. A high percentage of the incidence of caries occurs in those deciduous and permanent teeth the enamel of which is actively laid down, and in some cases fully calcified, during the first four or five years of life, so that a supply of suitable calcium salts and vitamin balance efficiency should be available at that period. Moreover, the incidence of caries is generally progressively less in the teeth, deciduous and permanent, in the order of their eruption, and it is during the earliest portion of this period that "hand feeding" and a faulty diet are most common. This led to an inquiry concerning the effect of a daily ration of raw milk begun during the first twelve months of life. That age was selected because few children are now breast fed. Moreover, it is a period previous to the eruption of the deciduous molars, in which the incidence of caries is high, and also a period when the first permanent molars are forming, in which the incidence of caries is highest. In children who began to take raw milk at later ages, a protective influence on the teeth subsequently erupted was found. Historically, those peoples showing the smallest incidences of caries are found to be those primitive races who nursed their children for the longest periods; i. e., fed them on raw milk.

Mr. Sprawson suggests that boiling or pasteurizing milk alters part of the vitamin content, so as to render enamel less resistant to caries. Whenever a child is hand fed, unless raw milk is given, there is necessarily an unnatural balance of vitamins and possibly other elements in its food. If raw milk forms part of the diet from birth, so long as it is continued all enamel formed has some immunity to dental caries. If it is not begun until later, erupted but incompletely formed teeth may be similarly altered, though in lesser degree. It is problematic whether fully formed teeth can be influenced. If raw milk is not begun till the third or fourth year, protection is not afforded to the deciduous teeth but to the permanent teeth. The converse is also true. If raw milk is taken for only two and one-half or three years after birth, the deciduous teeth are protected, but little if any protection is afforded to the permanent teeth. For ideal dental development in man, Mr. Sprawson holds that raw milk should form part of the daily food till the age of 14 years, but because of the danger of tuberculosis the milk should be from tuberculin-tested cattle.

### "Ambulance Chasing"

Lawyers of a discreditable type have touts on the watch for road accidents, who follow ambulances with injured persons into hospital wards with the object of getting them to sign a contract whereby the lawyer will take proceedings and a share in any damages awarded. Among other evils this system provokes unnecessary litigation. The evil is so widespread that it has earned the name of "ambulance chasing" and the injured person loses to the lawyer a big proportion of his damages. One hospital (the Folkestone) has had a conference with the Law Society on the subject and has amended its rules, so that no lawyer or his representative will be allowed to enter the wards unless the visit is made at the express request of the patient.

### Advances in the Study of Vitamins

It has been shown that vitamins can be produced by irradiation of substances termed provitamins—thus, vitamin D from ergosterol. At the Laboratory of Physical Chemistry, Cambridge, work has been done by Drs. F. P. Bowden and C. P. Snow, which shows that vitamins as well as provitamins are affected by light and can be destroyed by it if a certain wavelength is used. By means of an instrument resembling a spectroscope, intense rays of a certain wavelength were concentrated on a vitamin or provitamin contained in a tiny cell and the sensitiveness of the substance was studied. The provitamin A, carotene, absorbs visible light but is not altered by it. But ultraviolet rays convert it into a substance giving the spectrum of vitamin A and also the chemical reactions of that substance. Biologic tests demonstrating that vitamin A is actually formed will require some weeks for completion. The new substance absorbs waves of a length different from those which the provitamin absorbs and is destroyed by them. This discovery is of practical importance, for it shows that in the manufacture of vitamins only those which the provitamin absorbs should be used, and destruction of the vitamin so formed should be avoided by excluding the rays which it absorbs.

Vitamin B (which protects against beriberi) is quickly destroyed by rays which it absorbs. The isolation of a crystalline substance, hexuronic acid, from lemons, of which small doses are protective against scurvy, has suggested that this is vitamin C. Vitamin D has been produced by irradiation of the provitamin ergosterol. A method preventing destruction of this vitamin by the rays which it absorbs has been suggested. The study of vitamins by precise physicochemical methods is still in its infancy, but it is already clear that it may displace experiments on animals in estimating their amount in a diet and, further, that deficiency in a given vitamin may be made good more easily by a process of selective irradiation than by any other method.

### Investigation of "Cures" for Cancer

The Cancer Hospital, London, undertakes what is not done by any other hospital in the country. It investigates the new "cures" for cancer, which are vaunted from time to time. Every year it receives numerous suggestions for the treatment of malignant disease and requests to try them. In many cases the composition of the preparation was not revealed, and if this is withheld the committee of the hospital always feels compelled to refuse to pursue the matter. Whenever the nature of the composition of the proposed remedy is stated the matter is given careful consideration and, if it appears reasonable, investigation is made. At the annual meeting it was stated that during the year extensive inquiry had been carried out on these lines, but nothing encouraging had resulted, however, one communication had opened a new line of research, which was being actively followed. Mr. R. H. Jocelyn Swan, senior surgeon, said that during the last three years radium had been used in 700 cases in the hospital. Some of the results were astonishing. If cases could only be obtained in the early stage, the statistics, good as they were, would be much better.

### Splitting the Atom

Lord Rutherford has described in the press "a discovery of great scientific importance," the result of experiments carried out by two young men in the Cavendish Laboratory, Cambridge, over which he presides. These men—Dr. J. D. Cockroft and Dr. E. T. S. Walton—are now described as having succeeded in splitting the atom. Lord Rutherford says that it is difficult to say to what the discovery might lead. It could not be claimed that the discovery meant that we should be able to produce an immense amount of electrical energy for commercial purposes, as had been stated, for the simple reason that for every particle of additional energy they got it required millions of particles to make it effective. Cockroft and Walton split the atom by means of a vacuum tube through which millions of particles a second were fired at a speed of 10,000 kilometers a second. The atom has been split before, but in these experiments energies were procured from atoms as they broke up 100 times greater than that of the particles with which they were attacked (with a voltage of 120,000).

## PARIS

*(From Our Regular Correspondent)*

April 27, 1932.

### The Control of Pharmaceutic Advertisements

Prof. Marcel Labbé recently brought before the Academy of Medicine a question of great importance. He read a number of advertising leaflets vaunting the merits of a product with a sorbite base, presented to the public as a sugar that has been deprived of all harmful effects for diabetics, whereas, according to Professor Labbé, sorbite is no better tolerated by patients than other carbohydrates. He demands, therefore, that the academy take the initiative in putting the public on its guard against these erroneous statements so harmful to public health, and take a firm stand against the selling with impunity of products likely to be dangerous. French laws are silent on this subject. There is absolutely no control of the value of products advertised to the public, except for serums and vaccines. The law demands only that the exact composition of the product be stated on the label. However, most manufacturers circumvent the law by placing the label on the bottom of the bottle and by printing the technical names in exceedingly small type and with the terms of chemical nomenclature, which are understood only by the initiated. As to the statements in the prospectuses concerning the curative effects of the product, they are formulated with absolute freedom and without any guaranty. It is evident that a system of control would be valuable in the interest of public health; but it is equally evident that the introduction of such a system would cause great confusion in the ranks of the pharmaceutic industry. Nevertheless, the Academy of Medicine has appointed a commission to study carefully the situation and furnish a report on the subject.

### Vocational Guidance

The medical examination of children with a view to determining whether their physical condition reveals any contraindication to the trade or profession that they wish to take up is tending to become more general in France. Such an examination is now required of all students in schools of technical instruction, but it is optional in other schools. Many families are beginning to recognize the usefulness of such examinations and are voluntarily subjecting their children to such tests. The results obtained have led to interesting observations and made a great impression on the public. For example, at Nantes, 1,109 children were examined in 1931, as against 936 children in 1930. These examinations entail a search for three kinds of contraindications for the occupation chosen: medical, educational and economic. As to a group comprising 123 boys and 23 girls, formal contraindications were found in 38 per cent—in 15 per cent for medical reasons. Disorders of vision were discovered that both parents and children did not know existed. The eye examinations revealed, furthermore, that sixty-three young persons did not have normal vision. The medical examiners discovered eleven cases of pulmonary tuberculosis. Five of these children suffering from active tuberculosis were sent to sanatoriums or to the country. The dental examination showed that the parents are not paying sufficient attention to the teeth of their children. Three abnormal children were directed to special centers. Five boys were operated on, before they entered on their apprenticeship, for undescended testis. Three young women were advised not to take up dressmaking, and two boys were cautioned against the textile trade owing to hyperhidrosis of the hands.

### Use of Microscopic Preparations in Decorative Art

Modern decorative art is constantly seeking new designs for tapestries, wallpaper and ladies' dress goods. The imagination of decorative artists has been strained to the uttermost in the attempt to supply new designs. The infinite variety of designs displayed in the veins of marble and other building stones has been frequently studied and imitated; but the images supplied by nature on examination of microscopic preparations have never been utilized. Madame Albin Guillot, widow of a manufacturer of orthopedic apparatus, who is well versed in microscopy and who is also an expert photographer, had the ingenious idea of deriving original decorative motifs from these images. Microscopic preparations richly stained by means of various laboratory reagents and photographed with considerable magnification furnished her with some astonishing pictures in which nature combines freely and repeats the same elements in accordance with arrangements constantly renewed. Pathologic tissues, especially neoplasms, furnish images even more curious and interesting than normal tissues. Madame Albin Guillot has published an album of plates of this kind, in which one can see sections of cancer of the prostate, and adenomas of the breast that present designs of charming originality. Manufacturers of textiles have become interested and are making industrial applications that are scoring a great success. Superbly dressed women are wearing dresses the picturesque design of which is patterned, without their knowing it, after the structure of tumors; or they paper the walls of their apartment with paper the design of which is derived from a sarcoma.

### Decline of the Birth Rate in France

The Alliance nationale pour l'accroissement de la population française, in a study that it has just published on the vital statistics of France for 1931, points out that the birth rate fell off sharply toward the close of the year. A comparison of the birth rate for the corresponding quarters of 1930 and 1931 reveals the following differences: first quarter, increase

937; second quarter, decrease 3,537; third quarter, decrease 4,907; fourth quarter, decrease 11,155; for the entire year, decrease 18,662. The number of marriages, furthermore, having diminished by more than 16,000 it is to be feared that the reduction in the number of births may be still greater in 1932. If one notes that, of the 730,000 births in 1931, 55,000 were of children of foreigners, whereas, of the 680,000 deaths, there were only 30,000 deaths of foreigners, it will be seen that the French excess of births over deaths in 1931 was only 25,000. This small excess runs the risk of being transformed, next year, into a permanent deficit unless something energetic is done to promote a better birth rate. Finally, since the number of emigrants in 1931 exceeded the number of immigrants by more than 25,000, the population of France has in reality diminished, the first time that that has happened since the war.

## BERLIN

*(From Our Regular Correspondent)*

April 25, 1932.

### Congress of Internal Medicine

The Kongress für innere Medizin was held this year in Wiesbaden. In surveying the results of the session, two objectives in contrast with congresses of recent years were sought by the organization committee: accentuation of the clinicomedical point of view in the official papers of the first three days and—with a certain inner connection—the limitation of the number of individual communications to about half the number presented in previous years. The successful accomplishment of the new program was due primarily to the initiative of the chairman, Professor Morawitz of Leipzig, who has been called to Berlin, as the successor of Professor His, to occupy the chair of internal medicine and serve as director of the first Medizinische Universitätsklinik. The first day's session was held in collaboration with the Deutsche pharmakologische Gesellschaft, whose chairman, the pharmacologist Prof. O. Loewi of Graz, pointed out the inner relations and the mutual interests that characterize clinical medicine and pharmacology. The chief topic considered was "The Effects of Autogenous Substances on the Circulation." The discussants were Sir Henry Hallett Dale of London and Prof. Dr. F. Volhard of Frankfort-on-Main. Sir Henry considered the importance of autogenous substances for the regulation of the circulation in the healthy organism. The chemical regulation of the blood stream in the capillaries is not only dependent on the active substances of the hormone-secreting glands—primarily, epinephrine and vasopressin—but also on certain products of normal cell and tissue metabolism. It is a question of chemical substances that, in contrast with the aforementioned hormones, cause vascular dilatations and lowering of blood pressure. The principal representatives of this group are histamine, choline ester, and compounds of the type of adenylic acid.

Professor Volhard, clinician of Frankfort, supplemented Dale's statements by observations on the pathologically changed circulation. He pointed out the importance of the mentioned substances for a number of pathologic manifestations that have usually been considered of nervous origin. The new conception has proved to be fruitful for the theory of infections, the tuberculin test, certain inflammations, so-called angioneurotic disturbances, shock, cerebral hemorrhage, increase of blood pressure, with or without kidney involvement, and other conditions. Volhard's remarks on the various types of high blood pressure were of practical importance for the clinical study of kidney diseases and for the question as to how convulsions of pregnancy arise. Volhard was the first to describe the pathologic syndromes of "white" and "red" kidneys, which are said to be caused by an unknown hypophysin-like substance, which appears to originate in the kidneys. If in the acute stage of kidney disease the high blood pressure has existed too long, a cure is not likely to be effected and a further progression of the disorder is probable. In Germany, and probably also in other countries, numerous attempts have been made to utilize these therapeutic suggestions in a practical way. Whether, as a matter of fact, there is as much practical therapeutic value in the various preparations derived from muscle extract, and otherwise, as in the first period of optimism was assumed, is for future investigators to decide. At least no decisive success in this direction has as yet been reported. Nevertheless, it appears that these preparations may have the power of improving the blood supply of tissues through dilation of the blood vessels and thus exerting a favorable influence on certain severe and painful disorders, such as angina pectoris and Raynaud's gangrene. The certainty based on a therapeutic success that can be repeated at will, which is necessary for the support of a really favorable opinion, is still lacking. Medicine finds itself, from time to time, in a position in which it gains interesting new theoretical insight, with the prospect of tedious and laborious clinical study before the new methods can be used in everyday practice.

On the second day, Prof. L. Brauer of Hamburg-Eppendorf discussed respiratory insufficiency. Brauer and his collaborators, particularly Knipping, were able to develop an ingenious clinical method of research that permits the continuous registration of respiratory rhythm, air volume and the simultaneous passage of oxygen and carbon dioxide through lungs and blood, under normal and pathologic conditions. The disturbances of gas exchange, due to respiratory paralysis of nervous origin, mechanical obstruction of the air breathed, disturbances of air and blood distribution in the lungs, rarefaction of the air at great altitudes, and interruption of the gas exchange in the pulmonary air vesicles (so-called Brauer's pneumonosis), were discussed with considerable detail. One purpose of these researches is to secure, as far as possible, clear and accurate indications and controls for the treatment of pulmonary tuberculosis by means of artificial pneumothorax, in the promotion and development of which Brauer has performed meritorious service. The two following papers took up the practical side of this important subject. Liebermeister of Düren fixed the range of application of bilateral pneumothorax, which was first successfully employed, fifteen years previously, by Professor Ascoli of Palermo. Ascoli was present and took part in the general discussion. The third paper, presented by Professor Jakobaeus of Stockholm, dealt with lung collapse. He directed attention to the part played by atelectases, and to the interpretation of roentgenograms taken of tuberculous patients.

The chief topic on the third day of the congress was involvement of the stone-free biliary passages. Three eminent investigators in as many different fields discussed the subject: Prof. L. Aschoff, pathologic anatomist of Freiburg; Prof. F. Umber, clinician of internal diseases, Berlin, and Prof. V. Schmieden, surgeon of Frankfort-on-Main. Research in this field has made good progress since the publication of the epochmaking investigation of Naunyn, and, in recent years, particularly through the examination of the bile by the use of a sound, and the roentgenologic exhibition of the biliary passages. Also more detailed anatomic studies (more particularly the researches of Aschoff) have furnished new insight into pathologic manifestations. Stone-free involvement of the efferent biliary passages develops, in the presence of some obstacle preventing the outward flow of the bile, through ascending infection with bacteria from the intestine, or through the dissemination of micro-organisms from the circulating blood. The result is swelling of the liver, with generalized jaundice, there being seldom any collection of pus or any shrinking of the liver. The treatment can usually be confined to dietetic, physical and medicamentous remedies, surgical aid being required only in special cases.

The social setting of the congress this year was of a more festive character than usual, owing to the fact that the congress was preceded by an academic festival in honor of the fiftieth anniversary of the founding of the society. In spite of the economic depression, more than 1,000 participants appeared. Professor Morawitz gave an historical survey of the evolution of the congress during the fifty years of its existence. Since Frerichs and E. v. Leyden founded the society, it has always furthered national and international research, supported the progress of internal medicine, and disseminated much valuable knowledge among the physicians. While special congresses serve to advance certain specialties, as, for example, the Gesellschaft für Verdauungs- und Stoffwechselkrankheiten, and the Gesellschaft für Kreislaufforschung, the Gesellschaft für innere Medizin remains the great mother society, which keeps its gaze fixed on internal medicine as a whole. The accomplishments of the society have been recorded in a monograph prepared by the Berlin clinician Georg Klemperer, at the request of the society, in which the author calls attention to the progress that the transactions of the congress brought about by supporting the high aims of the society with respect to the authoritative position, the unity and the independence of internal medicine through the ever increasing familiarization with the advanced ideas of psychology. "The knowledge that man, although the object of natural research, obeys, through his psychic make-up, his own laws, secures for the clinician independence of research and of his medical attitude toward the auxiliary sciences."

## BUDAPEST

*(From Our Regular Correspondent)*

April 10, 1932.

### Goethe as a Philosopher and Scientist

At the medical society, professor Dr. Julius Donath gave a memorial address on Goethe as a philosopher. The number of those who know of Goethe's pioneer work in the natural sciences is few. When he edited in 1791 to 1793 the "Beiträge zur Optik" in two volumes, he thought more highly of this work than of his poetry. He created something lasting in the field of physiologic optics, dealing with the subjective symptoms caused by light rays entering the eye and with the color sense.

The close observation of nature was awakened in Goethe by the books in his father's library. The old Johann Kaspar Goethe, whose legal ambitions were not gratified by the patricians of Frankfort-on-Main, withdrew into private life, having inherited a fortune; but the father demanded of his son that he select a practical career and accordingly he matriculated at the faculty of law of Leipzig University. Here, however, he dealt rather with poetry and the occult sciences, which he so enrapturingly utilized in his Faust, in the colloquy of the latter with Wagner, in his meeting with Mephistopheles and in his visit to the witch kitchen. Afterward he moved to the University of Strasbourg, where the professors were not so severe with their students. Here he ardently attended the lectures on anatomy, visited the clinics and even attended a course in obstetrics. He liked to be in the company of medical students. Here he worked, in collaboration with Lavater, on his book entitled "Physiognomische Studien." In 1776, he published his work entitled "Beiträge über Tierschädel"—Contributions on the Animal Skull. In Jena, he took a demonstration course under Professor Löder on the bones and muscles, and soon he was giving lectures on the human osseous system in a drawing school. To his great rejoicing here he discovered the intermaxillary bone, which carries the incisors. This was long known of in zoology but not in anthropology. It was futile for Goethe to accentuate that these "intermediate bonelets" can be seen in young human skulls, because they soon merge with the surrounding bones; but they can be discerned in adult monkeys. Professor Löder accepted this discovery, but the great anatomists Merck, Sömmering, Camper and Blumenbach could not be convinced. From his discovery Goethe forthwith concluded the common origin of man and animals, and thus he was the forerunner of evolution. Officially, the scientific world accorded him recognition only one year prior to his death, when the Kaiserliche Leopoldino Karolinische Akademie had his original treatise with his drawings printed.

There have always been princes and royal courts that valued poetry, arts and science, but the relation between Goethe and August, Prince of Weimar, is unique. Traveling through Frankfort, the prince wished to get acquained with the poet of Werther. The talented and educated prince invited, in 1775, Goethe, as his first minister. Weimar, the capital of the tiny country of about a hundred square miles, became the gathering place of poets, scientists and artists whom Karl August assembled about himself, thus making of Weimar the intellectual center of Germany.

Among the numerous tasks entrusted to Goethe was the promotion of the Ilmenau mine. He took to this work with great fervor and ambition, and began a thorough study of mineralogy and geology in order to win the confidence of his prince. To this end he sought connection with Jena professors and utilized his frequent visits to Carlsbad to study Bohemia from the point of view of mineralogy and geology. The Carlsbad museum, unfortunately visited by few people, contains the original writings of Goethe.

Goethe was the first to recognize the importance of excavated bones and petrifactions in the determination of the age of rocks and periods of the earth.

Particularly important is his botanical treatise "Versuch die Metamorphose der Pflanzen zu erklären," an experiment to explain the metamorphosis of the plants. He recognized that in flowers the pollen and stamen holders are in a state of retrogression. He disagreed with Linné, who proclaimed the invariableness of the species, whereas he was convinced that the botanic forms were flexible and in a position to accommodate themselves to the various influences of the earth. His achievements in research he imparted to his innermost circle of friends, among whom were Merck, Schiller, Herder and Charlotte von Stein.

In the eighties of the past century the science of embryology, founded by Roux, demonstrated that parts of the organism may became transposed and shifted during its development. Goethe's ideas laid down in these treatises were the forerunners of Roux's achievements, and it is undeniable that he raised purely descriptive zoology and botany to the rank of actual sciences.

The term "struggle for existence" originated with Darwin, but its conception was already sharply circumscribed by Goethe with the following words: "All things that come to exist seek space and want to persist; therefore they crowd out one another and shorten their existence." The cell doctrine and the recognition that animal and plant cells are identical we owe to Schwann (1839) and to Brücke, the Vienna physiologist; Goethe foresaw this, in his following declaration: "The organism is a simple, but always a multiple being; it seems to be one, yet it is a conglomeration of independent living beings."

Shortly before his death, Goethe was accorded a great satisfaction, when, in the summer of 1831, he submitted to Geoffrey de St. Hilaire for the French Academy his work "The Metamorphosis of Plants," which was translated into French by Soret under his own supervision, and Hilaire passed the work with the following report: "When Goethe published his work in 1790, the scientific world did not take very much heed of it; it was even regarded as a lapse. In fact, we had to deal with a slip, but such a one as occurs with genius only."

In his optical studies relating to the spectrum, he was led astray by some idealistic preoccupation. He could not accept that white should be composed of several colors. Goethe was unjust when he jeered at Newton's idea in this matter. Goethe's explanation as to the color phenomena was generally recognized, however. His studies relating to the so-called colored shadows are a treasure even today.

## Marriages

RUSSELL C. CARRELL, Des Moines, Iowa, to Miss Marguerite Cheney, in Chicago, March 15.

LINDLEY V. SPRAGUE, Madison, Wis., to Miss Virginia Clement of Glen Ellyn, Ill., May 8.

RICHARD E. MARTIN, Two Rivers, Wis., to Miss Catherine O'Brien of Milwaukee, May 24.

DEAN K. STINSON, Rochester, Ind., to Miss Elizabeth Alice Whitaker of Detroit, April 9.

HERBERT J. WITTE, Marathon, Iowa, to Miss Eola Friedman of St. Paul, March 15.

## Deaths

**Orlando Henderson Petty** ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1904; member of the House of Delegates of the American Medical Association, 1926-1928; professor of diseases of metabolism, University of Pennsylvania Graduate School of Medicine; member of the American College of Physicians; past president of the Philadelphia County Medical Society; formerly director of the department of public health of Philadelphia and assistant medical inspector in the division of communicable diseases, bureau of health; served during the World War; was awarded the Congressional Medal of Honor, the Distinguished Service Cross, the French Croix de Guerre with Palm and the Italian War Cross; chief of the department of diseases of metabolism, Philadelphia General Hospital; consultant in diseases of metabolism and malnutrition, Shriners' Hospital for Crippled Children; consultant in metabolic disorders, Rush Hospital for Consumptives; author of "Diabetes—Its Treatment by Insulin and Diet"; aged 58; died, June 2, of a self inflicted bullet wound.

**Richard Ward Westbrook,** New Canaan, Conn.; Yale University School of Medicine, New Haven, 1891; fellow of the American College of Surgeons; professor of orthopedic surgery, Long Island College Hospital, Brooklyn, 1902-1906; formerly on the staffs of the Bethany Deaconess Hospital, and St. Mary's Hospital, Brooklyn, and the Brooklyn Hospital; aged 68; died, May 11, of coronary disease.

**John Markley Ross,** Richland Center, Wis.; St. Louis College of Physicians and Surgeons, 1905; member of the State Medical Association of Wisconsin; past president of the Richland County Medical Society; served during the World War; aged 49; died, May 7, in the Richland Hospital, of meningitis following an otitis media and mastoiditis.

**Edward Winfield Howard,** Fairmont, W. Va.; Jefferson Medical College of Philadelphia, 1894; member of the West Virginia State Medical Association; past president of the Marion County Medical Society; formerly on the staffs of the Cook Hospital and the Fairmont No. 3 Hospital; aged 61; died, April 16, of angina pectoris.

**James Henry Carr** ⊕ Buffalo; University of Buffalo School of Medicine, 1900; fellow of the American College of Surgeons; served during the World War; attending surgeon to the Emergency Hospital of the Sisters of Charity and St. Francis Asylum for Aged; aged 63; died, May 21, of abscess of the lung.

**Jesse Edwin Hahn,** Warsaw, Ohio; Medical College of Ohio, Cincinnati, 1901; member of the Ohio State Medical Association; for many years member of the school board; formerly member of the county board of health; aged 61; died, May 4, in the Coshocton (Ohio) City Hospital, of heart disease.

**Thomas Marshall Jones,** Alexandria, Va.; University of Maryland School of Medicine, Baltimore, 1870; member of the Medical Society of Virginia; for many years coroner; aged 83; died, May 11, in the Georgetown University Hospital, Washington, D. C., of hypertrophy of the prostate and uremia.

**Arthur J. Burridge,** Winnipeg, Manit., Canada; Manitoba Medical College, Winnipeg, 1897; associate professor of medicine at his alma mater; fellow of the American College of Physicians; for many years on the honorary attending staff of the Winnipeg General Hospital; aged 56; died, March 15.

**Perry William McLaughlin** ⊕ Norristown, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1907; served during the World War; aged 49; died, May 20, in the Veterans' Administration Hospital, Coatesville, of a self-inflicted wound which severed an artery in his groin.

**Moses A. Karol** ⊕ Decatur, Ill.; Loyola University School of Medicine, Chicago, 1919; served during the World War; on the staffs of the Wabash Employees' Hospital, St. Mary's Hospital, and the Decatur and Macon County Hospital; aged 38; died, April 24, in Chicago, of heart disease.

**Frank Leon Slater** ⊕ Rochester, N. Y.; Syracuse University College of Medicine, 1920; fellow of the American College of Surgeons; on the staffs of the Rochester General Hospital and the Monroe County Hospital; aged 36; died, April 6, of cyanide poisoning, self-administered.

**Anstruther Davidson** ⊕ Los Angeles; University of Glasgow Medical Faculty, Glasgow, Scotland, 1881; professor emeritus of medicine (dermatology) College of Medical Evangelists; for many years on the staff of the Los Angeles General Hospital; aged 72; died, April 3.

**Alexander Brown Kalbaugh** ⊕ Western Port, Md.; University College of Medicine, Richmond, Va., 1907; served during the World War; formerly secretary of the board of health of Western Port; aged 48; died suddenly, May 15, of coronary embolus.

**George John Van Vechten,** Blakely, Pa.; Albany (N. Y.) Medical College, 1891; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 66; died, May 1, in the Mid-Valley Hospital, Peckville, of mastoid infection.

**Thomas Lovell McRitchie,** *Chatham, Ont., Canada;* Western University Faculty of Medicine, London, 1889; health officer of Chatham and coroner of the district; formerly member and chairman of the board of education; aged 69; died, March 19.

**Albert G. Hamilton** ⊕ Thermopolis, Wyo.; Medical College of Ohio, Cincinnati, 1888; fellow of the American College of Surgeons; president of the Hot Springs County Medical Society; manager of the Hopewell Hospital; aged 68; died, April 7.

**William B. Wakefield** ⊕ Peoria, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, Chicago, 1907; on the staff of the Methodist Hospital of Central Illinois; aged 47; died, May 11.

**Henry Ernest Beck** ⊕ Moline, Ill.; National Medical University, Chicago, 1906; served during the World War; aged 65; on the staff of the Moline Public Hospital, where he died, May 16, of injuries received in an automobile accident.

**Hobert Le Gear Collins,** New Westminster, B. C., Canada; University of Toronto Faculty of Medicine, 1900; served with the Canadian Army during the World War; aged 51; died, February 26, in the Royal Columbian Hospital.

**Samuel N. Harvey** ⊕ Chicago; Bellevue Hospital Medical College, New York, 1875; aged 79; on the staff of the Illinois Central Hospital, where he died, May 20, of acute hepatitis.

**Edward Eldred Kellogue Chapman,** Defiance, Ohio; Hahnemann Medical College and Hospital, Chicago, 1888; member of the Ohio State Medical Association; on the staff of the Defiance Hospital; aged 73; died, March 26.

**Constant Perkins Wilson, Jr.,** Fort Smith, Ark.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the Arkansas Medical Society; served during the World War; aged 49; died, April 1, of pneumonia.

**Charles Daniel Werley** ⊕ Reading, Pa.; Jefferson Medical College of Philadelphia, 1889; secretary and for many years member of the school board of Topton, Pa.; aged 69; died, April 19, of chronic pulmonary tuberculosis.

**W. Oliver McLane,** Frostburg, Md.; University of Maryland School of Medicine, Baltimore, 1892; member of the Medical and Chirurgical Faculty of Maryland; aged 63; was found dead, May 14, of heart disease.

**J. Ernest Brown** ⊕ Lake Providence, La.; Atlanta College of Physicians and Surgeons, 1901; bank president; formerly member of the state board of health; aged 53; died, May 6, of a self-inflicted bullet wound.

**Jasper J. Bland,** Beaumont, Texas; University of Louisiana Medical Department, New Orleans, 1882; formerly chief diagnostician for the state board of health of Louisiana; aged 81; died, March 30, of pneumonia.

**Joseph Vincent Missett** ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; for many years on the staff of the Misericordia Hospital; aged 61; died suddenly, May 14, of angina pectoris.

**Silvanus Blanchard Newton,** Chevy Chase, Md.; University of Pennsylvania School of Medicine, Philadelphia, 1894; served during the World War; aged 61; died, April 30, of streptococcus septicemia.

**James Franklin Crump,** Pine Bluff, Ark.; University of Arkansas School of Medicine, Little Rock, 1905; member of the Arkansas Medical Society; aged 58; died, May 6, of cerebral hemorrhage.

**Victor Sulviro Merritt,** Springfield, Mass.; Medico-Chirurgical College of Philadelphia, 1897; member of the Massachusetts Medical Society; aged 69; died, May 2, of coronary thrombosis.

**George De Witt Culver** ⊕ San Francisco; University of California Medical Department, 1903; member of the American Dermatological Association; aged 55; died, May 9, of pernicious anemia.

**William Thomas Jones,** Fort Davis, Texas; University of Georgia Medical Department, Augusta, 1884; aged 79; died, April 26, in Galveston, of hypertensive heart disease and arteriosclerosis.

**Howard Clarence Minor,** Steubenville, Ohio; Ohio Medical University, Columbus, 1897; member of the Ohio State Medical Association; aged 62; died, May 9, in Cleveland, of heart disease.

**Cornell Nathan Smith** ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1905; on the staff of the General Hospital; aged 53; died, April 26, of uremia and hypertensive heart disease.

**Sidney A. Stokes,** Cornersville, Md.; Jefferson Medical College of Philadelphia, 1884; member of the Medical and Chirurgical Faculty of Maryland; aged 69; died, May 19, of heart disease.

**Adrian Peter Van Deinse,** Sayville, N. Y.; Albany Medical College, 1886; aged 70; died, April 24, in a sanatorium at Brentwood, of arteriosclerosis, myocarditis and acute pulmonary edema.

**Horace Bunnell Boyd,** Richmond, Ind.; Starling Medical College, Columbus, Ohio, 1881; member of the Indiana State Medical Association; aged 76; died, May 14, of laryngeal tuberculosis.

**Charles W. Tidball,** Norwood, Ohio; Eclectic Medical Institute, Cincinnati, 1879; aged 75; died, May 6, in the Cincinnati General Hospital, of cerebral hemorrhage and pneumonia.

**Robert Tyre Macdonald,** Cowansville, Que., Canada; McGill University Faculty of Medicine, Montreal, 1881; aged 75; died, February 23, at the home of his son in Montreal.

**Anne Tefft Bingham** ⊕ New York; Syracuse University College of Medicine, 1900; member of the American Psychiatric Association; aged 56; died, May 20, of heart disease.

**George Schoeps,** Paris, France; University of the City of New York Medical Department, 1891; member of the Medical Society of the State of New York; aged 74; died, April 2.

**J. Charles Schlicht,** North McAlester, Okla.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1903; aged 50; died, April 2, of acute septic endocarditis.

**George H. Parshall,** Freeport, N. Y.; Long Island College Hospital, Brooklyn, 1884; formerly member of the state legislature; aged 88; died, April 2, of pulmonary edema.

**William Hugus Keck,** Santa Cruz, Calif.; Western Pennsylvania Medical College, Pittsburgh, 1889; aged 82; died, March 24, of arteriosclerosis, myocarditis and nephritis.

**Arthur William Wheeler** ⊕ Toledo, Ohio; Toledo Medical College, 1902; served during the World War; aged 57; died, May 9, of gangrenous appendicitis and peritonitis.

**John T. Boldrick** ⊕ Lebanon, Ky.; Louisville and Hospital Medical College, 1908; proprietor of the Boldrick Infirmary; aged 47; died, May 6, of cerebral hemorrhage.

**Joseph Francis Higgins** ⊕ Trenton, N. J.; Medico-Chirurgical College of Philadelphia, 1902; aged 55; died, April 23, in a hospital at Philadelphia, of toxic poisoning.

**Godfrey F. Hamlen,** Rochester, Mich.; Michigan College of Medicine and Surgery, Detroit, 1896; aged 66; died, May 5, in the Harper Hospital, Detroit, of diabetes mellitus.

**John Henry Edmison,** Brandon, Manit., Canada; Manitoba Medical College, Winnipeg, 1898; on the staff of the Brandon General Hospital; aged 58; died, March 22.

**James Benono Beckett,** Spiro, Okla.; Memphis (Tenn.) Hospital Medical College, 1903; aged 70; died, March 10, following an operation for hypertrophy of the prostate.

**Ralph Elmer Jenkins** ⊕ Pittsburg, Kan.; Ensworth Medical College, St. Joseph, Mo., 1908; aged 46; died, May 4, in St. Luke's Hospital, Kansas City, of heart disease.

**Joseph Morley Jory,** St. Catharines, Ont., Canada; Trinity Medical College, Toronto, 1894; for many years member of the board of education; aged 64; died, March 21.

**Frank A. Morrison,** Uhrichsville, Ohio; Pulte Medical College, Cincinnati, 1890; aged 72; died, May 5, in the Twin City Hospital, Dennison, of chronic myocarditis.

**Everett Layton Pirkey,** Louisville, Ky.; University of Louisville School of Medicine, 1911; served during the World War; aged 48; died, May 16, of heart disease.

**Eugene B. Appelget,** Chicago; St. Joseph (Mo.) Hospital Medical College, 1880; aged 85; died, May 24, of injuries received when he was struck by an automobile.

**Marcus Clifford Reeves** ⊕ Vidalia, La.; Baltimore University School of Medicine, 1897; aged 57; died, May 4, in Natchez, Miss., of chronic interstitial nephritis.

**Dennis Alexis Myers** ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; aged 64; died, March 9, in St. Joseph's Hospital, of influenza and pneumonia.

**John V. Bower,** Indianapolis; Butler University Medical Department, Indianapolis, 1880; aged 81; died, April 28, of chronic myocarditis and interstitial nephritis.

**Frank Merton Robertson Spendlove,** Westmount, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1881; aged 77; died, March 22.

**Berkeley Sherwood-Dunn,** Nice, France; Bellevue Hospital Medical College, New York, 1884; served during the World War; aged 64; died, March 29.

**Duncan Hamilton McAllister,** Sussex, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1898; aged 60; died, March 6, of pneumonia.

**Granville Hampton Richards** ⊕ Port Deposit, Md.; University of Maryland School of Medicine, Baltimore, 1908; aged 48; died, May 10, of heart disease.

**Elihu Ashby Fluesmeier,** Wright City, Mo.; University of Missouri School of Medicine, Columbia, 1891; aged 61; died, May 4, of heart disease.

**Charles B. Marks,** Grants Pass, Ore.; Detroit College of Medicine, 1890; veteran of the Spanish-American War; aged 65; died suddenly, March 27.

**Carl J. Schneider,** New York; University of the City of New York Medical Department, 1884; aged 73; died, March 31, of carcinoma of the tongue.

**Samuel Nelson Irwin** ⊕ New York; University of the City of New York Medical Department, 1892; aged 69; died, May 5, of heart disease.

**Henry B. Wright,** Gainesville, Ga.; Meharry Medical College, Nashville, Tenn., 1914; aged 42; died, May 6, of cerebral hemorrhage.

**Wallace Allison Reed** ⊕ Covina, Calif.; University and Bellevue Hospital Medical College, New York, 1913; aged 42; died, March 27.

**Alexander M. Cowden,** Washington, Iowa; College of Physicians and Surgeons, Keokuk, 1880; aged 77; died, April 16, of senility.

**James Walsh,** Mount Stewart, P. E. I.; University of Pennsylvania School of Medicine, Philadelphia, 1877; died, February 26.

**John W. Chamberlain,** Wyalusing, Pa.; Jefferson Medical College of Philadelphia, 1886; aged 72; died, May 1, of myocarditis.

**Ursin Prejean,** Carencro, La.; University of Louisiana Medical Department, New Orleans, 1877; aged 76; died, March 27.

**David Thompson** ⊕ Denver; Denver College of Medicine, 1891; aged 75; died, April 30, in Long Beach, Calif.; of heart disease.

**George E. Munroe** ⊕ New York; College of Physicians and Surgeons in the City of New York, 1877; died, April 3.

**Jason Turner,** Heuvelton, N. Y.; Detroit Homeopathic Medical College, 1873; aged 84; died, April 4, in Ogdensburg.

**Robert Withers Poellnitz,** Medford, Ore.; Kentucky School of Medicine, Louisville, 1908; aged 53; died, March 23.

**Horace Porter Gillingham,** Brooklyn; New York Homeopathic Medical College and Hospital, 1894; died, April 3.

**Joel A. Cooper,** Bryson City, N. C. (licensed, North Carolina, by years of practice); aged 84; died, February 11.

**Jonas Jacobs,** New York; College of Physicians and Surgeons, Baltimore, 1886; aged 69; died, April 1.

## Bureau of Investigation

### ABORTIFACIENT PASTES

### The Exploitation and Dangers of Pastes Sold for Producing Therapeutic Abortion

There are on the European market various pastes that are exploited as simple means of performing therapeutic abortions. The most popular ones are "Interruptin," devised by a Berlin pharmacist, Heiser, and "Provocol," the formula of Dr. J. H. Leunbach, a gynecologist of Copenhagen. The Heiser product appears to be secret in composition. Leunbach has published (*Monatschr. f. Geburtsh. u. Gynäk.* **87**:509, 1931) the formula of his paste, which is given as:

| | | |
|---|---|---|
| Olive oil | 120 | gm. |
| Cacao butter | 10 | gm. |
| Potassium hydroxide | 18 | gm. |
| Sodium hydroxide | 7 | gm. |
| Iodine | 2.5 | gm. |
| Potassium iodide | 7.5 | gm. |
| Tincture of benzoin | 10 | gm. |
| Tincture of myrrh | 5 | gm. |
| Thymol | 0.25 | gm. |
| Distilled water, to make | 250 | gm. |

This paste, known in Europe as Provocol, is now on the American market under the name "Leunbach' Paste." It comes in a collapsible tube with a turn-key and an intra-uterine cannula to be attached to the mouth of the tube.

For the past year or two, physicians in Germany have been urged to employ these pastes as an allegedly simple means of performing therapeutic abortions. It is claimed that the method can readily be used in the physician's office and the patient return to her home immediately and without danger. The instructions to inject the uterine cavity, through the cannula, from 15 to 50 cc. of the paste, the amount injected depending on the duration of the pregnancy. The claim is made that within thirty-six hours after the injection, the uterus generally will empty itself with a moderate amount of bleeding and with little pain, and in a manner that is even smoother than a spontaneous abortion.

The preparation Leunbach' Paste, now on the American market, is put out by the Vauka Chemical Works, Inc., of Newark, N. J. A leaflet sent out by this company has this to say about the product:

> "LEUNBACH' PASTE consists of a soap base in which iodine, potassium iodide, thymol and astringents are incorporated. It is packed in collapsible tubes with turn-key and applied by means of an especially constructed intrauterine metal cannula with a rounded tip.
>
> "LEUNBACH' PASTE is formulated on the principle of producing a continuous action upon the uterine mucous membrane, and in this way bringing about a separation of the ovum. It is indicated in spontaneous abortions with retention of the entire, or parts of the ovum. Its chief indication, however, is the induced arrest of the natural process, for therapeutic reasons. It offers distinct advantages over the usual curettage."

Leunbach in a recent article (*Monatschr. f. Geburtsh. u. Gynäk.* **90**:446, 1932) maintains that in using these pastes it is necessary, in order to avoid danger, that they must be free from air. He also states that as they are not antiseptic enough to guarantee against sepsis, the cervical canal must be free from pathogenic bacteria. Further, they should not be used during the first six weeks of gestation.

It is not surprising, in view of the enthusiastic reports of the manufacturers and advocates of the various pastes of this type, together with the obvious simplicity in their use, that the products have become popular. Foreign medical literature, however, indicates that ideal results from the use of such pastes —that is, spontaneous expulsion of the ovum without much pain or bleeding—are obtainable in only about one-fourth of the cases. In many instances, the uterine contractions are unusually painful, and the period of expulsion may last for five or six days. In others, there is severe hemorrhage and many instances are on record in which the uterus had to be emptied instrumentally or digitally.

Some patients develop fever and, in all cases, there is danger of perforation of the uterus, with the almost inevitable peritonitis. In one case reported by Seitz (*Zentralbl. f. Gynäk.* **56**:885, 1932), peritonitis resulted not from perforation, but from penetration of the infection through the uterine wall to the peritoneum of the culdesac of Douglas.

Within a comparatively short period of time, there have recently appeared in German literature reports of twenty-five deaths that have resulted from the use of these abortifacient pastes. Doubtless, more fatalities have occurred than have been reported. Some of the deaths, according to the reports, were caused by air embolism and others by fat embolism. Kustner (*Zentralbl. f. Gynäk.* **56**:754, 1932) has proved experimentally that in some cases the death was attributable to the poisoning by the paste (Interruptin) itself. Kustner injected into the veins of guinea pigs from 1 to 1.5 cc. of the filtrate of a 1:75 solution of Interruptin, and the animals died within from a few minutes to three hours. As from 30 to 50 cc. of Interruptin is supposed to be injected into the uterine cavity to produce abortion, death might ensue if 1 to 1.5 cc. of the paste finds its way into the general circulation. The paste, Interruptin, is said to quickly liquify in the uterus, because of the body heat, and its entrance into the bloodstream is thus favored, especially if it reaches the placental site.

Naturally, the use of these pastes has a medico-legal significance. It is reported by Brack (*Zentralbl. f. Gynäk.* **56**:687, 1932) that two physicians in Hamburg used Interruptin to produce abortions and both patients died within a few minutes. The judge before whom the physicians were tried was lenient, saying that he did not hold them to blame so much as the blatant advertisements of the manufacturers. He warned, however, that in the future he would deal severely with physicians who used such pastes.

As has already been stated, physicians in this country are now receiving circulars extolling the alleged virtues of Leunbach' Paste. These describe how readily the paste may be used to produce abortions for therapeutic purposes. It does not take much stretch of the imagination to believe that physicians and midwives who make a business of performing abortions illegally will turn to such pastes, because of their simplicity. It is not inconceivable that some reputable physicians, now in dire financial straits, may be tempted to use this simple means for inducing abortion when the therapeutic indications are not clear.

In the matter already quoted from the Vauka Chemical Works' circular on Leunbach' Paste, it will be noted that the physician is told that the paste is "indicated in spontaneous abortions with retention of the entire, or parts, of the ovum." Such a statement may easily lead to fatalities, because as Wagner has pointed out (*Monatschr. f. Geburtsh. u. Gynäk.* **90**:445, 1932), such pastes are most dangerous when used in cases where an abortion is in progress and bleeding is taking place. In these cases, the paste might easily be injected into open veins in the placental site and lead to paste embolism or to fatal poisoning.

## Correspondence

### INFLUENCE OF HEREDITY ON CANCER

*To the Editor:*—Referring to your editorial on the influence of heredity on cancer (THE JOURNAL, May 7), may I call attention to a neglected method for determining the importance of hereditary factors in the etiology of cancer and other tumor formations. I have in mind the method based on the study of twins.

As all know, twins are of two kinds, monozygotic and dizygotic. Monozygotic twins have the same hereditary endowment, whereas dizygotic twins, like siblings, do not have an identical heredity, although they are the offspring of the same parents.

If cancer occurs on the basis of heredity as an essential etiologic factor, then in cases of monozygotic twins, if one is affected, the other will be likely to be similarly affected, even as regards the type of growth and its localization. In cases of dizygotic twins, the chance is greatly against such correspondence.

It would be a simple matter for any of the cancer research foundations or large clinics to investigate cases of cancer in twins and to derive from a comparison of monozygotic and dizygotic twins a measure of the importance of heredity in the etiology of cancer.

The literature contains, here and there, reports of such cases, but in order to settle the issue it will be necessary to collect at least one hundred pairs of twins with cancer. In other words, there must be an amount of this type of material that would be sufficient for statistical treatment.

About two years ago I undertook a research of mental disorders in twins for a similar purpose. In the course of the study I came across a case of a pair of monozygotic twins born in 1849. Both twins had had attacks of manic-depressive psychoses, for which they were treated in state hospitals in Pennsylvania. It so happens that they both eventually died within a few months of each other of carcinoma of the right side of the face.

This case was referred to me by Dr. S. M. Miller, superintendent of the Norristown State Hospital, Norristown, Pa.

Aaron J. Rosanoff, M.D., Los Angeles.

Comment.—The occurrence of cancer in identical twins is of great significance. Unfortunately, such an occurrence is so rare that it has not been possible to secure enough cases to give important results. Up to the present, only about half a dozen such cases have been described in the medical literature of the entire world. Therefore, it is improbable that it would be possible to collect anything like the hundred pairs of twins with cancer desired for statistical study. A serious difficulty in interpreting the significance of the few cases already recorded in which identical twins have developed identical tumors lies in the fact that no one seems to have thought it important to report the equally significant occurrence of cancer in one of a pair of identical twins and its absence in the other.—Ed.

## PUBLIC HEALTH INTELLIGENCE OF THE HEALTH ORGANIZATION OF THE LEAGUE OF NATIONS

*To the Editor.*—May I through the courtesy of your columns bring to the notice of public health administrators the facilities that exist in the Health Organization of the League of Nations for the supply of information relating to the detailed application of different public health methods in various countries. In addition, comparative information is available with regard to epidemiologic statistics and public health legislation.

The Health Organization is willing to supply, as far as possible, data on these branches of preventive medicine.

Inquiries are, however, limited to those from the heads of large administrations or the heads of scientific institutions, who should indicate the purpose for which the information is required in view of the amount of work that unconsidered requests necessarily involve. Furthermore, inquiries should be limited to information that is not already in the medical press.

All inquiries should be addressed to the Medical Director, Health Section, marked "Public Health Intelligence," League of Nations, Geneva, Switzerland.

Ludwik Rajchman, Geneva.
Medical Director, Health Section,
League of Nations.

## "TREATMENT OF HEMOPHILIA BY AN OVARIAN EXTRACT BY BIRCH'S METHOD"

*To the Editor.*—Female sex hormone therapy in hemophilia seems to be proving of distinct value. Too great care, therefore, cannot be exercised in scrutinizing all reports of this treatment of hemophilia before permitting their publication.

A case in point is the report by Drs. Alvin G. Foord and Ben R. Dysart in The Journal, April 23. They here reported the stoppage of bleeding by an injection of ovarian extract, the hemorrhage ceasing within five minutes of the injection. No one familiar with this therapy would expect or credit an effect of the ovarian extract within five minutes of its administration. The bleeding recorded in the patient's family is quite inadequate to establish a diagnosis of hemophilia.

I have closely observed the use of ovarian extract therapy on several severely hemophilic patients by Dr. Charlotte Wiedemer of Cincinnati during the past year. The treatment has definite value, although it is by no means entirely corrective for the hemophilic condition. The effect of a single injection is slight, full benefit coming only after injections have been given every two or three days for a week or more.

C. A. Mills, M.D., Cincinnati.
Professor of Experimental Medicine,
University of Cincinnati College
of Medicine.

# Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### IMPOTENCE

*To the Editor:*—Recently a single man, aged 24, came to me for medical advice, as for the past two and a half years he has been unable to have an erection. In discussing the condition with this patient, he tells me he has never had intercourse more than once monthly, and that while he has masturbated to some extent he feels that he has done no more of it than is indulged in by the average individual. A complete physical examination reveals nothing abnormal other than the symptoms mentioned, except that the hearing is slightly deficient. I am at a loss as to what should be done. Can you outline a course of treatment that might enable me to be of service to him? I may say here that this man is of keener intelligence than the average individual. Please omit name and city.

M.D., Mississippi.

Answer.—From the history, it may be assumed that the presence of syphilis, diabetes and cerebrospinal conditions have been ruled out. It is also evident that the masturbation is not the cause of the impotence.

The history does not give clear information as to whether the inability to have an erection is of recent origin or whether it has existed from the commencement of the patient's sexual life. This is important as regards prognosis, as a patient who was at one time normal in this regard is almost certain to get well with proper treatments, while those who have always been weak sexually, showing that there might possibly exist a congenital weakness of all the sexual centers, give a rather doubtful prognosis. However, the fact that the patient has indulged in masturbation makes the prognosis better, as it indicates that the patient has sexual feelings. It is also important to establish whether the patient could obtain an erection during masturbation, as this would also indicate that there is no gross organic deficiency in the sexual apparatus to prevent an erection.

The main point in all cases of impotence is accurate diagnosis. It must be definitely established by a competent specialist whether there exists any local congestion in the prostate or prostatic urethra. The former can be determined by an examination of the prostate by rectum, and the latter by inspecting the prostatic urethra with the cysto-urethroscope, always remembering that it is not necessary to find gross pathologic changes by this examination, but that a mere congestion may be sufficient to cause all the symptoms.

If such local congestions are found, it is of the utmost importance to remove them before starting any stimulating treatment. In this case the patient should be treated every five or six days by gentle massage of the prostate and instillations of weak silver nitrate solution with the Bangs sound syringe. The first solution employed should be 1:3,000, and this strength may gradually be increased until a strength of 1:500 is reached. During this preliminary treatment, the patient must avoid tea, coffee, alcoholic liquors and all sexual excitements, especially ungratified sexual excitements.

Many patients become absolutely well as soon as the local congestions have been removed. Others, however, especially if the condition has lasted for a long time, may need stimulating treatment, as there has developed a weakening of the muscles involved in the act of connection.

The following stimulating treatment may be employed not only in the cases just mentioned but also in those cases in which there is no local congestion but a weakened condition of the sexual muscles.

The stimulating treatment consists in the use of the sinusoidal-faradic current of moderate rapidity and as strong as the patient can bear without any pain. It is important that no pain be caused and that the patient be informed of this fact, as some patients will believe that the more of the electricity they get, the better, and will therefore allow themselves to receive strong currents without a murmur, which is harmful. One cable is connected with a rectal electrode and the other with a wet-sponge electrode applied to the perineum and the current is allowed to pass for about ten minutes. Treatments may be given every third or fourth day.

At present there is no aphrodisiac, whether made from a testicular extract or otherwise, that has any beneficial effect in these cases. Whatever good results have been reported were either accidental or psychic.

The vast majority of cases will respond favorably to the treatment outlined, but occasionally cases are seen in which there is a definite psychic inhibition, such as fear of pregnancy, fear of venereal disease or fear of being discovered in the act. Such persons must receive common sense general treatment, but, while admitting the possibility of a psychic impotence, the physician must not make the mistake so often made of considering every case of impotence psychic and as a result neglect to submit the patient to a thorough examination for organic conditions.

## TREATMENT OF SYPHILIS

*To the Editor:*—Will you kindly advise me whether an individual who has received intensive antisyphilitic treatment, consisting of 145 neoarsphenamine and bismuth injections for one year and in whom no change in the original 4+ Wassermann reaction has materialized, should receive further treatment and, if so, for how long a time, if the Wassermann reaction remains constantly positive without any variation? The spinal fluid is positive. Kindly omit name. M.D., New York.

ANSWER.—After a year of such strenuous treatment, a rest is indicated and a thorough neurologic examination before further treatment can be planned. If there is a trend toward dementia paralytica and no contraindications to tryparsamide are found, a course of this drug alternating with mercury should be given. If the nervous involvement is of some other type, after a rest of at least two months less strenuous therapy with alternation of one of the arsphenamines and mercury may be resumed, iodides being given before the course of arsphenamine and during the administration of mercury. The blood reactions should be regularly noted and an examination of the spinal fluid should be made once a year. The general good health of the patient is the first desideratum. If a second year of treatment shows but slight improvement, some form of fever therapy may be used. This patient should have some treatment as long as he lives, though it may be but one course a year. It is often advisable, however, not to discourage him by telling him this.

## COMPENSATION FOR LOSS OF VISION

*To the Editor:*—May I ask a question concerning the interpretation of the standard method approved by the House of Delegates at the session of the American Medical Association in Atlantic City in 1925, in determining impairments to the vision of a patient who has a corneal opacity near the periphery of the pupil? This corneal opacity casts a shadow on the visual field and produces some shadowing near the periphery when the field is taken by the usual perimetric methods. Has it been the intention of the committee in estimating visual impairments to include this as a disturbance of the field of vision, or have visual field disturbances reference only to actual pathologic changes in the field, such as constriction of the field due to disease of the optic nerve, or the results of acute retinitis and other pathologic conditions of the retina? In interpreting corneal opacities our industrial commission is insisting that, in addition to the reduction of visual acuity which results, a visual field factor be applied as well. Could you advise me what the intention of the committee was with reference to such corneal opacities?

HARRY WINKLER, M.D., Charlotte, N. C.

ANSWER.—It was not the intention of the committee to include visual field defects due to opacities of the cornea. If the opacity is sufficiently central to cause an interference with the visual acuity the compensation would be adequate to care for the damage done. But if the opacity is eccentric to the pupillary area, it is questionable whether a "shadow on the visual field" could be estimated with sufficient accuracy for purposes of compensation. Furthermore, on page 9 of the compensation report the second paragraph states that "compensation for loss in industrial visual efficiency as provided for above does not include compensation for any cosmetic defect. . . . Additional compensation should be awarded for such losses when not specifically provided for by statute." Consequently, it would seem to the committee that such corneal opacity should be compensated for on the basis of a cosmetic defect rather than a "shadow on the visual field."

## ADMINISTRATION OF ARSPHENAMINE

*To the Editor:*—Does arsphenamine cause sclerosis and obliteration of veins more frequently than neoarsphenamine? If it does, can anything be done to prevent this action? After sclerosis has occurred in veins as a result of arsphenamine therapy, is there any adequate form of treatment that will make them normal again?

HARVEY L. JORGENSON, M.D., Kenosha, Wis.

ANSWER.—There is no more sclerosis and obliteration of veins caused by arsphenamine than by neoarsphenamine, if the preparation is given properly. The average case of sclerosis of the veins following the use of arsphenamine is due to improper percentage of alkali in the solution. If one is careful to follow the technic advised by the United States Public Health Service, 0.85 cc. of tenth normal sodium hydroxide to each tenth of a gram of arsphenamine, the solution that results will not cause irritation of the veins. Moreover, in using a tenth normal solution of sodium hydroxide one should be careful to have it retitrated from time to time, as possibly from evaporation or other cause it may become more concentrated and then the preparation would be too alkaline and would cause an endophlebitis with resultant sclerosis. If one is using arsphenamine in the treatment of syphilis, it is well to give it by the gravity method with a two way valve cock, using physiologic solution of sodium chloride first to see that the needle is in the vein and following up the administration of the arsphenamine by thoroughly flushing out the vein with a further larger amount of saline solution. This would also tend to obviate any damage from a too alkaline solution of the arsphenamine. Once sclerosis has formed in the veins, there is nothing to be done for them.

## SWELLING OF LIPS

*To the Editor:*—A girl, aged 17 years, had an attack in which her lips became swollen, bluish and painful. Thinking of angioneurotic edema, I gave her ephedrine sulphate, which did not relieve the condition. She felt well otherwise. I prescribed calcium and salts, and the swelling subsided slowly. Itching, peeling and discomfort in the lips are still present. I have advised changing her brand of toothpaste to a mild, nonirritating brand. Can I do anything more to relieve her? What tests can be done to help make a diagnosis? Please omit name.

*M.D., Wisconsin.*

ANSWER.—The swelling might well have been due to angioneurotic edema. Against this assumption, however, is the fact that no previous attacks had occurred and that after the swelling subsided peeling took place, which is uncommon in true angioneurotic edema and makes one suspicious of some infectious process or an insect bite or trauma rather than hypersensitivity. The patient should be watched for further attacks, if any. If swellings recur, the diet should be scrutinized, especially for some unusual food. Contact with some irritant, such as a cosmetic, should be thought of. Drug idiosyncrasy must also be taken into account. Protein sensitization tests are frequently successful in angioneurotic edema; elimination diets are often of great help. For symptomatic treatment of the swellings probably the best is epinephrine hydrochloride, 1 : 1,000, from 0.5 to 1 cc., subcutaneously; ephedrine hydrochloride by mouth, from 0.025 to 0.050 Gm. (⅜ to ¾ grain) comes next. Administration of calcium is harmless, though its efficacy is questionable.

## COLD FEET

*To the Editor:*—A girl about 9 years of age has cold feet. The mother says that as a baby the child had to have warm socks at times when other children were wearing none. The girl is normal in every ordinary way: well developed, a good scholar, good disposition and all that sort of thing. There is no evidence of unbalanced circulation, excepting at the feet. Please suggest an explanation and treatment to make skating and other sports more enjoyable. Please omit name.

M.D., Connecticut.

ANSWER.—With the unusual coldness of the feet, coarctation should be excluded as a possible cause of lessened blood supply. The color reactions to cold should be carefully studied to exclude early manifestations of Raynaud's disease. Diathermy might be tried over the area of the second, third and fourth lumbar ganglions to see whether the temperature of the feet becomes normal. The cold feet may be due to a hyperactivity of the sympathetic nervous system. Unless something more than cold feet is found, one may simply resort to additional thickness of stockings, together with an attempt to increase vascular tone by contrast baths to the feet, hot thirty seconds, followed immediately by cold fifteen seconds, hot fifteen, cold fifteen and hot thirty, twice a day.

In skating, constricting straps about the feet and ankles should be avoided.

# *Council on Medical Education and Hospitals*

## COMING EXAMINATIONS

ALABAMA: Montgomery, July 11. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec, Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

ARIZONA: Phoenix, July 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave, Phoenix.

CALIFORNIA: San Francisco, July 11-14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, July 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Regular.* Hartford, July 12-13. *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 29-30. *Regular.* Washington, July 11-12. Sec, Dr. W. C. Fowler, 203 District Bldg., Washington.

HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Room 48 Young Bldg, Honolulu.

ILLINOIS: Chicago, June 28-July 1. Supt., Mr. Paul B. Johnson, Springfield.

INDIANA: Indianapolis, June 21-23. Sec., Dr. William R. Davidson, 413 State House, Indianapolis.

KANSAS: Kansas City, June 21-22. Sec., Dr. C. H Ewing, Larned.

MAINE: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr, 192 State St., Portland.

MARYLAND: Baltimore, June 21-24. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, July 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

MINNESOTA: Minneapolis, June 21-23. Sec., Dr. E. J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, June 28-29. Asst. Sec, Dr. R. N. Whitfield, Jackson.

NATIONAL BOARD OF MEDICAL EXAMINERS: Examinations in Parts I and II will be held at all centers where there are five or more candidates, but not at Durham, Minneapolis, nor New Haven, June 27-29. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

NEW JERSEY: Trenton, June 21-22. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

NEW YORK: Albany, Buffalo, New York, Syracuse, June 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 State Education Bldg, Albany.

NORTH CAROLINA: Raleigh, June 20. Sec, Dr. John W. MacConnell, Davidson.

NORTH DAKOTA: Grand Forks, July 5-8. Sec, Dr. G. M. Williamson, Grand Forks

OREGON: Portland, July 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

PENNSYLVANIA. Philadelphia and Pittsburgh, July 5-9. Sec., Mr. Charles D. Koch, Dept. of Public Instruction, Harrisburg.

RHODE ISLAND: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

TEXAS: Marlin, June 21-23. Sec., Dr. T J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

UTAH: Salt Lake City, July 6-8. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VERMONT. Burlington, June 22-24. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

WEST VIRGINIA: Harpers Ferry, July 12. Sec., Dr. W. T. Henshaw, State Health Dept., Charleston.

WISCONSIN: Milwaukee, June 28-30. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

## New Hampshire March Report

Dr. Charles Duncan, secretary, New Hampshire Board of Registration in Medicine, reports the oral and written examination held at Concord, March 10-11, 1932. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Two physicians were licensed by reciprocity with other states and 2 physicians were licensed by endorsement. The following colleges were represented:

| College PASSED | Year Grad. | Per Cent |
|---|---|---|
| Columbia Univ. College of Physicians and Surgeons | (1929) | 81 |
| McGill University Faculty of Medicine | (1931) | 86 |

| College LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Tufts College Medical School | (1929) | Mass. |
| Fordham University School of Medicine, New York | (1913) | New York |

| College LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| Boston University School of Medicine | (1929) | N. B. M. Ex. |
| Harvard University Medical School | (1929) | N. B. M. Ex. |

## Oklahoma March Report

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, March 8-9, 1932. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Three physicians were licensed by reciprocity with other states and one physician was licensed by endorsement. The following colleges were represented:

| College PASSED | Year Grad. | Number Passed |
|---|---|---|
| University of Oklahoma School of Medicine | (1931) | 1 |
| Meharry Medical College | (1929) | 1 |
| University of Wisconsin Medical School | (1931) | 1 |

| College LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| University of Louisville School of Medicine | (1927) | N. Carolina |
| Tulane University of Louisiana School of Medicine | (1923) | Texas |
| Columbia Univ. College of Physicians and Surgeons | (1916) | Kansas |

| College LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| Washington University School of Medicine | (1928) | N. B. M. Ex. |

## Rhode Island April Report

Dr. Lester A. Round, director, Rhode Island State Public Health Commission, reports the written and practical examination held at Providence, April 7-8, 1932. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Twelve candidates were examined, all of whom passed. The following colleges were represented:

| College PASSED | Year Grad. | Per Cent |
|---|---|---|
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1930) | 85.4 |
| Harvard University Medical School | (1929) | 88.5, 89.9 |
| Tufts College Medical School | (1931) | 90.8* |
| St. Louis University School of Medicine | (1929) | 86.6 |
| Hahnemann Medical College and Hospital of Philadelphia | (1931) | 85.8,* 87.7,* 89.4* |
| Jefferson Medical Colleg |  | 92.3 |
| Marquette University Sc |  | 80.1 |
| Dalhousie University Faculty of Medicine | (1928) | 89.2 |
| Laval University Faculty of Medicine | (1931) | 84.5 |

* Certificates being withheld pending completion of internship.

## Wisconsin Reciprocity Report

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports the oral and practical examination for reciprocity and endorsement candidates held at Milwaukee, April 6, 1932. Fifteen candidates were examined, all of whom passed. The following colleges were represented:

| College LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Rush Medical College | (1929), (1931, 2) | Illinois |
| University of Illinois College of Medicine | (1922), (1926) | Illinois |
| Indiana University School of Medicine | (1930) | Indiana |
| Univ. of Minnesota Med. School | (1929),* (1930),* (1932, 2) | Minnesota |
| Ohio State University College of Medicine | (1929) | Ohio |
| Marquette University School of Medicine | (1931) | Illinois |
| Western University Faculty of Medicine, Ontario | (1909)* | N. Dakota |
| Osteopath † |  | Iowa |

| College LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| Harvard University Medical School | (1929) | N. B. M. Ex. |

* Licenses are being withheld pending completion of credentials.
† Licensed to practice osteopathy and surgery.

## Ohio Reciprocity Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 20 physicians licensed by reciprocity with other states, April 5, 1932. The following colleges were represented:

| College LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| University of Arkansas School of Medicine | (1929) | Arkansas |
| Indiana University School of Med. | (1924), (1929), (1930) | Indiana |
| University of Kansas School of Medicine | (1928) | Kansas |
| University of Louisville School of Medicine | (1926), (1931) | Kentucky |
| Baltimore Medical College | (1907) | New York |
| Univ. of Mic | 2) | Michigan |
| Washington | 09) | Missouri |
| Cornell Univ | 04) | New York |
| Fordham Un | 21) | New York |
| University of Pennsylvania Department of Medicine | (1903) | Penna. |
| Meharry Medical College | (1926), (1927) | N. Carolina |
| University of Wisconsin Medical School | (1930) | Wisconsin |

# Medical Economics

## A CONSULTATION SERVICE FOR PATIENTS OF MODERATE MEANS

GEORGE BAEHR, M.D.
NEW YORK

A consultation service for people of moderate means was inaugurated at the Mount Sinai Hospital, New York, Nov. 24, 1931. A brief report on its activities and its future possibilities seems warranted by the widespread interest, both favorable and critical, which this type of public service has heretofore aroused.

The service was established by members of the medical staff of the Mount Sinai Hospital, in cooperation with the board of trustees of the hospital, and is restricted to patients of moderate means referred by their family physician. It is designed as an aid to the physicians of the community in the investigation of patients with clinically obscure conditions requiring multiple consultations and laboratory examinations in order to establish a diagnosis. The service is based on the conviction that the full advantage of competent medical care can best be achieved under the continuous guidance of a family physician but that, in order to accomplish this, he must be provided with complete and easily available diagnostic facilities to supplement his own resources.

Diagnostic clinics heretofore established have met with one or more of the following criticisms:

1. The clinics accept patients who are not referred by physicians, carry out all forms of therapy, and thus practice medicine in competition with the family practitioner.
2. The clinics are manned largely by physicians who do not possess adequate scientific training and clinical experience.
3. Some diagnostic clinics are merely part of a general public dispensary, and the primary principle—to keep the patient in the hands of his physician—is in conflict with the function of the public dispensary which takes over the complete management of the poor patient.

### THE MOUNT SINAI PLAN

The Mount Sinai Consultation Service is organized, staffed and administered by internists, surgeons and specialists who are members of the visiting staff of the hospital proper. It functions as an independent detached unit of the hospital and occupies space in the hospital's new building for semiprivate patients. No patients are accepted unless referred by their physicians. The work is limited exclusively to diagnosis. On completion of the clinical investigation, the patient is promptly returned to the referring physician, who receives as complete a diagnostic opinion as possible, together with detailed advice concerning appropriate therapy. No therapy is practiced, but the physician who refers a patient is invited to avail himself of the advice and guidance of the staff in carrying out the therapeutic procedures recommended.

As the aim of the service is to cooperate with practitioners in the medical care of people of limited means, the economic level of eligibility is a maximum income of $2,400 a year for unmarried individuals and $4,000 for total family income. For families of more than five members, an extra allowance of $400 may be added for each additional dependent. Physicians are requested to refer only patients who fall within this economic group and the patients are expected to give satisfactory information concerning salaries or other income, rent and the names of employer and landlord.

A flat fee of $35 is charged all patients regardless of the nature of their illness or the number of consultations or laboratory examinations that may be required. To avoid interference with the practice of individual consultants, the fee for a comprehensive examination is purposely set at about double the average amount charged a patient of this class by a specialist for an individual consultation or major laboratory examination. It is the intention of the service to maintain a flat fee schedule in preference to a sliding scale. Its obvious advantages are that (1) the patient knows the total maximum cost in advance irrespective of the nature of the condition that may be found and the number or complexity of the diagnostic procedures that may prove to be necessary; (2) the physicians of the consultation service do not find themselves restricted in the thoroughness and completeness of their diagnostic investigation by the patient's financial limitations.

### CLINICAL ROUTINE

For the present, new patients are assigned appointments through their physicians for Tuesday, Thursday and Saturday afternoon. On arrival, a record is made by the clinic secretary of the economic status of the patient and of his family. If the patient is accepted, the referring physician is notified by letter that the diagnostic investigation has been begun and that he may expect to receive a detailed report on its completion. After admission, a secretary enters the preliminary data on the clinical record and the patient is taken to the laboratory. Pulse, respiration, temperature and weight are recorded by a nurse and then a number of preliminary routine laboratory procedures are performed, such as urine analysis, blood count, Kahn or Wassermann test for syphilis, and sedimentation test of the red blood cells. The blood obtained for the last test is then available for any chemical analyses that may subsequently be needed.

Each patient is then interviewed by the director or associate director of the consultation service, the referring physician's letter is read, and the patient is assigned to one of the internists. After the clinical history has been taken and the physical and fluoroscopic examination recorded, the details of the diagnostic investigation are planned by the internist in conference with the director or associate director. In addition to internists, a gynecologist and a laryngologist serve daily, and other consulting specialists are always on call. Many of the consultations and some special laboratory examinations can be completed on the first visit, such as blood chemical analyses, tests of renal or hepatic function, electrocardiography, oscillometry and certain roentgenologic procedures on parts of the body, such as the heart, lungs, sinuses and bones, which require no special preparation of the patient. On the intervening days of the week (Monday, Wednesday and Friday), patients return for special diagnostic procedures, such as basal metabolism determinations, Rehfuss or Ewald test meals, confirmatory reexaminations of various kinds, roentgenologic examinations, cystoscopies, proctoscopies, biopsies, and some of the specialist consultations.

Only rarely can the investigation be completed at the first visit. The patients average three or four visits, or about seven days for completion of the study. Unusually difficult or complicated cases require a longer period. Two or three additional days are necessary before all reports are received and recorded, the case summarized by the internist, and the final report to the referring physician is dictated by the director or associate director.

The final correlation and interpretation of all the observations devolves eventually on the director of the service. If there is any doubt about the accuracy of the diagnosis or the completeness of the investigation, the patient is summoned for a reexamination by the director or associate director before the final report is made to the referring physician.

### STAFF

The staff of the consultation service is recruited solely from the visiting staff of the hospital. For children, a pediatrician replaces the internist. Internists, gynecologists and laryngologists are on duty during the time of year when they are off ward service. All other consulting specialists are chosen from those who are on duty in the hospital because they are available every afternoon. This assures a gradual rotation of service among all members of the hospital staff. No distinction is made between associates and adjuncts. Full attending physicians are called whenever justified by the nature of the case, and they respond as promptly as the junior members of the visiting staff. The members of the visiting staff who participated in the diagnostic investigation of the first 350 patients included 11 internists, 2 pediatricians and 31 specialists (1 hematologist, 3 otologists, 4 laryngologists, 2 orthopedic surgeons, 2 genito-urinary surgeons, 3 general surgeons, 3 neurologists, 4 psychiatrists, 4 gynecologists, 1 dermatologist, 3 ophthalmologists and 1 dentist).

### COMPENSATION

Half the gross income per month is available for payment of the medical staff. The internists see two or three new patients in an afternoon, which requires from two to three hours. For this period of time, they receive credit for one work unit. Consultants are credited with half a unit for one consultation and with a full unit for two or more consultations during the same afternoon. The duties of the director and associate director demand three or four times as many hours a week as those of an internist, but, as the consultation service cannot afford to compensate them proportionately, they are assigned two units of credit for each actual clinic afternoon. In this manner their compensation does not depend on the time they spend in the consultation service, which must be unlimited.

At the end of each month, the value of the unit is determined by dividing the total number of units into half the gross income. Thus far the value of a unit has varied between $10 and $14. Specialist consultants, therefore, receive from $5 to $7 for each consultation. An internist who works three afternoons a week receives about $120 to $150 a month. This is somewhat more than is paid at other diagnostic clinics, but our internists and specialists are members of the visiting staff of the hospital.

The plan that has been adopted of sharing the gross income of the service between the participating physicians and the hospital is advantageous to both. Although the physicians are thereby relieved of financial responsibilities, the plan automatically keeps them interested in the administration of the service and in the economical utilization of its facilities.

### EXPENSES

One half of the gross income is available to defray the nonprofessional expenses of the service. If the total operating cost during the first year should exceed 50 per cent of the gross income, the deficit will be met by trustees of the hospital. If the operating cost should prove to be less than one half of the gross income, a share of the surplus will first be set aside for future replacements and any remainder will revert to the medical staff. As the service is designed for patients of very moderate means who cannot pay the full cost, the hospital has agreed to derive no profit from the operation of the consultation service either directly or indirectly.

The service has been in operation too short a period to determine how closely the payment of $35 will cover the average cost of a diagnostic investigation. Thus far a loss has been sustained, in spite of the fact that in estimating the operating cost no charge has been made for rent or for interest on the capital investment. The sums allotted each month to the roentgen and pathologic laboratories and other divisions of the hospital represent the full cost of the services which they have been called on to render during the current month. In arriving at estimates of the cost of services of this nature shared with other departments of the hospital, an equitable proportion of administrative and other general expenses has been included, but again nothing has been charged for rent or for interest on capital investment.

Any increase in gross income that may be expected as a result of the future growth of the service will tend to eliminate or at least materially reduce the operating deficit, for some of the fixed charges may be expected to remain unchanged even if the volume of work is eventually doubled. An increase in the gross income will have only a limited influence on the rate of compensation of the physicians per day or per patient, for under the elastic system employed a greater number of patients will always require a proportionately larger staff.

### VOLUME AND SOURCE

Although the consultation service ran at full capacity during December and January, there was a decrease in the number of patients referred during February. This was in part due to fading of the effect of circularizing physicians just before the service opened. In a larger part it was due to the fact that physicians made appointments for patients without informing them of the fee. Frequently, out of ten or twelve new patients who had been assigned appointments for an afternoon, three or four would cancel their appointment because they did not have $35. It has been quite obvious that only patients well within the prescribed economic level are being referred.

Table 1.—*Number of Patients Referred by Individual Physicians*

| | | |
|---|---|---|
| 216 physicians | referred | 1 patient each |
| 32 physicians | referred | 2 patients each |
| 11 physicians | referred | 3 patients each |
| 3 physicians | referred | 4 patients each |
| 1 physician | referred | 5 patients |
| 1 physician | referred | 7 patients |
| 1 physician | referred | 8 patients |

During the present month (March), the number of referred patients has again increased. This is probably due to a logical growth dependent on the many contacts established with physicians during the previous period. The first 350 patients were referred by 265 physicians, as shown in table 1.

This tabulation includes forty-two members of the staff of the Mount Sinai Hospital or outpatient department, who constituted 16 per cent of the total number of referring physicians and were responsible for referring sixty-four patients, or 18 per cent of the total number.

Table 2.—*Geographic Distribution*

| | Physicians | Patients |
|---|---|---|
| Manhattan | 103 | 72 |
| Bronx | 52 | 89 |
| Brooklyn and Queens | 54 | 95 |
| Richmond | 4 | 4 |
| Westchester County | 7 | 15 |
| Long Island | 6 | 18 |
| New York State (outside of Greater New York, Long Island and Westchester County) | 2 | 3 |
| Connecticut | 5 | 8 |
| New Jersey | 32 | 42 |
| Pennsylvania | .. | 2 |
| Massachusetts | .. | 1 |
| Canada (Toronto) | .. | 1 |
| Total | 265 | 350 |

### COMMENT

Many ambulatory patients of the type referred to the consultation service were previously hospitalized because their family physicians recognized that they could not afford to pay privately for a thorough diagnostic investigation, and some are still being referred for this purpose to the wards of the hospital. This is uneconomical for the hospital, the patient, and the hospital physicians. The cost to the hospital is thereby multiplied several times; the ward rate paid by the patient is about equal to the consultation service fee and he is deprived of an opportunity to continue his work; the physicians on ward duty receive no compensation for their professional services. The diagnostic investigation in the consultation service is often more intensive than in the wards because it is concentrated into a shorter time; the diagnostic facilities are more centralized; the consultations and conferences between internists and specialists are more intimate and, therefore, more satisfactory than in the wards. And not least important is the fact that a much closer relationship is maintainable between the physicians of the consultation service and the patient's family physician, both during the period of the investigation and at its conclusion.

If the activities of the consultation service should continue at the present level, about one thousand patients suffering for the most part from obscure and complicated illnesses will have received a searching diagnostic investigation during the first year. This represents a noteworthy expansion in the hospital's activities. It is equal to, or larger than, the total number of obscure diagnostic problems investigated in one of the medical divisions of the hospital of seventy beds during the course of a year. The medical problems presented by the patients of the consultation service are as important as those encountered in the hospital; in fact, they are apt to be more important to the patients because they represent the beginnings of disease, when patients are still in the operable or otherwise curable stage of their illness.

Viewed in its broadest aspect, the project represents an experiment in placing the professional and physical facilities of a large, well equipped general hospital at the disposal of the practicing physicians of the community for the benefit of patients of moderate means. Through the consultation service the hospital is making and maintaining new contacts with hundreds of physicians in the community, so that it is constantly expanding its scientific influence on the practice of medicine outside its walls.

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# Book Notices

**Surgery of the Chest.** By George F. Straub, M.D., F.A.C.S. Cloth. Price, $10.50. Pp. 475, with 341 illustrations. Springfield, Illinois: Charles C. Thomas, 1932.

In this concise work the author covers the subject of chest surgery. The book is profusely illustrated with photographs and many pen and ink and wash drawings, as well as diagrams made by the author himself. The main articles on the literature of chest surgery have been condensed, and an excellent bibliography has been made. The chapter on x-rays in thoracic surgery is written by Dr. Arnold and illustrated with excellent copies of roentgenograms. Although the field of chest surgery is covered by Sauerbruch's monumental treatise in German, by Lilienthal's excellent two volume work in English, and by many fine monographs on special subjects, there is still a need for such a book as Straub's, which covers the whole field in a comparatively few pages. Most of the thoracic surgery in this country is done by men who have not the time to study either the innumerable original publications in the journals or the other works mentioned. The author has avoided taking a controversial stand on subjects in which the opinion of the authorities is still divided, by giving wherever possible the various theories and procedures. The book should appeal to the general surgeon who has neither the time nor the desire to go more deeply into the matter of thoracic surgery, and it might be read with profit by that large group of medical men who still consider that except for empyema there is little that can be done of a surgical nature to relieve thoracic and intrathoracic disease.

**Die ästhetische Chirurgie und ihre soziale Bedeutung.** Von Dr. A. Noel. Deutsche von der Verfasserin erweiterte und neubearbeitete Ausgabe. Übersetzt von Dr. A. Hardt. Mit einem Geleitwort von Prof. Dr. E. Meirowsky. Paper. Price, 7.50 marks. Pp. 72, with 112 illustrations. Leipzig: Ambrosius Barth, 1932.

This translation is of a presentation by Dr. Noel of her work devoted frankly to eradication of conditions impairing the esthetic values occasioned by skin laxity, puffiness of the lids and kindred phenomena. The selection is of a kind to minimize the element of reparative surgery and to constitute a frank advance to or over the borderline. Granted that there is a case to be made for those who have sound reasons in economic status or in mental suffering justifying such procedures, the deliberate standardizing of mere beauty procedures leaves something to be desired. Decisions should be individual rather than generic, exceptional rather than collective. Moreover, even ignoring the ethical objection, the methods here disclosed indicate a lack of thorough knowledge of the nature and relation of the facial tissues; and the indicated procedures themselves convey the same message.

**Kurzes Handbuch der Ophthalmologie.** Herausgegeben von F. Schieck und A. Brückner. Band VI: Auge und Nervensystem. Bearbeitet von C. Behr, F. Best und anderen. Paper. Price, 148 marks. Pp. 878, with 277 illustrations. Berlin: Julius Springer, 1931.

The sixth volume of this handbook of ophthalmology has appeared promptly as advertised and indicates that the whole series of seven volumes will be in the market well within the time announced by the publishers. This is in marked contrast to the larger Graefe-Saemisch, the second edition of which has been in the process of publication for more than thirty years and is not complete yet. Our own American Encyclopedia of Ophthalmology required several years more than first contemplated but finally appeared in its entirety before the war. The sixth volume of the Kurzes Handbuch is devoted to the eye and the nervous system and is divided as follows: the pathologic anatomy of the base of the brain, by F. Wohlwill of Hamburg; the pupil, by R. Bing and A. Franceschetti of Basel; diseases of the ocular nerves, by C. Behr of Hamburg; diseases of the optic tract from the chiasm upward, by C. Behr of Hamburg; diseases of the higher optical centers, by F. Quensel of Leipzig; ocular changes in organic noninflammatory diseases of the central nervous system, by F. Best of Dresden; ocular changes in inflammatory diseases of the central nervous system, by W. Kyrieleis of Würzburg; disturbances and changes in the visual apparatus in psychoses and neuroses, by the late L. W. Weber of Chemnitz; reedited by R. Runge of Chemnitz. As can be seen from the contents, this is essentially a reference book for the ophthalmologist, for it contains practically all the neurophthalmology ever needed. The one chapter the ophthalmologist should read in its entirety is the one on the pupil. Unfortunately this is not written as clearly as it should be, as the authors have analyzed and recorded the experiments and conclusions of various men with diametrically opposed opinions. It is perfectly true that our knowledge of the physiology and histopathology of the pupil and its reactions contains many gaps; but the differences of opinion should not be so emphasized as to cloud the known facts. Apart from this one phase, the chapter on the pupil is good. Interesting is the rather lengthy discussion of psychic blindness (*seelenblindheit*) by Quensel, a phase of ophthalmology that is not to be found in any of the ophthalmic literature. Taken on the whole, this volume offers an intensely interesting reference book but scarcely one that would be chosen voluntarily for light reading. The illustrations and the bookmaking are fully up to the high standards set by the preceding volumes, and so is accomplished one more step in what promises to be the most valuable reference handbook of modern ophthalmology.

**Textbook of Gynecology for Nurses.** By Philip J. Reel, M.D., F.A.C.S., Assistant Professor of Surgery, College of Medicine, Ohio State University. Cloth. Price, $2.50. Pp. 282, with 81 illustrations. Philadelphia: F. A. Davis Company, 1932.

The first chapters of this book are devoted to the anatomy, physiology and pathology of the external and internal genitalia. Then follow chapters which are of more special interest to nurses. These include sections on examination of patients, preparation of patients for operation, anesthesia, postoperative care and operating room equipment, personnel and technic. At the end of each chapter is a list of review questions. The illustrations are clear and instructive, particularly those depicting operating room and office equipment. The author is to be complimented for showing face masks that cover not only the mouth but also the nose and for calling attention to this. The book should prove helpful not only to pupil nurses receiving instruction in gynecology but more especially to supervisors of operating rooms and to graduate nurses who are preparing to be hospital or operating room supervisors.

**Miracles of Healing and How They are Done: A New Path to Health.** By J. Ellis Barker. Cloth. Price, 7/6. Pp. 404. London: John Murray, 1931.

Mr. Barker is a British journalist who has written some remarkably unscientific volumes in the medical field. Some of his previous writings have had the benefit of introductions by Arbuthnot Lane. Mr. Barker is the possessor of a vast credulity. As a result, he takes everything printed in the medical field as truth, citing numerous case reports from ancient textbooks in every field of medical cultism and making a great case for homeopathy. The book is worthless for any purpose except as a medical curiosity.

**Human Physiology: A Text-Book for High Schools and Colleges.** By Percy Goldthwait Stiles, Assistant Professor of Physiology in Harvard University. Sixth edition. Cloth. Price, $2.25. Pp. 448, with 82 illustrations. Philadelphia: W. B. Saunders Company, 1932.

This textbook for high schools and colleges was first published in 1916 and has since passed through numerous reprintings and revisions. Because of the systematic and simple character of the presentation, the book may be recommended for general reading. It is not, however, adapted to use by medical students.

# *Medicolegal*

## When Disease Is Not Attributable to Accident

*(Chase v. Business Men's Assurance Co. of America, (U. S. C. C. A.), 51 Fed. (2d) 34)*

The deceased was insured against disability caused by sickness and by bodily injuries. The policy, however, insured against death only when it resulted from "bodily injuries effected solely through accidental means," not when it resulted from disease. The insured died of typhoid fever. His widow, the beneficiary under the policy, sued the insurer for the benefits payable under it. She claimed that the death of the insured was caused by typhoid fever, "which was occasioned by and resulted from bodily injuries effected solely through accidental means, to wit, by his drinking polluted and contaminated water . . . believing such water to be pure and fit for drinking purposes." After a judgment on demurrer in favor of the insurer-defendant, the plaintiff appealed to the United States Circuit Court of Appeals, Tenth Circuit.

The question, said the court, is whether the death of the insured resulted "from bodily injuries effected solely through accidental means," and not from "disease." It is difficult, if not impossible, to draw an exact line of demarcation between bodily injuries and bodily disease. The two concepts are not always exclusive of each other; they often overlap. Usually pathogenic bacteria are taken into the system as incidents to normal bodily processes, and when disease follows, common understanding regards the introduction of the germs into the system, not as an accidental injury, but as the contracting of a disease, and common speech so describes it. On the other hand, when the channel of infection is abnormal—when infection enters through a bruise, a cut, or other trauma—the layman views the event as an accident, and in his everyday speech he refers to it as such.

When an accidental injury to the body causes a disease, and the disease in its turn causes death, the cases generally hold that the accidental means is the cause of the death. The disease is an effect of the accident and is merely the incidental means that brings about the fatal result; it is nothing more than a link in the chain of causation between the accident and the death, and the death is attributable to the accident. In the present case there was no bodily injury caused by accidental means, but only bodily injuries caused by disease, and these, under the terms of the policy, were excluded from its coverage.

Even if it should be assumed that typhoid fever is itself a bodily injury, the beneficiary under the present policy would be no better off. The policy by its express terms provides that it shall cover no injury caused by disease. It does not cover death from typhoid fever which is not brought about by an accidental bodily injury, unless the word "disease," as used in the policy, is construed as not including infectious and contagious disease. The language of the policy discloses no intent that would justify such a construction. On the contrary, the policy expressly provides that "blood poisoning or septicemia resulting from bodily injuries shall be deemed to be included in said term 'bodily injuries,'" and under familiar rules of statutory interpretation thus clearly excludes from the coverage of the policy "bodily injuries" caused by any other infectious disease. The fact that such an express provision with reference to septicemia was written into the policy shows that the parties believed that its other provisions excluded from its benefits injuries caused by infectious diseases.

In the judgment of the court, death resulting from typhoid fever was not within the coverage of the policy and the judgment of the court below in favor of the insurer was affirmed.

## Malpractice Suit Barred by Judgment for Fees

*(Garrett v. Kendrick et al. (N. C.), 160 S. E. 349)*

Garrett, injured in an automobile accident, was taken to a hospital owned and operated by Drs. Saliba and Bulla. Surgical treatment was given him by Saliba and by another physician, Kendrick. Later Saliba and Bulla, as owners and operators of the hospital, recovered a judgment against Garrett for bed, board and other hospital services and for the surgical services rendered by the hospital through Saliba. Garrett subsequently instituted a suit to recover damages for malpractice against Saliba, in which he joined Kendrick as a defendant. Judgment was rendered in favor of Saliba and Kendrick, and Garrett appealed to the Supreme Court of North Carolina.

When Saliba and Bulla sued Garrett for services rendered, they had to prove, said the Supreme Court, that such services were worth a certain amount. When the defendant Garrett defended the action against him on its merits, it was his duty to set up malpractice as a counterclaim, since the malpractice of which he complained grew out of the contract or transaction that formed the basis of the claim against him. In his present suit, Garrett alleged and the trial judge found that Saliba and Kendrick "acted jointly and in cooperation in said treatment and in the setting of the fractured bones of the arm and leg of the plaintiff." It seems, therefore, that on Garrett's own theory, Kendrick was a partner of Saliba in rendering the professional services out of which this litigation grew. When a court of competent jurisdiction renders judgment in a cause properly before it, such judgment estops the parties and their privies as to all issuable matters contained in the pleadings, including all material and relevant matters which the parties in the exercise of reasonable diligence could and should have brought forward. The judgment in favor of Bulla and Saliba in their suit against Garrett was necessarily an adjudication of the fact that both Saliba and Kendrick performed their services in an acceptable manner. Because of that judgment, Garrett could not now be heard to complain that he had been damaged by the negligence of either Saliba or Kendrick. The judgment of the trial court in favor of the defendants was therefore affirmed.

# *Society Proceedings*

## COMING MEETINGS

American Association for the Study of Goiter. [illegible] June 14-16. Dr. J. R. Yung, 670 Cherry St., Ter[illegible]

American Ophthalmological Society, New Lo[illegible] Dr. Emory Hill, 501 East Franklin Street, [illegible]

American Orthopedic Association, Toronto, Canada, June 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.

Maine Medical Association, Rangeley, June 16-18. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

New Jersey, Medical Society of, Atlantic City, June 15-17. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.

Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Pathology, Boston

**8:** 123-262 (March) 1932

*Intranuclear and Cytoplasmic Inclusions ("Protozoan-Like Bodies") in *Salivary Glands and Other Organs of Infants*. S. Farber and S. B. Wolbach, Boston.—p. 123.

Yellow Fever Encephalitis of Monkey (Macacus Rhesus). E. W. Goodpasture, Nashville, Tenn.—p. 137.

Occurrence of Intranuclear Inclusions in Monkeys Unaccompanied by Specific Signs of Disease. W. P. Covell, St. Louis.—p. 151.

*Anatomic Changes in Livers of Dogs Following Mechanical Constriction of Hepatic Veins. J. P. Simonds and J. W. Callaway, Chicago.—p. 159.

*Torula Infection: Review and Report of Two Cases. J. W. Watts, Chicago.—p. 167.

Studies of Experimental Muscle Degeneration: I. Factors in Production of Muscle Degeneration. D. K. Fishback and H. R. Fishback, Chicago.—p. 193.

Id.: II. Standard Method of Causation of Degeneration and Repair of *Injured Muscle. D. K. Fishback and H. R. Fishback*, Chicago.—p. 211.

Vital Staining of Rabbit's Aorta in Study of Arteriosclerosis. G. L. Duff, Toronto.—p. 219.

*Effect of Cabbage Feeding on Morphology of Thyroid of Rabbits. I. T. Zeckwer, Philadelphia.—p. 235.

Technic of Silver Impregnation for General Laboratory Purposes. N. C. Foot and Ellen Bellows Foot, Cincinnati.—p. 245.

Question of Specific Myocardial Lesion in Hyperthyroidism (Basedow's Disease). W. Lewis, Hamburg, Germany.—p. 255.

**Intranuclear and Cytoplasmic Inclusions in Salivary Glands.**—In the submaxillary glands removed in a series of 183 postmortem examinations on infants, Farber and Wolbach found large cells containing intranuclear and cytoplasmic inclusion bodies ("protozoan-like bodies") in twenty-two cases (12 per cent). In addition, two older cases with inclusions in the parotid and submaxillary glands, and two instances in which inclusions were found in epithelial-lined spaces of the liver, lungs, kidneys, pancreas and thyroid are reported, making a total of twenty-six new cases to be added to the twenty-five already in the literature. All the patients in this series were less than 17 months of age, the majority being under 1 year. These inclusions are apparently identical with those found in the submaxillary glands of guinea-pigs and are generally similar to inclusions found in diseases due to filtrable viruses. Clinical and pathologic studies of the series reported reveal no association with any distinctive feature or group of symptoms or disease changes. The frequency of the inclusions in the authors' postmortem series suggests geographic factors affecting this occurrence and leads naturally to the suspicion of the existence of a disease, in infants, of filtrable virus etiology. However, if that is true, there are no distinctive clinical or pathologic features which would permit its recognition in the wards or in the pathology laboratory. The clinical and pathologic observations in the "positive" instances resemble, in general, the observations in the entire group studied.

**Changes in Dogs' Livers Following Constriction of Hepatic Veins.**—The livers of dogs examined by Simonds and Callaway twenty-four, forty-eight and seventy-two hours and seven days after mechanical obstruction of the hepatic veins for periods of from seven to thirty minutes showed the following changes: (1) A mean increase of 25 per cent in the liver weight-body weight ratio, due to edema and to swelling of the hepatic cells; (2) swelling, granulation vacuolization and extensive necrosis of the hepatic cells in the central half or two thirds of the liver lobules; (3) marked dilatation of the perivascular lymphatics surrounding the sublobular veins; (4) the presence of hyaline thrombi in many central and sublobular veins; (5) intrasinusoidal cell masses of two types: small, compact, occluding masses probably originating in "conglutination thrombi" of red cells, and larger, more diffuse and branching cell masses, and (6) hemosiderosis of Kupffer cells.

**Torula Infection.**—Watts presents two cases of torula infection. In the first the infection was generalized but the symptoms were almost entirely cerebral. A remarkable collection of pathologic changes were present in the brain: diffuse meningitis, granulomas in the meninges, marked endarteritis and proliferation of adventitial elements of the meningeal vessels, and infarct in the pons, areas of softening and focal disappearance of the granular and Purkinje cells in the cerebellum, diffuse ganglion cell changes, increase of neuroglia, nerve fiber destruction, myelin sheath damage, and encephalitis by extension in the striate body. The second case falls into the group which Freeman considers embolic phenomena. Mucicarmine was found to be an excellent differential stain, not only making it easy to identify the organism by its distinctive color but bringing out details of structure not heretofore recorded. Two strains of yeastlike bodies were isolated: the one producing no pigment falls into the torula group; the one producing pigment appears to be chromotorula. The organism was nonpathogenic for guinea-pigs, rats and mice. The author believes that the respiratory tract is probably the portal of entry in most cases. The infarct in the pons, endarteritis of numerous meningeal vessels with torula in the intima, and softenings in the cerebellum in one case add weight to the theory that cystic cavities in the deep white and gray matter are embolic phenomena and dissemination is by the blood stream.

**Effect of Cabbage Feeding on Thyroid of Rabbits.**—Zeckwer reports that feeding winter cabbage in the early part of 1931 to seventeen rabbits for periods up to 114 days produced hyperplasia of the thyroid, but only in two instances resulted in enlargements more than twice the normal weight. The microscopic changes of hyperplasia were more conspicuous than the gross enlargement. Under the conditions of these experiments, the feeding seemed to favor a high incidence of intercurrent infections. The data support the view that there is annual variation in the goiterogenic agent of cabbage.

### Archives of Internal Medicine, Chicago

**49:** 345-540 (March) 1932

**Normal Range of Gastric Acidity from Youth to Old Age: An Analysis of Three Thousand Seven Hundred and Forty-Six Records.* Frances R. Vanzant, W. C. Alvarez, G. B. Eusterman, H. L. Dunn and J. Berkson, Rochester, Minn.—p. 345.

Systemic Effects of Histamine in Man, with Especial Reference to Responses of Cardiovascular System. Soma Weiss, G. P. Robb and L. B. Ellis, Boston.—p. 360.

Avitaminosis: IV. Effect of Deficiency of Vitamin B Complex on Lipid Metabolism and Glycogen Content of Liver of Albino Rat. B. Sure and Margaret Elizabeth Smith, Fayetteville, Ark.—p. 397.

Id.: V. Specific Effect of Vitamin B Deficiency on Differential Count of Albino Rat. B. Sure and Dorothy J. Walker, Fayetteville, Ark.—p. 405.

*Effect of Ligation of Parotid Ducts on Carbohydrate Tolerance of Normal Dogs. L. M. Zimmerman, Chicago.—p. 409.

Cholesterol-Thorax in Tuberculosis (Cholesterol Pleurisy). H. M. Stein, Baltimore.—p. 421.

Carcinoma of Gastrojejunal Stoma Following Operation for Peptic Ulcer. H. A. Singer, Chicago.—p. 429.

*Effect of Prolonged Distention of Stomach in Dogs. J. P. Burgess, H. G. Scott and A. C. Ivy, Chicago.—p. 439.

*Normal, Absent and Pathologic Tonsils in Young Women: Comparison of Physical Measurements. Ruby L. Cunningham, Berkeley, Calif.—p. 453.

*Psittacosis: Report of Five Cases. M. A. Rabinowitz and S. H. Livingston, Brooklyn.—p. 464.

Chorea Gravidarum: Statistical Study of Nine Hundred and Fifty-One Collected Cases, Eight Hundred and Forty-Six from the Literature and One Hundred and Five Previously Unreported. P. Willson and A. A. Preece, Washington, D. C.—p. 471.

Red Cell Regeneration During Menstrual Cycle. C. Reich and Dorothy Green, New York.—p. 534.

**Gastric Acidity from Youth to Old Age.**—Vanzant and her associates call attention to the fact that satisfactory standards of normal gastric acidity have so far been lacking. They made a study of data from 3,746 persons in whom careful examination did not reveal any disease which could conceivably affect the mucous membrane or the secretory activity of the stomach. There was a steady increase in the incidence of achlorhydria from youth to old age. At the age of 60 years, 28 women in 100 (in the series) failed to show free acid on repeated fractional analysis, and, similarly, 23 men in 100 were achlorhydric. In an additional 5 per cent of women and 3 per cent of men there was no free acid in the first sample of an Ewald meal removed at the end of an hour. Free gastric acidity appears to increase rapidly from childhood up to the age of 20 years, when adult values are reached. About the age of puberty, the average value for boys begins to rise considerably above that for girls. In order to simplify the statistical study of the group of persons with free acid, all data from persons with true or apparent achlorhydria were first removed from consideration. One can now say that modal free acidity for men ranges between 45 and 50 units in the years from 20 to 40. After this it falls off rapidly to a level of from 30 to 35 units in the aged. The mode for women is approximately 35 units throughout adult life. It appears to fall off slightly after the age of 60 years. The normal range of free acidity in both men and women is about 90 units. The modal total acidity for women is practically constant at a level of about 51 units between the ages of 20 to 60 years; the mode for men ranges from 66 at the age of 20 years down to 56 after the age of 65 years. For both free and total acidity, mean and modal values were about the same. In both sexes the combined acidity appears to vary but little from youth to old age. Ninety per cent of the data lay between limits of 12 and 22 units, with a mode at 17 units. The data suggest that the process which gives rise to achlorhydria is not the same as the one that in men after 40 years produces a gradual falling off in acidity. The absence of such a gradual decrease in the older women makes it seem improbable that in either sex there is a progressive senile atrophy of the gastric mucosa.

**Effect of Ligation of Parotid Ducts on Carbohydrate Tolerance.**—Zimmerman reports that ligation of the parotid ducts in normal dogs results in an increased dextrose tolerance, as measured by the height of the blood sugar curve following the injection of dextrose solution. Histologic study of parotid glands removed at varying intervals after ligation of their ducts reveals only gradual dilatation of the ducts, with atrophy and fibrosis of the glandular parenchyma. Extirpation of the parotid glands in which the ducts had been ligated produced inconstant effects on the carbohydrate tolerance. Usually there was some increase in the height of the blood sugar curve, but the values rarely returned to the levels that had been maintained before the ducts were ligated.

**Effect of Prolonged Distention of Stomach in Dogs.**—Burgess and his associates found that continuous distention of the stomach with a volume of water introduced into a balloon —a volume twice that which would be ingested in the form of milk in hunger—caused grave morbid changes to occur in the wall of the stomach and resulted in death in twelve dogs within a period of from twenty-six to ninety hours without a significant fall in blood chlorides and dehydration. The cause of death was toxemia. The changes found at necropsy were not unlike those reported to occur in man in acute dilatation of the stomach. An electrocardiographic study revealed that distention of the stomach causes (1) a tachycardia with abolition of the normal sinus arrhythmia manifested by dogs, (2) inversion of the T wave or the accentuation of an inverted T wave present in some normal dogs, (3) accentuation of the Q wave, and (4) an exaggeration of preexisting electrocardiographic abnormalities.

**Tonsils in Young Women.** — According to Cunningham, the condition of the tonsils is of minor importance in influence on the health history and the determination of physical measurements of young women. Such influence is tangled with that of factors determining whether pathologic tonsils shall be removed or not and is therefore difficult to evaluate. The contention that normal tonsils are an aid in resisting disease is not strongly defended by contrasting the histories of disease of those with normal and those with pathologic tonsils. The argument that the removal of tonsils closes a portal of entry for infectious and respiratory diseases is not sustained by a comparative study of the histories of those who have had their tonsils removed and of those whose tonsils are present. The effect of the tonsils as a focus of infection does not find much support when histories and physical measurements of those with pathologic tonsils are contrasted with either those with normal or those with absent tonsils. The effect of normal tonsils in augmenting growth or of pathologic tonsils in retarding development is not apparent in this study. The effect of the tonsils on the glands of internal secretion is suggested in the thyroid observations but is not evident in comparative menstrual experiences or in the results of growth. The theory that the tonsillar condition is influenced by diet and reflects nutritional conditions, as may teeth, stature and weight, is not greatly aided by the observations of this investigation. The author's study does not emphasize the arguments for the removal of tonsils other than for the cure of a local throat condition.

**Psittacosis.** — Five cases of psittacosis occurring in one family are presented by Rabinowitz and Livingston, with necropsy observation in one. The disease in these cases was distinctly attributable to exposure to infected love birds or parrakeets brought to this country from Havana, Cuba, by returning tourists. This is of extreme epidemiologic and diagnostic importance. Biologic evidence of the identity of the disease was possible in this epidemic, the virus of psittacosis being clearly demonstrated in the sputum of one of the patients, in the liver, lung and spleen of another, and in the liver and spleen of the only bird available for examination. That this bird was apparently healthy is of great epidemiologic importance. The characteristic clinical points of diagnostic importance are: (1) history of exposure to a diseased bird; (2) incubation period of approximately nine days; (3) marked headache; (4) toxemia, which may be decidedly out of proportion to the physical observations in the chest; (5) slight cough with extremely scanty, thick, tenacious expectoration, which may or may not be blood tinged; (6) an extremely fine type of crepitant râle; (7) roentgen evidence of dense consolidation of part of a lobe of the lung almost from the onset of symptoms; (8) no pleuritic involvement in the face of extensive pulmonary pathologic involvement; (9) moderate or no leukocytosis in the presence of severe pneumonic infection, and (10) tendency to venous thrombosis.

## Delaware State Medical Journal, Wilmington

4: 57-76 (March) 1932

Evidences in Favor of Inheritance in Cancer. J. McFarland, Philadelphia.—p. 57.

Modern Trends in Medical Practice, with Especial Reference to Medical Education. G. H. Meeker, Philadelphia.—p. 62.

## Journal of Allergy, St. Louis

3: 219-324 (March) 1932

Metabolic Studies in Urticaria: I. Acid Base Balance: II. Blood Chemistry. L. H. Criep, Pittsburgh.—p. 219.

Comparative Pollen, Mold, Butterfly and Moth Emanation Content of Air. R. M. Balyeat, T. R. Stemen and C. E. Taft, Oklahoma City, Okla.—p. 227.

*Serum Sensitiveness After Toxin-Antitoxin: Clinical and Laboratory Study. L. Tuft, Philadelphia.—p. 235.

Hypersensitiveness to Air-Borne Bee Allergen. R. V. Ellis and H. C. Ahrens, Minneapolis.—p. 247.

Studies on Pollen and Pollen Extracts: VIII. Dialyzability of Pollen Allergens. L. Unger, H. W. Cromwell and Marjorie B. Moore, Chicago.—p. 253.

Clinical Manifestations of Heat and Effort Sensitiveness and Cold Sensitiveness (Relationship to Heat Prostration, Effort Syndrome, Asthma, Urticaria, Dermatoses, Noninfectious Coryza and Infections). W. W. Duke, Kansas City, Mo.—p. 257.

Preparation of Mixtures of Pollen Extracts. A. V. Veer, New York.—p. 275.

Pollen Content of Air and Its Relation to Hay Fever in Baltimore, Maryland, During 1930. P. M. Patterson and L. N. Gay, Baltimore.—p. 282.

*Evaluation of Therapeutic Effect of Caldwell-Luc Operation in Bronchial Asthma. H. P. Schenck and R. A. Kern, Philadelphia.—p. 296.

Small Dosage Treatment for Hay Fever. J. M. Anderson, Salt Lake City.—p. 306.

Maple Leaves a Cause of Seasonal Asthma. J. A. Rudolph and M. B. Cohen, Cleveland.—p. 310.

Heat Sensitiveness: Report of Case Treated Successfully. W. R. Caven, Toronto, Canada.—p. 311.

**Serum Sensitiveness After Toxin-Antitoxin.** — Tuft states that after the administration of diphtheria toxin-antitoxin mixture containing minute amounts of horse serum, sensitization of varying degree occurs in 27.9 per cent of children. Such sensitization affects not only the skin but also other body tissues and is much more apt to occur in allergic children or children of allergic families. Reinjection of serums containing larger amounts of horse serum is in certain instances fraught with the danger of severe, immediate or accelerated serum reactions and may in most instances be prevented by the performance of a properly carried out skin test (in preference to the eye test) just prior to the administration and in the presence of a positive reaction, either by the use of a serum containing no horse serum or, if this cannot be procured, by spaced administration of increasing amounts of serum together with administration of small amounts of epinephrine. The continued use of diphtheria toxoid or of toxin-antitoxin prepared with goat serum antitoxin in active immunization against diphtheria will, in the future, prevent any possible development of sensitization to horse serum in immunized individuals and obviate the necessity for further precautions with serum reinjections.

**Effect of Caldwell-Luc Operation in Bronchial Asthma.**—Schenck and Kern report the results of the Caldwell-Luc operation as performed in thirty-five cases of bronchial asthma. The percentage of favorable results obtained bore no relation to the apparent etiology (allergy or infection), to the previous duration of the asthma or to the age of the patient. A comparison of these results with those of other intranasal operative procedures shows a greater percentage of improvement after the radical operation. In a majority of instances this improvement is only temporary. The authors believe that the radical operation should be reserved for those cases of antrum infection which have failed to yield to more conservative measures.

## Journal of Immunology, Baltimore

**22:** 165-243 (March) 1932

*Phenomenon of Local Skin Reactivity to Meningococcus: Production of Neutralizing Antibodies in Horses. G. Shwartzman, New York.—p. 165.

*Typhoid Agglutinins in Man Following Vaccine Injection. R. W. Lamson and J. F. Kessel, San Francisco.—p. 177.

Antibodies Against Vaccinia Virus Demonstrable in Vitro: II. Alexin-Fixation by Vaccinia Virus Tissue Suspensions and Their Specific Antiserums. R. Thompson, Elizabeth Lee Hazen and L. Buchbinder, New York.—p. 189.

*Factors Influencing Antigenic Power of Toxin-Antitoxin Mixture. T. S. Githens, Glenolden, Pa.—p. 197.

Blood Groups of Indians in Certain Maya Areas of Central America. D. W. Rife, Chicago.—p. 207.

Natural Agglutinins and Their Relationship to Somatic and Flagellar Antigens of Bacteria. H. J. Gibson, Edinburgh, Scotland.—p. 211.

Studies on Viscosity of Sensitized Erythrocyte Suspensions. S. Went and C. Lissak, Budapest, Hungary.—p. 229.

Parenteral Denaturization of Foreign Proteins: VII. Test-Tube Synthesis of "Hybrid" Specificities. H. C. Sox and W. H. Manwaring, San Francisco.—p. 237.

**Skin Reactivity to Meningococcus.**—Shwartzman reports that titrations of neutralizing antibodies of antimeningococcus horse serums with the aid of the auxiliary antibody disclosed wide fluctuations in their concentration during the immunization. A description is given of a simple and economical method of immunization which shows high titer of neutralizing antibodies for the phenomenon of local skin reactivity. Incidental observations reported are those on full antigenicity of meningococcus toxic filtrates, and also on the fact that the neutralizing antibodies may fluctuate in their concentration, while the agglutination and precipitation titers remain stationary.

**Typhoid Agglutinins Following Vaccine Injection.**—Lamson and Kessel gave thirty-six allergic patients numerous doses of typhoid vaccine in a period of several months to a year. Seven of them were given a total of 50 cc. or more during the course. These large doses did not produce a single untoward reaction. A few individuals gave a mild local or general reaction, but it usually followed one of the early treatments in the course. In one or two instances an injection seemed to precipitate a mild attack (or aggravate an existing one) of asthma. The observations are too few to make it certain that the injection had anything to do with the development of symptoms or to justify the conclusion that they were manifestations of a true allergy to the typhoid organism. A significant number of patients obtained relief during treatment and others seemed to gain weight more rapidly than is normal, even though their allergic state was not well controlled. It would appear that one is justified in assuming that those patients have had conferred on them a high degree of immunity to typhoid infection. The summary of the authors' observations indicates that the agglutinin titer is rather low, and there are but few reactions that would be considered suggestive if these serums were submitted for a routine Widal test.

**Antigenic Power of Toxin-Antitoxin Mixture.**—Githens describes experiments in which he demonstrated that toxin-antitoxin mixtures that are almost completely neutralized are as efficient antigens as those containing a great excess of toxin, and the immunity eventually obtained from toxic mixtures is no greater than that from almost completely neutral mixtures, although the maximum level may be obtained more rapidly. Two doses of 0.25 cc. each of toxin-antitoxin mixture are approximately as effective (in guinea-pigs) as one dose of 1 cc., although they contain only half as much toxin. Moderate differences in the L plus dose of the toxin used make little or no difference in the effectiveness of the mixtures as antigens.

## Journal of Nutrition, Springfield, Ill.

**5:** 103-212 (March) 1932

*Effect of Grapes and Grape Products on Urinary Acidity. L. G. Saywell, Berkeley, Calif.—p. 103.

Study of Calcium Retention on Diet Containing American Cheddar Cheese. Marguerite G. Mallon, L. Margaret Johnson and Clara R. Darby, Lafayette, Ind.—p. 121.

Quantitative Study of Dietary of Human Mother with Respect to Nutrients Secreted into Breast Milk. Carroll F. Shukers, Icie G. Macy, Betty Nims, Eva Donelson and Helen A. Hunscher, Detroit.—p. 127.

*Iron Requirement of the Preschool Child. Jane M. Leichsenring and Iva Hansen Flor, St. Paul.—p. 141.

Dietary Requirements for Fertility and Lactation: XXIV. Further Studies on Specific Effect of Vitamin B on Lactation. B. Sure and Margaret Elizabeth Smith, Fayetteville, Ark.—p. 147.

Specific Effect of Vitamin B on Growth. B. Sure, M. C. Kik and Margaret Elizabeth Smith, Fayetteville, Ark.—p. 155.

Changes in Weights of Various Organs and Systems of Young Rats Maintained on Low Protein Diet. M. Limson and C. M. Jackson, Minneapolis.—p. 163.

Failures to Produce Experimental Dental Caries in White Rat with High Carbohydrate Diet and Bacillus Acidophilus or with Vitamin D Deficiency. C. A. Lilly, Ann Arbor, Mich.—p. 175.

Analysis of Curve of Heat Production in Relation to Plane of Nutrition. E. B. Forbes and M. Kriss, State College, Pa.—p. 183.

Is Vitamin B Content of Milk Under Physiologic Control? F. L. Gunderson and H. Steenbock, Madison, Wis.—p. 199.

**Effect of Grapes on Urinary Acidity.**—Saywell reports sixteen experiments with men subjects on basal diet and on the same basal diet supplemented by fresh grapes, fresh natural grape juice, detartrated grape juice, natural grape juice concentrate, concentrate-tartrate mixture, Thompson seedless and Muscat seeded raisins. The following results were observed when the grapes or grape products were added to the basal ration. 1. An increase in the $p_H$ of the urine occurred, ranging from 0.8 to 1.2 $p_H$ units. 2. A decrease in the ammonia excreted and a corresponding decrease in the total acidity was noted. 3. There was an increase of the alkali reserve above the normal for each subject, the alkali reserve being estimated by the plasma carbon dioxide combining power determined from the acid and ammonia content of the urine and calculated by the method of Fitz and Van Slyke. 4. A correlation between the alkalinity of the ash and the physiologic reaction was apparent. Grapes and grape products with the greater alkalinity of ash were associated with a more basic body reaction. 5. An increase occurred in organic acids excreted. This may be explained by the presence in the urine of some incompletely oxidized tartaric acid. 6. Approximately 94 per cent of the ingested organic acids appeared to be oxidized.

**Iron Requirement of the Preschool Child.**—Leichsenring and Flor conducted two iron-balance studies, using four healthy children, one boy and three girls, ranging in age from 35 to 56 months. Iron retentions at two levels of intake were compared. The results of the food analyses indicate that the iron content of foods may show considerable variation from the most commonly used figures. Diets that were planned to contain 5 and 8.5 mg. of iron actually contained only 3.25 and 6.5 mg. On a diet containing 3.25 and 6.5 mg. of iron, an average of 1.2 mg. was retained daily, whereas, on a diet containing 6.5 mg. of iron, 3.2 mg., or nearly three times as much as during the period of lower iron intake, was retained. The observed maintenance need of the children in this study was approximately 0.12 mg. per kilogram. It would appear from these results that, on the basis of body weight, the maintenance requirement of the child is similar to that of the adult. The iron requirement for growth, as observed in this study, was approximately 0.2 mg. per kilogram. In view of the differences observed between the actual iron content of the food used and the amounts as calculated from Sherman's tables, and also the pronounced individual differences in the iron requirement of children, it is suggested that a 50 per cent margin of safety be allowed above this observed total requirement of 0.32 mg. per kilogram. This would make a standard allowance for children of this age of 0.48 mg. per kilogram, or 0.62 mg. per hundred calories, or a total of 8.23 mg. a day.

## Journal of Pharmacology & Exper. Therap., Baltimore

**44:** 269-383 (March) 1932

*Effect of Radon Radiation on Isolated Organs. S. E. F. Gooding, Cambridge, England.—p. 269.
*Combined Ephedrine-Pituitary Extract (Posterior Lobe) Therapy in Histamine Shock. K. I. Melville, Montreal.—p. 279.
*Effect of Ultraviolet Irradiation on Toxicity of Pure Nicotine. G. Wakeham and G. P. Tracy, Denver.—p 295.
Rôle of Chemical Structure of Cocaine in Cocaine Sensitization-Desensitization Phenomena. S. K. Wirt and M. L. Tainter, San Francisco.—p. 299.
Blood Alcohol and Its Relation to Intoxication. R. G. Turner, with assistance of E. R. Loew, Detroit.—p. 305.
Duration of Action of Barbituric Acid Hypnotics as Basis of Classification. R. H. Fitch and A. L. Tatum, Madison, Wis.—p. 325.
*Picrotoxin as an Antidote in Acute Poisoning by Longer Acting Barbiturates. A. H. Maloney and A. L. Tatum, Madison, Wis—p. 337.
Slowing of Heart Rate, Due to Irradiated Synephrin, Epinephrine, Nicotine and Related Drugs. J. A. Higgins, P. L. Ewing and H. A. McGuigan, Chicago.—p. 353.
*Estimation of Relative Toxicities and Efficiencies of Local Anesthetics. A. D. MacDonald and M. C. G. Israëls, Manchester, England.—p. 359.
*Effect of Ergotamine on Intestine with Observations on Influence of Calcium on Its Action. W. Salant and W. M. Parkins, New York.—p. 369.

**Effect of Radon Radiation on Isolated Organs.**—Gooding describes experiments in which he demonstrated that irradiation from radon causes an increased activity and irritability of certain isolated organs. This effect is greater if the perfusion fluid is partially deprived of potassium ions. Irradiation renders the uterus much more sensitive to the action of solution of pituitary.

**Ephedrine-Pituitary Extract Therapy in Histamine Shock.**—Melville presents experiments to show that a mixture of ephedrine sulphate and pituitary extract (posterior lobe) is more effective than larger individual quantities of these drugs in restoring blood pressure and respiration and in abolishing general collapse in dogs experimentally shocked by the prolonged intravenous injection of histamine. The prolonged and well maintained pressor effects of the mixture and the stimulant action of ephedrine alone on the central nervous system are suggested as the possible basis of these rather striking effects. Finally, the results suggest the possibility of applying to advantage this combined type of treatment in human cases of surgical shock and allied conditions of circulatory failure.

**Effect of Ultraviolet Rays on Toxicity of Nicotine.**—Wakeham and Tracy irradiated nicotine in quartz glass tubes for periods varying from fifteen minutes to five hours. Approximate minimal lethal doses of the different irradiated samples were determined by feeding gradually increasing amounts in 5, 10 and 20 per cent solutions to albino rats, until the lethal effect was obtained. Two groups of rats were used, one composed of animals 1 month old and the other of animals 3 months old. In each group the animals were approximately the same size and the same sex (male). No animal was fed nicotine more than once, whether it survived or not. It was noted that a maximum decrease of the toxic effect of nicotine on albino rats is obtained by an ultraviolet irradiation period of about one hour and fifteen minutes, the reduction in toxicity amounting to approximately 70 to 75 per cent. With further irradiation, the toxicity of the nicotine increases to nearly its original value.

**Picrotoxin as Antidote in Poisoning by Barbiturates.**—Maloney and Tatum present experimental data demonstrating the effectiveness of picrotoxin as an antidote in acute poisoning by the longer acting barbiturates. In sublethal doses of these compounds, picrotoxin shortens the recovery time, in lethal doses within certain limits it effects a cure, and in doses beyond the limits of hopeful therapeusis it prolongs the life of the animal. As types of the longer acting barbiturates, the following were employed: phenobarbital, neonal, ipral, barbital sodium, allylisopropyl barbituric acid, allylisopropyl barbituric acid mixed with amidopyrine in the ratio of three to five, and diallylbarbituric acid. Amytal, when administered orally in excess of the minimal lethal doses for that mode of administration, is successfully antidoted with picrotoxin. Through comparative studies on blood pressure, temperature and tissue changes, some light is shed on the mechanism of action of picrotoxin in the presence of the toxic effects of the barbiturates.

**Toxicities and Efficiencies of Local Anesthetics.**—MacDonald and Israëls describe a method by which measure of toxicity, relative toxicity and rate of destruction of local anesthetics can be obtained following slow intravenous infusion into cats. Figures for the relative toxicities of common local anesthetics are given, and some of the applications of these experiments to the clinical use of these drugs are discussed. A fair indication of the relative efficiencies of local anesthetics can be obtained in terms of relative efficacies (ratios of concentrations which achieve adequate anesthesia for any purpose) and relative toxicities.

**Effect of Ergotamine on Intestine.**—Salant and Parkins report that a single dose of ergotamine injected intravenously produces in cats and rabbits increased movements of the intestine. The effect may be obtained with doses of about 0.1 mg. per kilogram in cats and smaller doses in rabbits. The same amounts may sometimes produce a weak response or no effect when respiration is depressed, irregular or both. Repeated doses of ergotamine cause little or no effect or may even produce inhibition of the intestine. Atropine prevents the stimulating action of the intestine by ergotamine, indicating that the stimulation is due to the effect on the parasympathetic endings. The effect of multiple injections is probably due to depression of the muscle substance and fatigue of the nerve endings. Reversal of the depressing action of repeated doses of ergotamine may be produced by intravenous injections of calcium chloride. Intravenous injections of sodium oxalate which produce a decrease of blood calcium increases the depressing action caused by ergotamine and may also decrease the stimulating effect of the initial dose. The effect of excess and of deficient calcium on the action of ergotamine is discussed and an explanation is suggested.

## Journal of Preventive Medicine, Chicago

**6:** 87-144 (March) 1932

*Case Fatality of Communicable Disease. H. B. Wood, Harrisburg, Pa.—p. 87.
*Tubercle Bacilli in Blood Stream of Rabbits During Course of Infection. Lucy Mishulow and W. H. Park, New York.—p. 95.
Effect of Brilliant Green on Eberthella Dysenteriae, Sonne Type. Elizabeth M. Myers and S. A. Koser, Chicago.—p. 101.
*Relation of Bovine Mastitis to Human Infection. P. B. Brooks, Albany, N. Y.—p. 111.
Comparative Study of Cultural and Immunologic Methods of Diagnosing Infections with Endamoeba Histolytica. Bertha Kaplan Spector, Chicago.—p. 117.
Study of Bacteriology of Various Levels of Intestine of Macacus Rhesus Monkeys, with Especial Reference to Technic and to Fate of Bacillus Prodigiosus. G. M. Dack and O. Woolpert, Chicago.—p. 129.
Importance of Temperature on Survival Time of Bacteria in Acid Foods. P. J. Beard and J. P. Cleary, San Francisco.—p. 141.

**Case Fatality of Communicable Disease.**—Wood states that case fatality ratios are the proportion of deaths which actually occur in a known number of cases of any disease, that is, the number of cases per death. Case fatality ratios indicate the completeness of reporting of a disease and show the virulence of the disease. Correct case fatality ratios depend on complete reporting and the determined actual number of deaths among the persons whose cases have been reported. Correct ratios cannot be computed from the usual vital statistics tabulations. The following case fatality ratios are approximately correct: diphtheria, from 15 to 19 cases to 1 death; measles, 500 to 1; scarlet fever, 100 to 1; typhoid, from 8 to 12 cases to 1 death; whooping cough, from 125 to 150 cases to 1 death. Any state whose ratio of reported cases to recorded deaths falls much below those figures is obtaining incomplete reporting and therefore incomplete control over its quarantinable diseases.

**Tubercle Bacilli in Blood Stream of Rabbits.**—Mishulow and Park describe two experiments which seem to indicate that there is rapid localization of the tubercle bacilli inoculated into the blood stream, as shown by the tremendous decrease in their number between *twelve and twenty-four hours* after inoculation, and the steady decrease up to the fourth day. The organisms persisted in the blood stream throughout the entire course of the infection, although they fluctuated in number from day to day. There was a marked rise in numbers on the day of death. This would justify the conclusion that there is a steady dissemination of the tubercle bacilli from the local lesion into the blood stream.

**Relation of Bovine Mastitis to Human Infection.**—According to Brooks, mastitis is common among dairy cattle and the infection is readily communicated from one cow to another. The types of streptococci that are the common incitants apparently are not infective for man but when present in milk in large numbers with their toxins may be responsible for severe toxic disturbances, especially in children. Organisms, of animal or human origin, pathogenic for man may be present in diseased udders. These include the tubercle bacillus, Brucella abortus and the hemolytic streptococci which are incitants of septic sore throat and scarlet fever. Udders infected with Brucella abortus may excrete the organisms during the life of the animal. Agglutination and complement fixation tests on milk from infected quarters have given positive results, that from uninfected quarters negative. Agglutinating power in the blood may be due to infection localized in the udder. Several milk-borne epidemics of septic sore throat in upper New York State have been traced to raw milk from herds with cases of mastitis. In the more recent epidemics, hemolytic streptococci corresponding to those found in the human cases have been obtained from the infected udders. Recent experience suggests the desirability of persistent effort to find the infected cows. One epidemic of scarlet fever in 1922 was traced to raw milk, including that from a cow with mastitis from which hemolytic streptococci were obtained. Experience suggests that organisms from human sources are primarily responsible. Since Jan. 1, 1924, six outbreaks of gastro-enteritis have been traced to raw milk from herds in which there were cases of mastitis. In three of these, most of the patients were children given the milk in school. Illness developed within four or five hours. Cows with chronic mastitis were involved, and common types of nonhemolytic streptococci isolated. The author believes that bovine mastitis is a major problem in the prevention of milk-borne infection. A slowly developing movement for eradication offers no practical and immediate solution, nor will careful dairying methods and inspection afford adequate protection. Pasteurization is the only practical safeguard.

### Laryngoscope, St. Louis

**42:** 163-232 (March) 1932

*Study of Physics of Antrum.* R. J. Hunter, Philadelphia.—p. 163.
Use of Periosteal Flap with Skin Graft in Radical Mastoid Surgery. E. F. Ziegelman, San Francisco.—p. 170.
General and Otologic Aspects of Cholesterol Metabolism. M. Fineberg, St Louis.—p. 177.
*Development of Nose: Its Dynamic Relation to Traumatic Injuries and to Submucous Resection of Nasal Septum. W. W. Carter, New York.—p. 189.
Control of Postoperative Edema of Nose and Throat. L. Felderman, Philadelphia.—p. 195.
Retrobulbar Abscess Complicating Submucous Resection. P. L. Mahoney, Little Rock, Ark.—p. 199.
Near-Fatal Postoperative Secondary Nasal Hemorrhage. L. R. Effler, Toledo, Ohio.—p. 201.
Effective Method of Controlling Secondary Hemorrhage. J. J. Littell, Indianapolis.—p. 207.
Carcinoma of Tongue (Misreference of Pain Following Alcohol Anesthesia): Report of Case. D. Mezz, Brooklyn.—p. 209.
Serious Throat Infections. H. Hays, New York.—p. 212.
New Organic Compound for Use in Chronic Ear Suppuration. S. Stein, New York.—p. 219.

**Development of Nose.**—Carter calls attention to the fact that the development of the nose is largely a mechanical proposition. The septum is the most important factor in the elevation and subsequently in the support of the nasal bridge; consequently every operator should be ever mindful of the fact that neither cartilage nor bone, removed from the septum, is ever replaced, and that conservatism should always be practiced in doing the submucous operation. In the treatment of traumatic injuries, when it is possible, replacement of the fractured and dislocated parts should be practiced. This is imperative in the young subject; otherwise a deformity is certain to develop, though it may not become noticeable for several years. In developmental deformities, an effort should be made to adjust the parts so that the lines of force shall be so directed that they will construct a normal organ. If there is a deficiency in material for reconstruction, autogenous bone and cartilage transplants from the rib should be used in the manner first advocated by the author. Under no circumstances should foreign materials, such as paraffin, celluloid or ivory, be used for this purpose, as they are not safe nor do they remain permanently in the living tissues.

### Northwest Medicine, Seattle

**31:** 99-152 (March) 1932

Acute Empyema. C. R. Austrian, Baltimore.—p. 99.
Kidney Function: Brief Review. T. H. Duerfeldt, Tacoma, Wash.—p. 108.
Nephritis. W. J. Pennock, Spokane, Wash.—p. 112.
Operative Treatment of Vesical Diverticula. H. W. Howard, Portland, Ore.—p. 115.
Subtotal Thyroidectomies: Deductions from Seventeen Hundred Cases. J. C. Moore, Seattle.—p. 118.
Surgical Progress in 1931. R. D. Forbes, Seattle.—p. 122.
Barbiturates on Surgical Trial. J. W. Baker, Seattle.—p. 126.
Medical and Dietary Treatment of Epilepsy. M. L. Margason, Portland, Ore.—p. 128.
Carbon Monoxide Poisoning. H. H. Kretzler, Edmonds, Wash.—p. 132.
Orthopedic Treatment of Infantile Paralysis. C. L. Lowman, Los Angeles.—p. 136.
Hydrochloric Acid for Headache. J. L. St. John, Pullman, Wash.—p. 140.
Earwig in Ear. H. V. Wurdemann, Seattle.—p. 140.

### Philippine Journal of Science, Manila

**47:** 305-423 (March) 1932. Partial Index

Philippine Anopheles of Rossi-Ludlowi Group. W. V. King, Manila.—p. 305.
Lead, Barium and Magnesium Salts of Hydnocarpic and Chaulmoogric Acids. H. I. Cole, Manila.—p. 351.

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## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Children's Diseases, London

**29:** 1-82 (Jan.-March) 1932

*The Allergic Child. G. W. Bray.—p. 1.
Examples of Anemia of Various Kinds in Children. F. P. Weber and E. Schwarz.—p. 17.
*Chronic Streptococcal Toxemia. J. D. Hindley-Smith.—p. 25.
Treatment of Early Cases of Knock Knee and Bowleg in Children. E. Cyriax.—p. 35.
Unusual Case of Multiple Lipomas in Boy, Aged 2 Years. W. R. Bett.—p. 39.

**The Allergic Child.**—Bray states that the treatment of the varied allergic manifestations of childhood resolves itself into a definite routine, and the reliance on one therapeutic agent for all cases, or the shotgun principle of an assemblage of many in the hope that one will hit the mark, is to be deprecated. At times it is the acute exacerbation that one is called on to relieve, while at other times one is consulted as to the means of preventing further recurrences. The acute symptoms can generally be relieved by the hypodermic injection of a few minims of 1 : 1,000 solution of epinephrine hydrochloride or ephedrine given by mouth, ⅛ grain (8 mg.) to a child under one, ¼ grain (16 mg.) to a child over one year. It is well to realize that children do not stand the continued administration of ephedrine at all well, frequent complaints including an inability to micturate, insomnia, tiredness and fretfulness during the day, and occasionally cardiac dilatation and murmurs. In the prevention of further relapses, the first step is to endeavor to determine a specific cause or causes, from the history or by skin tests or elimination diets, and to insure their avoidance or removal. In addition, in the majority of cases several contributory factors operate and need attention. Good hygienic surroundings are essential as well as peace and harmony. The diet should be chosen to avoid specific causes of reaction. The child should be encouraged to eat a good breakfast and have a hot midday meal and a light, early supper. No food or drink should be given to the patient after he gets into bed. A proper balance between fats, proteins and carbohydrates should be determined, with a sufficiency of vitamins and salts. At the same time any foci of sepsis or irritation should be removed. If the cause cannot be removed, desensitization may be attempted. Specific desensitization may be accomplished by the ingestion of gradually increasing doses of the allergen, if a food, or by denaturization by boiling or cooking, or by subcutaneous injection if an inhalant. Nonspecific desensitization may be attempted if the cause cannot be determined, but results cannot be relied on.

Peptone, tuberculin, milk, autohemotherapy and vaccines have been advised. In many cases, prominent symptoms must be treated with drugs. In the pulmonary group, sedatives for the bronchial mucous membrane in the form of linctures may be required, in hay fever ointments or douches for the nose or drops for the eyes, and in the cutaneous manifestations palliative lotions or ointments. In the majority of allergic conditions there is a hypochlorhydria and hypoglycemia, so that the administration of hydrochloric acid and dextrose by mouth is indicated. In some of the skin manifestations and asthma, physical therapy at times brings about improvement, but it must be used only by skilled technicians or violent reactions will follow.

**Chronic Streptococcal Toxemia.**—Hindley-Smith calls attention to the fact that clinical research suggests the existence of an acute disease having invariable characteristics, for which the name "acute streptococcal fever" has been proposed. Other workers who have been studying the condition of chronic rheumatism have suggested that this is also due to the streptococcus acting under conditions of cell sensitization in the affected organism. A careful analysis of a large number of cases has led the author to the conviction that chronic rheumatism may be due to other causes than the streptococcus but that the streptococcus does, in fact, produce a disease having a definite syndrome and which is recognizable in its various stages, and of which the later symptoms include chronic rheumatism. Support for the theory that there is a condition of allergic sensitization at work in these cases, in addition to the streptococcal infection, is to be found in the fact that treatment with specific autogenous vaccines produces a high percentage of success.

## Lancet, London

1: 549-600 (March 12) 1932

*Pathology and Treatment of Anemia. L. J. Witts.—p. 549.
*Treatment of Diabetic Uremia with Hypertonic Glucose Solutions. H. W. Fullerton, A. Lyall and L. S. P. Davidson.—p. 558.
*Specificity of "Proteose" Intradermal Reactions. J. Freeman.—p. 561.
*Duration of Red Lochia. C. Moir.—p. 564.

**Pathology and Treatment of Anemia.**—Witts discusses the anemias that result from disturbances of nutrition and disorders of the alimentary tract. They form a group that impresses both by its size and its unity. It is his opinion that all are of nutritional origin. The normal human diet contains substances which are necessary for the maturation of megaloblast into normoblast, such as vitamin B and the active principle of liver, and others which are necessary for the maturation of normoblast into erythrocyte, such as vitamin C, thyroxine, iron, and traces of other minerals. Animal experiments suggest that food substances are also necessary for the development of the megaloblasts from the reticulo-endothelium of the marrow, and that their absence leads to aplasia. Anemia arises whether these substances are not supplied with the diet or whether they are not absorbed in digestion. The anemia is due to diminished blood formation or anhematopoiesis, and, according to the level at which hematopoiesis is arrested, the marrow may be normoblastic, megaloblastic or aplastic. The cells drafted into the circulation from this dysplastic marrow are sometimes abnormal and liable to early destruction, but hemolysis is always secondary to the degeneration of the bone marrow and is never of high degree. The reticulocyte count is low, the resistance to hypotonic solution of sodium chloride is little impaired, and hemoglobinemia and hemoglobinuria never occur. The white cells and the platelets are normal or diminished. Remission of the disease is attended by an outpouring of reticulocytes in numbers directly proportional to the extent of the hyperplasia of the bone marrow. All these features are in direct contrast to the hemolytic anemias. Clinically these anemias are characterized by their frequent association with glossitis, gastro-intestinal disorders and degeneration of the nervous system. Some of these anemias are simple and uncomplicated: the nutritional anemia of infancy is entirely due to shortage of minerals in the milk, and the anemia of scurvy to shortage of vitamin C. In others, the effects of one deficiency predominate in the blood picture, but traces of other defects may be recognized, as when iron deficiency occurs in Addison's anemia, or of the liver principle in simple achlorhydric anemia. In other cases, again, the symptoms of multiple deficiency may be present together, as in the anemia of pellagra or in tropical macrocytic anemia. The blood picture may change during the evolution of the primary disease. Megalocytic anemia is constant in Addison's anemia, but it is not uncommon for the disease to begin as a microcytic anemia, and more rarely it terminates in aplasia. This sequence of events is almost the rule in sprue.

**Treatment of Diabetic Uremia with Dextrose Solutions.**—Fullerton and his associates report the case of a woman, aged 27, who was admitted to the hospital unconscious, with marked air hunger, exhaling acetone strongly, and with the urine loaded with sugar and acetone. The case was diagnosed as diabetic coma. The patient was covered with warm blankets and surrounded with hot water bottles. At noon, 50 units of insulin was injected subcutaneously. Within half an hour she partially regained consciousness, and 30 Gm. of dextrose was given orally. At midnight a catheter was passed, and only 1 ounce (28 cc.) of urine was found in the bladder. Sugar and acetone were present, but much less in amount, while only a trace of diacetic acid was found. Blood was withdrawn, and the result of the estimation done next morning showed that the blood sugar was 382 mg. per hundred cubic centimeters. The blood urea had risen to 55 mg. per hundred cubic centimeters and the chlorides remained approximately stationary, at 627 mg. per hundred cubic centimeters. The patient was given 30 Gm. of dextrose and 20 units of insulin. During the first twelve hours she received 190 units of insulin and 150 Gm. of sugar. At 5 a. m. the bladder again contained only an ounce of urine, in which a trace of sugar and acetone was found, and no diacetic acid was present. Air hunger was absent, so further insulin treatment was temporarily discontinued. At this time vomiting was first noticed. For the following four days the patient was practically anuric, since approximately 2 ounces of urine was all that could be obtained each twenty-four hours by repeated catheterization. A consideration of these facts led the authors to conclude that the condition of the patient had altered from diabetic coma to what might be described as diabetic uremia. The position appeared to be critical, since patients with diabetic coma who develop a definite anuria, and in whom the blood urea reaches 150 mg. per hundred cubic centimeters or over, invariably die. Simple remedies, such as hot fomentations and cupping the loins, had failed. Irritant diuretics appeared to be contraindicated, as judged by the presence of blood and casts in the urine. As a last resort it was decided to try to restart urinary secretion by raising the blood sugar level to a high degree by the intravenous administration of hypertonic solution of dextrose. Accordingly, at 5 p. m. and again at 10 p. m., one pint of a 25 per cent solution of dextrose in physiologic solution of sodium chloride was given intravenously. The solution was introduced slowly, about forty minutes being taken for the injection. At 12:30 a. m., 8 ounces of urine was passed; this contained some sugar but no diacetic acid. During the rest of that day 20 ounces was passed. At 7:30 the next day another pint of 25 per cent dextrose in physiologic solution of sodium chloride was given intravenously. On the following two days, 34 ounces and 52 ounces of urine were passed, and subsequently normal urinary secretion occurred. The blood urea, which on the sixth day after admission had reached a maximum of 230 mg. per hundred cubic centimeters, steadily fell and returned to normal figures in nine days. The plasma chlorides, which up to this date had been somewhat above normal, fell to a figure slightly below normal. The patient's nutrition became excellent, and a complete recovery was achieved.

**Specificity of "Proteose" Intradermal Reactions.**—According to Freeman, Oriel's "proteoses," no matter where obtained or on whom tested, show a fairly constant toxic reaction within a few minutes of injection into the skin. (They may also show a delayed reaction.) He can detect no trace of the specific skin reactions claimed by Oriel. An immunotherapy based on this alleged specificity has no scientific foundation.

**Duration of Red Lochia.**—Moir found that the duration of a colored vaginal discharge following childbirth in 250 hospital patients varied considerably, but in the great majority of cases it far exceeded the supposed normal time limit. The average duration was twenty-four days. The average duration of the colored lochia in cases of uterine subinvolution and of retroversion was not greater than the average of the total number of cases. In this series there were twenty-nine cases in which suckling was not carried out. Those cases did not show any prolongation of the colored lochia. Age and parity had no appreciable effect on the duration of the colored lochia.

## Medical Journal of Australia, Sydney

**1:** 215-248 (Feb. 13) 1932

George Adlington Syme: Man and Surgeon. A. L. Kenny.—p. 215.
Hyperpyrexial Heatstroke: Mesopotamian Experience, with Some Etiologic Views and Method of Prevention Resulting Therefrom. K. G. Hearne.—p. 226.
Geographic Distribution and Meteorologic Aspect of Hyperpyrexial Heatstroke. N. B. Friend.—p. 232.

**1:** 249-282 (Feb. 20) 1932

Problems in Working of Child Welfare Scheme in Community. Helen Mayo.—p. 249.
Sudden and Uncertified Deaths. S. Sheldon.—p 252.
Antepartum Hemorrhage. E. L. Newman.—p. 256.
*Investigation into Relation of Achlorhydria to Carcinoma of Stomach. F. L. Apperly and Joan H. Norris.—p. 260.
*Nasal Sinusitis in Relation to Lobar Pneumonia. C. M Eadie.—p. 263.
*Driver's Thigh. J. Hoets.—p. 265.

**Relation of Achlorhydria to Carcinoma of Stomach.**—Apperly and Norris call attention to the fact that there is much evidence that the achlorhydria that so commonly accompanies carcinoma of the stomach really precedes that condition. Achlorhydria may be acquired, the result of chronic gastritis, or it may be a congenital familial peculiarity. Investigations by the authors indicate that the achlorhydria is not of the latter variety and support Hurst's contention that it is the result of a chronic gastritis preceding the appearance of carcinoma.

**Nasal Sinusitis in Relation to Lobar Pneumonia.**—Eadie reports the results of 103 postmortem examinations of the nasal accessory sinuses. The cases were not selected in any way; the sinus examinations were carried out on patients who had died in the wards of the Melbourne Hospital and who came to necropsy. In few cases had a record been made of any examination of the nasal sinuses, carried out during the final illness. The diagnosis of the condition of the sinuses was formed from their macroscopic appearance. It would appear after reviewing these cases that there is a definite association between acute infection of the maxillary antrum and lobar pneumonia, and that the inflammatory reaction of the lung may be caused in many cases by the entrance into the lung by way of the larynx of pathologic organisms and their toxins that have developed in the maxillary antrum. The investigation seems to justify the following conclusions: 1. In all cases of lobar pneumonia, the maxillary antrums should be investigated, and this is most satisfactorily done by suction and disinfection of their contents. The earlier this is done, the better will be the prognosis when the antrums are infected. It is remarkable the improvement in general symptoms and signs that may occur after once these cavities are treated in this way. Also it is noted how often a single "wash out" seems sufficient to clear the suppurative condition of the sinus. At the first suction pure pus may be obtained, and on repetition of this procedure ten days later the contents may appear free of pus. 2. In regard to pneumonia in association with influenza, this procedure is particularly advocated. 3. When cerebral symptoms arise in the course of lobar pneumonia, the sphenoidal sinuses should be similarly dealt with. The suction and disinfection of the sinuses can be done with the minimal disturbance to the patient. He does not require to be moved in his bed. A local anesthetic is all that is required.

**Driver's Thigh.**—Hoets draws attention to a condition fairly well recognized by both medical and nonmedical motor drivers and suggests the name "driver's thigh," which seems both convenient and descriptive. If a label has already been affixed, it has escaped the author's notice. The condition is a neuralgia or a neuritis of the sciatic nerve observed in those who spend a fairly large part of their time driving a motor car. Symptoms vary from an ill defined feeling of fatigue of the thigh muscles to those of a classic sciatica. The cause is a long continued pressure on the sciatic nerve just before its division in the lower third of the thigh. The pressure is produced by the use of the accelerator pedal, which requires the foot to be held in the one position, often for long periods. Treatment is, of course, by having the seat adjusted. It would seem that the seat without the usual tilt is perhaps the best kind for the driver. The trouble comes only when the driver sits badly or the springs of the seat have given way.

## Archives de Maladies des Reins, Paris

**6:** 365-491, 1932

Relations Between Epididymis, Vas Deferens and Tunica Vaginalis. A. Hovelacque and H. Evrard.—p. 365.
*Abnormal Form of Polycystic Kidney. E. Papin and H. Verliac.—p. 383.
Improvement in Urea-Secretory Constant by Diuretics. A. Schwartz and I. Bertoliatti.—p. 391.
Hematuria Following Nephrectomy for Renal Tuberculosis. E. Papin and P. Bordas.—p. 413.

**Abnormal Form of Polycystic Kidney.** — Papin and Verliac state that a patient operated on by one of them had a condition which they called polycystic kidney, but there was no resemblance to true polycystic kidney or to nephritis with cysts. The patient was an emaciated woman, aged 31, with a mobile kidney and with sand in the urine, but no calculi, although she had had nephritic colic and hematuria. In the course of the operation, which had to be conservative, the authors removed a kidney which contained an adenoma and which on histologic examination was found to contain multiple cysts. These cysts were situated in the medulla and all the pyramids. Only two or three occupied the columns of Bertin. The cysts were filled with a homogeneous material whose reactions were similar to those of amyloid material. Their wall was formed by a single layer of endothelium.

## Presse Médicale

**40:** 409-432 (March 16) 1932

*Chancroid Antibodies in Serum of Patients with Inguinal Adenopathies. P. Ravaut, E. Rivalier and R. Cachera.—p. 409.
Operation on Region of Parathyroids in Deforming Rheumatism. R. Simon and J. Weill.—p. 412.
*Posttonsillitic Pyemia: Enucleation of Tonsils During Course of Peritonsillar Abscess and Acute Tonsillar Inflammations. N. Taptas.—p. 414.

**Chancroid Antibodies in Serum of Patients with Inguinal Adenopathies.** — Ravaut and his associates report the study of the formation of chancroid antibodies in the serum of patients with inguinal adenopathy. Studies of the deviation of complement in the presence of an antigen extracted from the bacillus of Ducrey were made on the serums of three groups of patients: (1) those with chancroid buboes, (2) those with poradenitis and (3) a control group. Ninety-one reactions were observed. The serum of patients with chancroid buboes in almost all cases gave a positive complement fixation reaction in the presence of a chancroid antigen; on the other hand, the reaction was almost regularly negative in patients with poradenitis. The antibody content of the serum following injections of streptobacillary vaccine (dmelcos) likewise revealed a fundamental difference between the two diseases. Vaccine therapy during the course of chancroid infection caused a considerable increase in the proportion of antibody in the serum (20 or 25 units of complement or more in place of the normal amount of 5 units). This increase followed intramuscular as well as intravenous injection and was of long duration. In poradenitis, vaccine therapy produced only a transitory appearance of antibody, which frequently remained a moderate proportion and was induced only by intravenous injection. This reaction, artificially produced, always became rapidly negative again. The behavior of the control subjects, also with suppurating adenopathies, was similar in all points to that of the group with poradenitis. The study of the reaction of the deviation of complement in patients with chancroid buboes and patients with poradenitis has some practical value because it may aid in the differential diagnosis of those relatively frequent inguinal adenopathies which do not present a characteristic clinical picture. However, the intradermal reaction with chancroid as well as with lymphogranulomatous antigen gives earlier, more sensitive and more constant reactions than the serum antibody reactions. Further, the intradermal reaction with the antigen of Frey constitutes a positive diagnosis in poradenitis, whereas the reaction of complement fixation with chancroid antigen only permits diagnosis by elimination. While admitting that the practical value of the complement fixation reaction does not equal that of the investigation of cutaneous allergy, the authors think the information furnished by this reaction has considerable theoretical value because it supplies an additional argument in favor of the difference in the nature of chancroid infection and poradenitis.

**Posttonsillitic Pyemia.**—Taptas discusses posttonsillitic pyemia, as to pathogenesis, diagnosis and therapy. He thinks that in posttonsillitic pyemia the infection spreads along the lymph channels to the lymph nodes in the region of the jugular vein and from there by continuity to the latter. Frequently the venous walls become infected before disintegration of the lymph node and formation of a cervical phlegmon. In other cases, formation of a peritonsillar abscess and a deep phlegmon of the neck appears first and it is not until much later, if one delays unduly the drainage of these pus collections, that the cervical veins may be attacked. Histologic examination of the tonsils which are the starting point of the pyemia reveals perivascular infiltrations, and the peritonsillar venules, even in cases in which the tonsils appear clinically healed, are often thrombosed. At the onset of pyemia all tonsillar inflammation may have disappeared, also pus in the tonsillar, peritonsillar or retrotonsillar region may be absent, but inflammation of the lymph nodes around the jugular vein always exists, if one knows how to find it. While it is impossible to tell in the beginning of a case of acute tonsillitis whether it will terminate in pyemia, the hope of recovery depends on early intervention; so the author advises being constantly on the watch for it and suggests several methods of procedure for the physician, depending on the condition of the patient at the time he first sees him. If the tonsillitis persists after a week or if remission of symptoms is followed by recurrence and formation of a peritonsillar abscess impends, it is better to perform enucleation of the tonsil immediately to prevent formation of the abscess, hasten the cure of the infection and prevent its spread to distant parts of the body. If on the first visit to the patient the tonsillitis is cured but the temperature remains elevated with remissions of septic fever, or there is continuous fever without chills and the cervical region at the angle of the maxilla is more or less sensitive or infiltrated, an incision should be made at the anterior edge of the sternocleidomastoid to inspect the jugular vein. If the vein is diseased or a deep phlegmon is found and drained, the tonsil which served as the portal of entry should be removed before the end of the operation. If the vein is healthy, exposure for examination by a small aseptic incision is not harmful. Waiting till symptoms of pyemia appear endangers the life of the patient. In cases in which the patient is first seen several days after the onset of tonsillitis and a peritonsillar abscess has already formed, if the jugular region is free and the abscess well formed, an incision of the soft palate can be made and the abscess drained; but if this appears difficult it is better to enucleate the tonsil. In this way, by removing the inner wall of the abscess, the cavity is transformed into an open wound permitting the best possible drainage. If the first examination reveals tonsillar or peritonsillar inflammation accompanied by an engorgement of the jugular region with high fever, tonsillectomy must be supplemented by exposure and inspection of the sheath of the large vessels. In such cases one sometimes finds a deep collection of pus with extensive detachment of the pharyngeal wall, drainage of which is followed by cure. At other times the veins of the neck are involved without the formation of an abscess and it is necessary to dissect and resect them. Here one should remember that in deep collections of pus as much as in thrombosis of the jugular vein, the skin and subcutaneous tissue remain entirely healthy, the lesions being located below the deep cervical fascia. It is difficult, even in case of an advanced lesion, to feel a definite hardness at this depth; trying to feel a hard cord to diagnose thrombophlebitis exposes the patient to irreparable lesions.

**40:** *449-472 (March 23) 1932*

Return Circulation. C. Laubry and A. Tzanck.—p. 449.
*Local Vaccine Therapy in Enterocolitis. A. Besredka.—p. 452.
Subcutaneous Rupture of Tendon of Long Extensor of Thumb. J.-L. Lapeyre.—p. 456.

**Local Vaccine Therapy in Enterocolitis.**—Besredka discusses local vaccine therapy in enterocolitis and reports some of the experiences of other investigators with this type of therapy which substantiate his observations and theories. By local vaccine therapy the author means specific immunization of an organ or tissue, effected without the aid of known antibodies and usually resulting in immunity of the entire organism. After discussing the development of this therapy and its use in streptococcus and staphylococcus infections, the author discusses its application in intestinal diseases such as typhoid, paratyphoid, cholera, dysentery and enterocolitis, in which the intestine is the sole or chief habitat of the infecting organism. Animal experiments demonstrated that ingestion of killed cultures of dysentery bacillus, cholera vibrio or typhoid and paratyphoid bacilli preceded, in the case of cholera or typhoid, by ingestion of ox bile to promote access of the organism to the intestinal wall resulted in a substantial immunity to infection. The method has been frequently and successfully used for vaccination in man. Seeking to discover whether this therapy could be used in enterocolitis, the author and his co-workers demonstrated in animal experiments that this method of local vaccination was also effective in the treatment of infection with Bacillus coli. Rabbits, after ingestion of living cultures of B. coli were able to resist lethal doses of the virus given intravenously. Corroborating experiences of other investigators are cited. In discussing the application of this therapy in various forms of enterocolitis, the author divides these into two groups: the monomicrobic, due to infection with typhoid-paratyphoid bacilli, dysentery bacilli, cholera vibrio, B. coli, Bacillus proteus and so on, and the polymicrobic or real enterocolitis which, the specific etiologic agent being unknown, must be considered as due to the collective action of all the intestinal bacteria. Two cases of B. coli infection are reported in which oral administration of an autogenous vaccine immediately after ingestion of bile resulted in cure. In cases in which the B. coli infection is complicated by urinary disturbances, the latter sometimes recede following oral vaccine therapy, but sometimes instillation of the antivirus into the bladder is required. In cases in which the colon bacilli persist in the urine after remission of the functional disturbances, if one can ascertain that the infection is localized in the upper part of the renal apparatus, one should not hesitate to introduce the antivirus into the kidneys. In fifty cases of colon bacilluria so treated by Jabiel and Petetin, symptoms of colitis and of bladder irritation disappeared in the first days of treatment. In some cases the bacteria persisted in the urine, but all signs of inflammation disappeared. Examples of successful oral vaccination against other monomicrobic forms of colitis are cited. Local vaccination in polymicrobic forms of enterocolitis, such as mucous colitis, sigmoiditis and ulcerative colitis, although more difficult, is practiced in France by many clinicians. Surmont and Butiaux employed the oral administration of autogenous vaccine, after sensitization of the intestinal mucosa with bile, in more than a hundred severe cases of enterocolitis with excellent results. The cure of a case of purulent hemorrhagic rectocolitis by local vaccination and its beneficial results in the treatment of ulcerative colitis have been reported by different authors. Amelioration or cure of the intestinal disturbances following local vaccination is accompanied in a good many cases by improvement or disappearance of the symptoms of perivisceritis, hypertension, anemia and cutaneous disturbances which sometimes accompany enterocolitis.

### Schweizerische medizinische Wochenschrift, Basel

**62:** 273-296 (March 19) 1932

Goethe and Biology. K. Spiro.—p. 273.
*Late Abscess Following Intragluteal Injection of Bismuth and Sulphur. H. Schaer.—p. 280.
Substances for Disinfection of Bronchial Passages and of Lungs. T. Gordonoff and F. Janett.—p. 281.
Treatment of Bronchial Asthma. J. Poras.—p. 283.
Treatment of Dysphagia After Goiter Operations. H. Mehlin.—p. 284.
Nutrition and Medicine of Prehistoric Races in Switzerland. Grandjean.—p. 284.

**Late Abscess Following Intragluteal Injection of Bismuth and Sulphur.**—Schaer relates the clinical history of a man, aged 34, in whom a large subcutaneous abscess developed following antisyphilitic treatment by means of intragluteal injections of bismuth and of sulphur preparations. Puncture of the abscess yielded a brown fluid in which bismuth could be detected but no sulphur. Bacteriologic examination of a smear, as well as the culture and the animal experiment, all gave negative results. Since puncture proved ineffective for the cure, two longitudinal incisions were made, and the abscess was drained. This treatment effected an immediate reduction in temperature, and after five weeks only a small fistula, the size of a pin head, remained. Because the general condition had also considerably improved, the patient was discharged from the hospital. The author points out that in the literature there are reports of other cases of late abscess after bismuth injections, and he cites several of them. He then calls attention to the fact that the patient who was the subject of his report received intermittently injections of sulphur. It is not impossible that injections of the sulphur preparations into the bismuth depot produced a toxic bismuth-sulphur compound that in turn could have produced a necrosis. However, the fact that in the pus there was only bismuth but not sulphur demonstrable speaks for the diagnosis of bismuth abscess.

## Minerva Medica, Turin

**1:** *365-400* (March 17) 1932

Certainties and Unknown Facts in Antituberculosis Vaccination. A. Ascoli.—p. 365.
Significance of Anaphylaxis and Idiosyncrasy in Man. A. Archi.—p. 371.
Influence of Arsphenamine on Velocity of Sedimentation of Erythrocytes in Syphilitic Persons. R. Policaro.—p. 380.
*Pathogenesis and New Treatment of Varicose Ulcer. L. Biancalana.—p. 382.

**Pathogenesis and New Treatment of Varicose Ulcer.**—In a brief sketch of the anatomophysiology of circulation in the lower limbs, Biancalana states that the venous flow is occasioned by both (1) extrinsic propulsion, the push of arterial blood, thoracic aspiration, venous compression by muscular contraction and pulsations of the nearby arteries, and (2) intrinsic propulsion, venous elasticity and contractility. The author explains the genesis of varicosities in terms of venous insufficiency. The stasis and decrease in blood pressure of the venous network causes transudation of the plasma; the plasma distends the tissues, hindering interstitial circulation. The venous stagnation and the edema in turn hinder arterial circulation. In phlebitis, the venous walls are transformed into rigid tubes in which the circulation is poor. Ulcers are produced where the tissues are altered, and chronic ulcers are caused by nonspecific bacteria. Varicose ulcers do not respond quickly to treatment: it is seldom that the ulcerating tissues find the resources necessary for a restorative process. The treatment of the varicose ulcer is identical with that of the varices because in both the causal factor, stasis of the blood, must be eliminated. When the treatment of varices fails because of ulcer, measures are applied that can favorably influence circulation and cutaneous trophism of the limb. Modern therapy has turned to the method of obliteration of the veins. The substances promoting the process of endophlebitis, causing venous obliteration and sclerosis, are sodium carbonate and salicylate, quinine hydrochloride, mercuric iodide, sodium chloride, glycerin and phenol solutions. This method is bloodless and requires neither hospital care nor suspension of habitual occupation. It is useful in cases in which the cure of the varices did not heal the ulcers and in recurrent ulcers. The ambulatory treatment combats circulatory stasis of the limb by compressed bandages. After successfully treating ten patients, the author advocates the following technic. 1. The ulcer is cleaned preferably with benzine. 2. Then follows a superficial cauterization of the granulations with silver nitrate. 3. A thin layer of protective ointment (preferably Unna's) is spread on the ulcer and ulcerated zone. 4. The ulcer is covered with gauze padding to act as an absorbent of the secretion. 5. A bath sponge (about 2 cm. thick) covers the whole ulcer and is held in place by a gauze bandage. 6. A semielastic bandage is wound tightly about the leg from foot to knee, to keep the sponge compressed. The function of the sponge is to exert a regularly distributed pressure over the whole area. 7. The patient must walk about. (This treatment cannot be given to those confined to bed or with an acute attack of phlebitis.) 8. Dressings are changed every two or three days.

## Pediatria, Naples

**40:** 169-224 (Feb. 15) 1932

Researches on a Case of Renal Infantilism. I. Gatto.—p. 169.
*A Peculiar Type of Hypoplastic Corpuscular Myelosis. P. Molteni.—p. 190.
Methods of Identifying the New-Born. F. Rolando.—p. 206.

**Peculiar Type of Hypoplastic Corpuscular Myelosis.**—Molteni describes a grave type of blood disease in a child, aged 6 years, and appearing some time after what is supposed to have been an attack of malaria. There were pallor of the skin and mucous membranes, hepatomegaly, great splenomegaly, practically no subjective symptoms, and nonprogressive but intermittent course of the disease, with periods of improvement and of exacerbation. The blood picture was characterized by diminution of red blood corpuscles, hemoglobin, leukocytes and platelets, with intermittent presence of basophil, polychromatophil and orthochromatic erythroblasts, few myelocytes and metamyelocytes, and absence of megaloblasts and megalocytes. The hematopoietic system presented zones of hyperplasia of the myeloid elements and aplasia of the elements producing the morphologic components of the blood, and in the spleen were found notable erythropoietic foci. This disease may be regarded as a variant of aplastic global myelosis, from which it differed in the variations of the clinical course, the blood picture and the histopathologic manifestations of the marrow, which throws light on certain types with a long course that may be observed in the adult. Malaria had no doubt an important part as a preparatory dysergic factor, in connection with a defective constitution, in the pathogenesis of the grave hemopathy. The course, although prolonged, proved fatal within one year and the many therapeutic attempts gave scarcely any results.

## Radiologia Medica, Milan

**19:** 109-214 (Feb.) 1932

*A Peculiar Roentgen Picture in Pneumothorax. G. Torelli.—p. 109.
Aneurysm of the Innominate Artery: Two Cases. G. Lupacciolu.—p. 122.
Peculiar Roentgen Aspect of Pneumothorax Complicated by Adhesive Pleuritis. M. Accorimboni.—p. 130.
Roentgen Therapy of Vaquez's Disease. R. Rossoni.—p. 156.

**Peculiar Roentgen Picture in Pneumothorax.**—Torelli describes twelve cases of pneumothorax in which the relation between the opacity of the collapsed lung and the transparency of the pneumothoracic cavity was reversed, the opacity of the cavity being more marked than the shadow of the lung. This roentgen picture, which the author terms "opaque thorax," might be explained by assuming a thickening of the parietal pleura of the pneumothoracic cavity.

## Revista de la Asoc. Med. Argentina, Buenos Aires

**44:** 693-808 (Nov.-Dec.) 1932

Epithelioma of Maxillary Sinus: Resection; Prosthesis. F. E. Christmann.—p. 693.
*Sign Produced by Forced Extension of Neck in Meningitic States. C. A. Videla.—p. 705.
Short Transverse Mesocolon. F. E. Christmann and M. Estiu.—p. 733.
Hemolysins in Paroxysmal Hemoglobinuria. C. A. Videla, E. Savino and J. Peroncini.—p. 743.
*Antitetanic Serum Therapy Intravenously. C. A. Videla, E. Savino and J. Peroncini.—p. 749.
Bleeding Nipple and Reclus' Disease. F. E. Christmann and J. M. Foutel.—p. 765.
Acute Appendicitis After the Age of 50. M. Estiu, F. E. Christmann and I. C. Celeri.—p. 775.
Calcium and Potassium in Mumps. C. A. Videla and E. Savino.—p. 785.

**Sign Produced by Forced Extension of Neck.**—Videla explains that he has obtained flexion of the lower extremities in 50 per cent of the meningitic patients he has examined. He raises the upper part of the body and supports it with his left hand on the back of the patient while his right hand exerts pressure on the chin of the patient to obtain forced extension of the neck. He describes the case histories of twenty patients with meningitis, of which eight were tuberculous, seven meningococcic, two pneumococcic, two purulent and one syphilitic. Frankly positive signs were obtained in nine cases and a faint sign in one other case, the distribution being the following: five positive in eight tuberculous, two positive in two pneumococcic, two positive in two purulent and one faint in seven meningococcic patients.

**Antitetanic Serum Therapy Intravenously.**—Videla and his co-workers offer a preliminary report on the intravenous use of a concentrated antitetanic serum prepared by one of them in the Bacteriologic Institute of the National Department of Hygiene, review its application in six tetanus patients, of whom five died notwithstanding very active treatment, and offer the following conclusions: Specific treatment of tetanus with concentrated serum administered intravenously does not offer difficulties, and the use of *high dosage does not* produce shock, but the intravenous route is not more efficacious than the intramuscular route.

## Beiträge zur klinischen Chirurgie, Berlin

**154:** 475-634 (Feb. 17) 1932

*Chondrosarcoma of Bones. R. Kienböck.—p. 475.
Elimination Pyelography as Functional Test of Kidney. G. L. Lütz.—p. 507.
New Method of Anesthesia by Intraperitoneal and Intravenous Administration. V. Sanchis Perpiña and R. Diaz Sarasola.—p. 515.
*Hemorrhages of Renal Pelvis. K. Ebhardt.—p. 541.
Clinical Aspects of Plastic Use of Cutis. H. Polano.—p. 551.
Chronic Fibrous Struma with Retraction Manifestations. K. Gerlach.—p. 563.
*Surgical Aspects of Abdominal Purpura (Henoch). E. Seifert.—p. 575.
Injection Therapy of Varicose Veins. K Kettel.—p. 585.
*Diagnosis and Surgical Pathology of Umbilical Rudiments: Hiccup as Symptom of Tension of Ligamentum Teres Hepatis. G. Büttner.—p. 603.
Action of Hormones in Acute Infections. H. J. Lauber.—p. 613.

**Chondrosarcoma of Bones.**—According to Kienböck, a chondrosarcoma of the bones may develop even during early childhood. Then it grows slowly during many years and even decades and finally reaches a considerable size. It may also form metastases in the internal organs as well as in the skeleton itself. In spite of this steady growth, the pains and other complaints are comparatively slight; only in the late stages does cachexia develop and then death follows. A detailed case history illustrates these aspects. In this case backache and scoliosis, the first symptoms, appeared at the age of 14. Roentgen examination at the age of 18 revealed a tumor the size of a hen's egg on the fourth lumbar vertebra. The tumor increased gradually up to head size, and a secondary cranial tumor developed, which also reached great size. The liver became enlarged and the skin showed Addison's pigmentation. The patient became apathic, emaciated and pale and died in his thirty-second year. The necropsy revealed a chondrosarcoma of the lumbar vertebrae and multiple foci in the internal organs and in the bones. In the conclusion the author states that although the final prognosis in such cases is unfavorable, it should also be considered that the patient may live with the primary tumor as well as the metastases many years and even decades.

**Hemorrhages of Renal Pelvis.**—In a case of severe hemorrhage of the renal pelvis in which nephrectomy was done, Ebhardt detected in the histologic examination that the hemorrhage was of inflammatory origin, was submucous, and was accompanied by proliferation of the epithelium. The kidney itself showed no essential changes. From this the author concludes that the term essential renal hemorrhage, as it is used in the modern literature, should be employed with greatest reserve, since in nearly all carefully examined cases a cause could be found for the hemorrhage. The reason for the absence of hemorrhages in one case and the presence of severe hemorrhages in another case giving an apparently identical histologic picture has as yet not been determined. The possibility of toxic influences from the respective infections on the vascular walls is considered.

**Surgical Aspects of Abdominal Purpura (Henoch).**—Three cases with certain similarities, which came under Seifert's observation in a comparatively short time, induced him to study the literature on the connection between abdominal purpura and intestinal invagination. He then describes the three cases of his own observation. The first one, which concerned a youth, aged 19, makes it appear probable that subserous hemorrhages in the end of the ileum in adults constitute a variation of purpura abdominalis (Henoch) in children. In the second case (true purpura abdominalis in a child, aged 10) surgical treatment was resorted to because appendicitis or invagination was thought of, but there were only hemorrhages in the intestinal wall, by which the wall had acquired a peculiar rigidity; but it is probable that this condition had caused the acute spasmodic abdominal pains. In a third case, which concerned a boy, aged 8, purpura abdominalis was combined with invagination and the author thinks that this is not a rare condition. The surgical significance of Henoch's purpura he sees in the fact that the spasmodic abdominal pains with vomiting and occasional bloody stools may mask an invagination, and since without a surgical intervention the diagnosis invagination can be based only on the palpation of the characteristic tumor, he thinks it advisable to resort to laparotomy whenever an invagination is thought probable, for it is better to perform an unnecessary laparotomy, that is, if there is only an abdominal purpura, than to overlook an actually existing invagination. The laparotomy is the more justified because there is also the possibility of an acute appendicitis. The abdominal purpura does not make an operation unusually dangerous, for it does not involve anomalies in the bleeding process, since the morphologic blood picture, the coagulation and the bleeding time are all normal.

**Hiccup as Symptom of Tension of Ligamentum Teres Hepatis.**—Büttner questions whether hiccup is always caused by contractions of the esophagus (cardia). A triad of symptoms attracted his attention, namely: (1) pains from the umbilicus upward, (2) a burning pressure that reaches underneath the sternum and simultaneous rising of watery mucus, which leads to frequent expectoration, and (3) hiccup. He cites observations which indicate that traction in the epigastric region such as is caused by tension of the ligamentum teres hepatis causes hiccup. The hiccup thus produced is always of a mild nature. It appears that the substernal pains, the heartburn-like manifestations and the expectoration are likewise caused by this tension. The most important practical result of his observations the author sees in the possibility that a group of complaints which have frequently been considered and treated as neurosis of the stomach can thus be explained and can be corrected by an operative intervention.

## Klinische Wochenscrift, Berlin

**11:** 401-440 (March 5) 1932

Timely Recognition of Pulmonary Tuberculosis and Tuberculosis Inapperecepta. Braeuning.—p. 401.
*Hormone of Intermediary Lobe of Hypophysis. B. Zondek and H. Krohn.—p. 405.
Uremia in Bence-Jones Albuminuria. F. Buschke.—p. 408.
Modification of Renal Activity by Blockade of Splanchnic Nerve. E. Freude.—p. 411.
Synonymous and Symmetrical Contralateral Comovements Produced by Passive Movement and by Electrical Stimulation. L. Alexander.—p. 412.
Blood Cholesterol in Arterial Hypertension. C. V. Medvei.—p. 414.
Elimination Urography in Young Children. A. Viethen.—p. 416.
Serologic Investigations on Athletes. E. Jokl.—p. 417.
*Deficiency of Symptoms in Chronic Agranulocytosis. T. Doxiades.—p. 419.
Iodine Content of Cerebrospinal Fluid. A. Hahn and A. Schürmeyer.—p. 421.
Transformation of Urinary Folliculin from Pregnant Mares into Form Extractable by Ether. S. Stammler and E. Djatlowa.—p. 422.
Mercury Diuresis: Indication and Application. K. Engel.—p. 423.

**Hormone of Intermediary Lobe of Hypophysis.**—Zondek and Krohn report their studies on the chromatophoric substance of the hypophysis. As a test object for this pigment hormone the authors used the minnow (Phoxinus laevis), a small fish, which at the spawning time develops the so-called nuptial dress, an intensive coloration on certain parts of the body. Attempts to produce the nuptial dress outside of the spawning period by means of the usual sex hormones (folliculin and prolan) failed, but it was found that, when a hypophyseal extract was injected that did not contain prolan, the minnows developed an intensive red coloration at the sites of attachment of the pectoral, ventral and anal fins. Microscopic examination revealed that this red coloration was due to a maximal expansion of the erythrophores. Since the erythrophores belong to the same cell group as the melanophores, it seems probable that the red coloration is produced by the melanophoric or chromatophoric substance of the hypophysis. The authors give a detailed description of their tests and state that they succeeded in isolating the chromatophoric substance as a special hormone, and that this hormone is produced in the pars intermedia of the hypophysis.

**Symptoms in Chronic Agranulocytosis.**—Doxiades relates the clinical histories of three patients with severe leukopenia or agranulocytosis in which the disease took a chronic and perhaps a benign course. In one of these cases there existed a reduction of the granulocytes for three years, with occasional latent intervals. During this period the patient passed through numerous infections, during which low as well as higher leukocyte values could be demonstrated. The transition from almost complete disappearance of the granulocytes to normal values of polymorphonuclear leukocytes took place without any therapeutic intervention whatever.

## Medizinische Klinik, Berlin

**28:** 351-386 (March 11) 1932

*Etiologic and Pathogenic Studies on Lymphogranulomatosis Inguinale. Levaditi.—p. 351.
Definition of Disease. F. Reiche.—p. 354.
Puberty Neurosis. Leichtentritt.—p. 355.
Trauma and Diabetes Mellitus. H. Liebig.—p. 357.
Erythema Nodosum and Scarlet Fever. H. Perger.—p. 360.
Nontypical Tumors of Bladder. K. Heusch.—p. 361.
Plastic Anatomy of Eyes of Nurslings and Children. R. H. Kahn.—p. 364.
Artificial High Mountain Climate. E. Homberger.—p. 368.

**Etiologic Studies on Lymphogranulomatosis Inguinale.**—Levaditi points out that until 1930 it was assumed that either a culturable micro-organism or a protozoan might be the cause of lymphogranulomatosis inguinale. Then, however, Hellerström and Wassen reported their experiments on monkeys, which indicated that a virus is the pathogenic agent. The author repeated the experiments reported by these investigators and obtained the same results. He further compared the virulence of several strains of the virus and he found that it varied greatly. He also investigated the biologic qualities of the virus, that is, its resistance to heat and cold and to various chemical substances. He found that it is a filtrable virus and that under the influence of electrophoresis it shows the same action as other types of virus, such as the virus of herpes, of encephalitis and of chicken cholera. Studies on the suitability of the various species of experimental animals for tests on the virus of granulomatosis inguinale revealed that only monkeys (not rabbits, rats and cats) are susceptible to the virus. The symptomatology of granulomatosis inguinale in monkeys varies according to the mode of inoculation, whether intracranial, intrapreputial or intra-inguinal. In intracranial inoculation, those symptoms predominate which indicate irritation of the cerebrospinal meninges. However, intrapreputial or intra-inguinal inoculations produce a bilateral inguinal polyadenitis, similar to that observable in human beings, but there are no indications of an involvement of the nervous system. Studies on the distribution of the virus in the organism of inoculated monkeys revealed that the virus is present in all organs. In regard to immunity and to the virucidal power of the serum in lymphogranulomatosis inguinale the author states that there are indications that during the disease the serum of the patient contains the virucidal principle, and he thinks that this factor may eventually be utilized for serodiagnosis and for serotherapy of the disease.

## Zentralblatt für Chirurgie, Leipzig

**59:** 641-704 (March 12) 1932

Adjustment of Articular Surfaces of Tibia by Elevation by Means of Bone Wedges. E. Lexer.—p. 642.
Anatomic Localization and Treatment of Pain in Knee Caused by Overexertion. J. Dollinger.—p. 644.
Duration of Spinal Anesthesia. W. Nissel.—p. 648.
*Incarceration of Anastomotic Loop in Mesocolic Opening in Posterior Gastro-Enterostomy. L. Torraca.—p. 652.
Isolated Dorsal Luxation of First Metacarpus. Z. Balogh.—p. 656.
Plastic Repair of Anterior Cruciate Ligament. W. Porzelt.—p. 658.
Technic of Roentgenoscopy of Lumbosacral Angle. M. Samuel.—p. 661.
Infection. H. F. O. Haberland.—p. 661.
Surgery of Colon. H. Finsterer.—p. 665.

**Incarceration of Anastomotic Loop in Mesocolic Opening in Gastro-Enterostomy.**—Torraca points out that von Hacker was the one who first advised fastening the margins of the mesocolic opening to the posterior wall of the stomach in order to prevent contraction of this opening and incarceration. Most surgeons followed this suggestion, but others suggested fastening on the suture of the anastomosis or on the intestinal wall. The author followed the advice of Bier, who suggested that the mesocolic opening could be fastened either to the wall of the stomach or to the intestinal wall. That the latter procedure may cause complications the author illustrates by a case in which an intestinal obstruction developed, which necessitated a second operation. He cites similar cases from the literature and emphasizes once more that fastening the mesocolic opening to the intestinal wall may have serious consequences. He also advises against fastening on the anastomotic suture and he recommends von Hacker's original method; namely, fastening on the wall of the stomach.

## Zentralblatt für Gynäkologie, Leipzig

**56:** 641-704 (March 12) 1932

Official Obstetric Statistics. L. Seitz.—p. 642.
Problem of Cesarean Section. E. Preissecker.—p. 645.
*Action Mechanism of Hormones of Anterior Lobe of Hypophysis and Acceleration of Biologic Pregnancy Reaction. H.-U. Hirsch-Hoffmann.—p. 655.
Interruption of Pregnancy on Account of Fracture of Vertebral Column. H. Naujoks.—p. 661.
*Induction and Acceleration of Labor by Combination of Modified Kiwisch's Hot Vaginal Douche with Stein's Method. H. Hellendall.—p. 667.
New Indications for Calcium Therapy in Gynecology. E. Wilser.—p. 674.
Simultaneous Bilateral Tubal Pregnancy. F. Heymann.—p. 678.

**Acceleration of Biologic Pregnancy Reaction.**—Hirsch-Hoffmann shows that the action of the hormones A and B of the anterior hypophysis is in some instances already noticeable after twenty-eight hours, but always after thirty-six or thirty-eight hours, provided the quantity injected was sufficiently large. The indication for the presence of the hormone A is the growth of the follicles with formation of a follicle cavity. The cells of the stratum granulosum are somewhat proliferated but do not differ essentially from those of a resting follicle. Presence of hormone B is indicated by a marked enlargement of the cells of the stratum granulosum, which gives the follicle a honeycomb appearance, and also by beginning or advanced luteinous transformation of the cells of the stratum granulosum. The enlargement of the cells the author considers as beginning transformation and in the Aschheim-Zondek reaction he considers it as indicative of an existing pregnancy. He thinks that for the diagnosis of a normal pregnancy it is not necessary to use the most rapid method. However, it should be considered that in urgent cases it is possible to detect signs of pregnancy after thirty-six or thirty-eight hours.

**Induction of Labor.**—According to Hellendall, the effect of Kiwisch's hot vaginal douche is due not so much to the thermic stimulation as to the dilator effect. To effect dilatation, efforts should be made to produce stasis of the fluid in the vagina, which is done by temporarily closing the vaginal opening. Every douche is continued for from one-half to one hour so that the vagina is irrigated by from 50 to 100 liters of fluid. The author cites twelve cases from the literature in which labor was induced by employing only this method, and reports one case of his own observation, in which he had good success by combining the vaginal douche according to Kiwisch's method with Stein's method of injection of solution of pituitary. He reports five other cases in which he induced labor by this combination method and then he describes four cases in which this procedure proved helpful to accelerate the process of labor after the uterine contractions had become weak or had ceased entirely.

## Mikrobiologicheskiy Jurnal, Leningrad

**13:** 1-80, 1931

*Flocculating, Precipitating Property of Antibacterial Serum. M. Elisuiskiy.—p. 5.
*Serologic Study: Subcutaneous and Enteral Injection of Bivaccine (Typhoid and Paratyphoid B). L. I. Budakov, N. N. Romanenko and K. N. Tokarevich.—p. 23.
Mechanism of Scarlet Fever Following Burn. A. A. Smorodintsev and E. F. Togunova.—p. 27.
Intra-Articular Fixation of Staphylococci and Bacterium Paratyphosum B Subsequent to Local Cold Applications. V. I. Ioffe and A. P. Lopatkin.—p. 36.
*Influence of Bacteriophage on Local Infectious Process. Ya. F. Sharov.—p. 47.
Treatment of Local Diphtheria with Combined Vaccine. L. I. Budakov, N. N. Romanenko, K. N. Tokarevich.—p. 51.
*Electrophoresis in Study of Rabies Virus. M. P. Gluzman, D. M. Gorfunkel, Yu. V. Solovyeva.—p. 56.
Mixed Blood Cultures in Typhoid. A. I. Pshenichnov.—p. 61.
Paracolon IV Group. N. G. Klineva.—p. 64.
*Passage of Brucella Melitensis-Abortus Through Normal Skin of Guinea-Pigs and Rabbits. V. N. Makkaveiskiy, I. V. Karkadinovskaya, N. I. Mixeev.—p. 72.

**Flocculating Property of Antibacterial Serum.**—Elisuiskiy performed flocculation and precipitation tests, according to the methods of Ramon and Deyer, and also complement fixation tests on the meningococcus, Pfeiffer bacillus, Brucella melitensis, and Bacillus anthracis. Tests were performed with fresh serums, some preserved with 0.5 per cent chloroform and others kept at icebox temperature as long as two years. The flocculations of antibacterial serum and filtrates of cultures were in all cases similar to those reported using antidiphtheria serum. The specificity of the flocculation tests was controlled by using normal and nonspecific serums. The intensity and rapidity of the flocculation was found to vary with the serum, the bacterial filtrate and especially with the proportion of each. Ignorance of the latter results in flocculation with characteristic gradual increase in precipitation but no zone of flocculation. Antibacterial serum is stronger than antitoxic serum. The antibacterial serum in contradistinction gives an "initial flocculation," since it contains the optimum of the reacting ingredients. The titer as well as the time for the appearance of the initial flocculation varies with the character as well as the immune property of the serum. Therefore initial flocculation is a good evaluation of antibacterial as well as antitoxic serums. And to obtain a zone of flocculation it is necessary to find the proper proportions when mixing the serum and the filtrate. In studying the zone phenomena, a constant amount of precipitin (serum) should be added to progressive quantities of precipitinogen (bacterial filtrate). In some tests it was noted that the zone of initial flocculation coincided with the complement fixing dose. In others in which this was not true, the author believes that previous flocculation had rendered the serum less sensitive. He concludes that initial flocculation should be a criterion in the determination of immune substances in serums and that it could be added to or used instead of agglutination and complement fixation tests.

**Injection of Bivaccine (Typhoid and Paratyphoid B).**—Budakov and his co-workers in an epidemic of typhoid in 1931 utilized a bivaccine of Bacillus typhosus and Bacillus paratyphosus B. Three variations were included; namely, (1) the usual vaccine consisting of 1 cc. (1 billion typhoid and 500 million paratyphoid bacilli), (2) a formaldehyde treated bivaccine (anavaccine), and (3) a bivaccine in chocolate tablet form (administered by mouth), each tablet containing 100 billion bacilli (two thirds typhoid bacilli and one third paratyphoid B bacilli). Among 7,300 persons, 526 persons were treated with anabivaccine and 3,964 persons were treated with enterovaccine. Serologic examinations for immunity were made in 680 instances: 202 immunized with bivaccine, 162 with anabivaccine, 207 with enterobivaccine, and 109 controls without immunization. It was found that most of the high titers were due to bivaccine in spite of the fact that less of the antigen was used for vaccination; and the number of negatives for both typhoid and paratyphoid were less. The titer for Bacillus typhosus was always higher than for Bacillus paratyphosus B. The negative serologic reactions were between 40 and 50 per cent, and the titers were lower for both typhoid and paratyphoid when the enteral route rather than the subcutaneous route was used for immunization. The authors conclude that the bivaccine gives better results than the anavaccine and that the subcutaneous route is preferable to the enteral route.

**Influence of Bacteriophage on Local Infections.**—Sharov discusses two series of experiments in which bacteriophage "Posen" was used for treatment. In one series the articulations of a number of mice were experimentally infected with the paratyphoid B bacillus, and this series received for treatment subcutaneous injections of bacteriophage. Similarly another series of mice with experimental local infectious processes received intravenous injections of bacteriophage. The mice were killed after seventy-two hours and cultures were made of the articulations, blood, and lymph nodes. The author found that in spite of the fact that the bacteriophage strain "Posen" produced lysis in high dilutions when brought in contact with Bacillus paratyphosus B in vitro, his experiments showed no decrease in the microbic flora when the experiments were performed in vivo.

**Electrophoresis in Study of Rabies Virus.**—Gluzman and his co-workers used emulsions of brain from rabbits infected with rabies and killed in the agonal stages. The emulsions were diluted 500 times in buffers ranging from $p_H$ 6.0 to 9.3. The apparatus for the electrophoresis was a modification of Todd's instrument. The current at the rate of from 0.8 to 7 milliamperes with a potential of 120 volts was allowed to flow from two to sometimes three hours and then quantities of solution were taken from the region around the positive pole and around the negative pole and for control purposes from the region in between the two poles, and rabbits were injected subdurally. No change in virulence for rabbits was noted in the material taken during the passage of the current. The solution taken from the anode was virulent in twenty-one of the twenty-seven instances. The solution around the cathode was virulent in six instances, but in the latter the solution around the anode proved to be virulent at the same time. The range of hydrogen ion concentration in the six instances was from $p_H$ 8.0 to $p_H$ 8.6 and the rate of movement was slowest in that range. The authors conclude that the electrophoresis of the rabies virus is toward the positive pole in the $p_H$ range of from 6.0 to 9.3. The virus loses its virulence on the acid side or at the iso-electric point. It was not found possible to separate the virus from the rest of the solid substance.

**Passage of Brucella Melitensis-Abortus Through Normal Skin.**—Makkaveiskiy and his co-workers state that the alimentary tract is not the only portal of entry for Brucella abortus and Brucella melitensis. The skin as a portal of entry was used in two groups of guinea-pigs (twenty each) and two groups of rabbits (ten each) in experiments on Brucella melitensis and Brucella abortus. In ten rabbits and ten guinea-pigs, the injections were made into the conjunctiva. The authors found that agglutination tests were positive in 25 per cent of the guinea-pigs and 60 per cent of the rabbits infected through the normal skin with Brucella abortus; and the tests were positive in 10 per cent of the guinea-pigs and 20 per cent of the rabbits infected through the normal skin with Brucella mellitensis. The tests were positive in 60 per cent of the guinea-pigs and 90 per cent of the rabbits injected with both strains into the conjunctiva.

## Ugeskrift for Læger, Copenhagen

### 94: 249-278 (March 10) 1932

*Diagnosis and Prognosis in Cardiac Diseases. E. Warburg.—p. 249.*
Ulcer of Leg and Treatment. H. Tvedegaard.—p. 256.
*Hematologic Casuistics. K. Winge.—p. 259.
*Albuminuria in Polycythemia and Relation During Treatment. H. C. Gram.—p. 262.

**Hematologic Casuistics.**—In Winge's first case, of acute leukemia, epistaxis was the earliest symptom and death occurred after barely three weeks. The second case, of myeloid leukemia, was in a patient aged 76, with a history of recognized symptoms for only six months. In the third case, of lymphosarcoma, there was a moderate anemia with lymphocytosis, followed after roentgen treatment by lymphopenia. The fourth and fifth cases illustrate the varying pictures in the development of a pernicious anemia, with, in the last, difficulty in diagnosis.

**Albuminuria in Polycythemia.**—On the basis of three cases of polycythemia treated with phenolhydrazine and benzene, Gram is inclined to believe that the albuminuria in polycythemia may be a result of the increased number of cells, not the cause or a coordinated phenomenon. The albuminuria, he says, is improved or disappears when the blood values approach or attain normal values as the result of effective treatment.

### 94: 279-305 (March 17) 1932

*Infectious Mononucleosis. A. Nyfeldt.—p. 279.
Dependence of Normal Kidney Function on Size of Body. C. Holten.—p. 288.
*Blood Sugar Studies in Diphtheria Patients. A. Brems.—p. 292.
Two Cases of Recurring Measles. K. Lau.—p. 298.

**Infectious Mononucleosis.**—Nyfeldt describes the history, clinical aspect, diagnosis and differential diagnosis of this condition, partly from study of the literature. He urges examination of the blood in all diseases of the throat in order to make sure the diagnosis, particularly for the timely diagnosis of agranulocytosis.

**Blood Sugar Studies in Diphtheria Patients.**—Brems says that a moderate fasting hyperglycemia is not infrequently seen in the acute toxemic stage of diphtheria. The blood sugar curve after oral administration of 1 Gm. of dextrose per kilogram of body weight in many cases of only fairly grave diphtheria shows remarkably high maximal values and a strongly protracted hyperglycemia, with return to normal usually after from one to two weeks. The phenomenon is due to the intoxication, being frequently noted in afebrile patients and absent in mild cases with possibly considerable rise in temperature. At the start of the condition, glycosuria is occasionally seen. After the administration of dextrose, the elimination of sugar in the urine is an almost constant phenomenon in toxic patients.

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# DRUG ADDICTION—A WORLD-WIDE PROBLEM

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The pursuit of intoxication, the search for a means of invoking a condition of unimagined bliss, though it be but a bitter self-deception, a paltry fool's paradise, is a goal which even the most primitive peoples have sought and found. At all times and in all places, in the days of Homer, under the tropical sun and in the regions of eternal snow alike, mankind has found methods of attaining this "holy," god-given madness. So long as narcotics remained the secret of the priesthood, they were of little danger to mankind in general. In more modern times, the explanation and popularization of hitherto sacred usages, the expansion of science, the extension of our knowledge and experience and, above all, the enormous advances made in the last hundred and fifty years in the medical and natural sciences have brought about a change. A few of the milestones in the development of medicine include the isolation of morphine by Sertürner in 1806, the ingenious invention of its subcutaneous injection in 1853 by Wood, whose first experiments on injection were carried out with a solution of morphine, and the introduction into medical practice of cocaine, the anesthetic properties of which were known in 1860 but which curiously enough was not used therapeutically until Koller, a Viennese physician who found his second home in the United States, first employed it clinically in 1884. This triumph of rational therapy based on the results of experimental and clinical research had, however, its darker side in the growth and extension of drug addiction. Among the many bitter legacies of the World War and postwar times, not the least difficult to combat was this scourge. New problems constantly arose to be solved. As a result, many medical and social questions were once again revived or brought into greater prominence. Through careful scientific investigation many phenomena, for instance the rapidly increasing incidence of cocaine addiction, took on a new aspect. Older problems were examined in a fresh light and were measured by newer and more rational standards.

Drug addiction is a colorful picture of varied perspective. In this field practical medicine must work in the closest possible collaboration with legislation and justice in order that useful progress may be made, in the interest not only of individual patients but also of the health and sanity of the race as a whole. The economist, too, should have his place in the council chamber, for drug addicts are not only a source of leakage from the ranks of producers and consumers but also a permanent burden on the national exchequer.

It is hygiene, in the best sense of the word, that must here be practiced. From the physician it demands much effort and knowledge and a full sense of responsibility. He must not be beguiled by false sympathy into prescribing habit-forming drugs to individual addicts. It is his special duty to institute a withdrawal cure and thus perform his part in freeing the world from a plague which in many places has become an epidemic. Should the term epidemic seem too bold, it is only necessary to consider how many members of our own profession in every country have been attacked by the "virus" of drug addiction; how many meritorious physicians and research workers in this field have succumbed to its seductive influence in spite of all their knowledge and, one hesitates to say it, by a seemingly irresistible chain of events, have found in it their ruin.

A few figures will suffice to support this disturbing contention. Out of 100 male morphine addicts, Oppenheim, the late Berlin neurologist, found in prewar times 42 physicians, the Munich psychiatrist Kraepelin 10 out of 42 addicts, and E. Meyer 21 out of 64 addicts, apart from members of associated professions, such as nurses and dispensers. Similar figures are given by other clinicians. In postwar times the percentage of the total number of addicts represented by medical men has considerably decreased but it is nevertheless still high enough. According to recent statistics (1928) the number of physicians in Germany who personally consume a tenth of a gram or more of morphine daily is about 500; that is to say, roughly 1 per cent of the profession.[1]

The medical addict forms a source of danger in that his addiction may lead him to prescribe his favorite drug too lightly for his patients without exercising rigorous judgment from the medical standpoint as to the real need for it. Such a condition is not far removed from proselytism, and the physician who no longer fully realizes the sacred nature of his professional responsibility may form the nucleus of a colony of addicts, quite apart from the so-called script doctors, who have shown themselves entirely unworthy representatives of our profession. At this point, however, it is necessary to emphasize the fact that there are many physicians of high standing and worthy achievement who are to a certain extent morphine addicts but who nevertheless carry out their duty in every possible way and who prescribe opiates and cocaine solely in accordance with the strictest rules of medical practice. Apart altogether from legal procedures connected with

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Clinical lecture, read at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 9, 1932.

[1] Pohlisch: *Die Verbreitung des chronischen Opiatmissbrauchs in Deutschland,* Monatsschr. f. Psychiat. **79,** number 1 Berlin, S. Karger.

transgressions of the law, it is necessary in all countries to introduce a system whereby those physicians whose addiction has rendered them dangerous to the community should be deprived of their licenses; such a regulation will shortly be enforced in Germany.

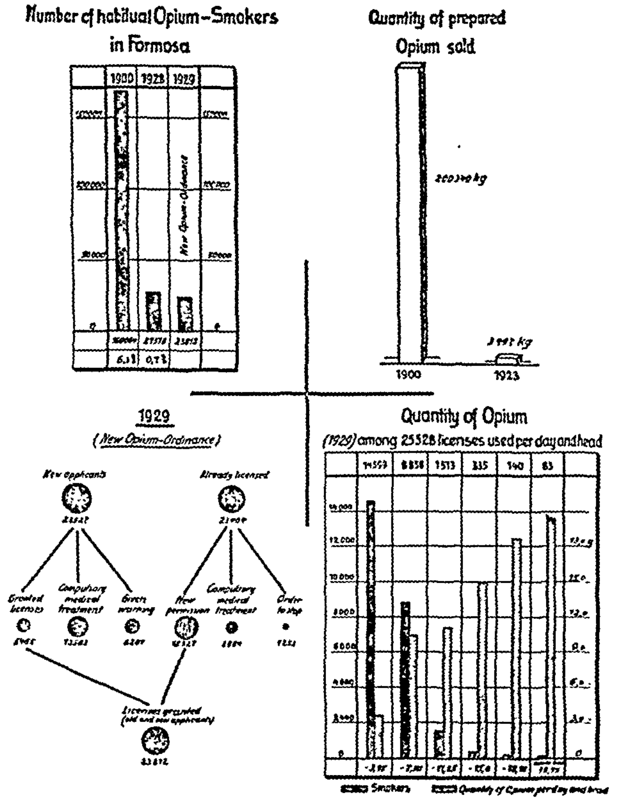

Fig. 1.—Opium in Formosa.

NARCOTIC ADDICTION THROUGHOUT THE WORLD

In order to demonstrate clearly the universal nature of the problem of drug addiction, it is necessary to review briefly the situation in various countries. It is not easy to make a selection but I must of necessity content myself with the description of only a few scenes from the world panorama. For the present purpose, therefore, I will briefly outline the conditions in China, Formosa, British India and Egypt. Of the European countries, Germany will be particularly discussed.

In 1907 the hope was cherished that it would be possible over a period of ten years to obliterate entirely both the internal production in China itself and the importation of opium from India, so that in 1917 the problem would have been in a large measure solved. In the meantime, however, internal political changes have taken place which are today occupying the attention of the whole world and which permit the continued existence of the opium scourge. We are not concerned here with political questions except so far as they concern narcotic addiction. While the cultivation of opium is technically forbidden, the army continues to demand it. According to what one reads and hears, many of the Chinese military authorities of the most various political parties are themselves extensive dealers in opium and the legally introduced fines have degenerated into a system of licenses. In addition, a severe abuse of morphine has arisen in the distribution of diacetylmorphine. It has been observed that the Chinese soldiers roll themselves cigarets from tobacco with which diacetylmorphine powder is mixed. The coolies preferably submit to an injection of morphine, since this produces the desired effect more quickly and cheaply than the smoking of opium, which takes up much more of their working hours. The placards of the Chinese Anti-Opium Association are eloquent, but the campaign seems to be somewhat too idealistic and at present bereft of any great effect in the desired direction. The restoration of political stability within the country itself would undoubtedly lead to better conditions. Chinese physicians who have studied in European or American universities are entirely in agreement with our attitude toward drug addiction.

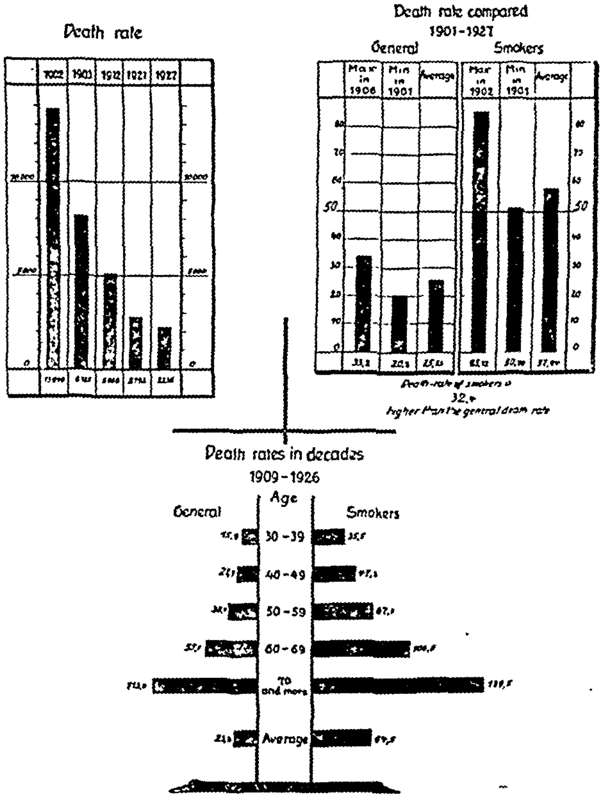

Fig. 2.—Death rate among opium smokers in Formosa.

As a contrast to the indefinite position in China, it is interesting to note the gradual reclamation of a Chinese population in the island of Formosa,[2] which is under Japanese control. In this territory, certain sections of the population are granted a license to smoke opium and the individual smokers are controlled. A complete census has been maintained and, as will be seen from figure 1, the number of smokers reached 6.3 per cent of the population in 1900 and 0.7 per cent in 1928; that is to say, it has been reduced to one ninth in twenty-eight years. Parallel with this, the amount of opium sold for smoking purposes has been reduced to one sixtieth of the former consumption. In 1929 a new opium ordinance was issued and the old applicants for licenses were sifted out from the new and hitherto unlicensed candidates. It will also be noticed (fig. 1) that a considerable number of new applicants were obliged to undergo a compulsory "withdrawal" cure, Formosa being the only country where such a measure is legally enforced. From the old applicants, although the majority received new licenses, some were refused permission to continue opium smoking. Further, others were warned off, so that the combined number of old and new applicants was roughly the same as the number of previous license holders, instead of showing an increase to twice this figure. In addition, it will be seen that the majority of smokers get along with a minimum quantity of opium and that appreciable quantities are allowed only to a rapidly diminishing number of addicts. It may be of interest to compare these figures with American experience in the reformation of another island, the Philippines. The fact that the death rate among opium smokers is much greater than the average for the same population is borne out by the literature (fig. 2). The mortality among smokers is in fact 32 per thousand higher than the general death rate, and this relationship is essentially similar throughout the various age periods. The origin of opium addiction in the lowest social strata is in large measure due to the fact that here, as in other Asiatic countries, opium is considered as a "home remedy" (fig. 3). Nevertheless the euphoric effect undoubtedly plays a certain part.

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[2] Commission of Enquiry into the Control of Opium Smoking in the Far East, League of Nations, Geneva, 1930, volume I. Tu: Statistical Studies on Opium Addiction in Formosa, Jap. J. M. Sc. Tr. IV, Pharmacol. 5: 48-52, 1931.

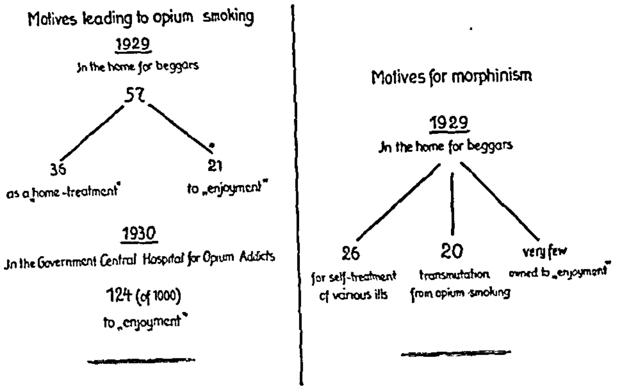

Fig. 3.—Motives leading to opium smoking and to morphinism in Formosa.

It is curious that in another closely related population, namely, the Japanese, addiction is unknown as a national practice.

In British India opium eating is also endemic[3] although, as far as we know, it is decreasing rapidly, at least as far as the production of the drug goes. A stringent control is being exercised, which, however, is largely vitiated by the fact that the semi-independent native states have preserved their independence in this respect. Since 1926, public auctions of opium in Calcutta have ceased to take place. According to a resolution of the government, the export of opium to the Far East, apart from supplies destined for medical or scientific purposes, will have ceased within ten years; that is to say, at the end of 1935. So long, however, as opium is manufactured in quantities far in excess of those required for these serious purposes, the prevention of illegal traffic is impossible. At the same time the retail prices have been raised, a measure which will perhaps also contribute to the suppression of the habit. A more serious and, medically considered, incredible fact is the Indian mothers' custom of giving opium to their children to prevent them from crying and to insure that they sleep and are quiet while the mother is at work; further, opium is held in such high esteem that it is administered to children with the intention of rendering them fat and strong! The superstition that centers around the poppy juice forms a great obstacle to its removal, as do many other external factors which can be fought only with difficulty. A nation will not readily give up a household remedy.

Curiously enough, opium smoking is not customary in India. On the other hand, a certain special form of addiction is practiced which, as far as I know, is peculiar to India. It consists of the use of the intact capsules of Papaver somniferum—the so-called "post." This practice is confined to the Punjab, where there is a total of only 6,500 addicts. The fresh poppy heads are thoroughly macerated with water and the resulting fluid is swallowed. In contradistinction to opium addiction, "post" is preferably taken in company with others, and among the lower classes "clubs" exist for this purpose. This form of opium consumption is cheaper and is not subject to control. It exists solely as a habit, and is not used medically. The effect, which appears in some twenty or thirty minutes, is said to be more markedly euphoric than that of opium eating. The morphine content of the liquid is relatively small in relation to the larger quantities of narcotine, codeine and papaverine that it contains. To a certain extent this beverage is used as a "household remedy," though never in serious illness. It is far more popular as a "society drink" as a euphoric and as a substitute for alcohol among manual workers. I have described this unusual form of addiction in some detail since, in spite

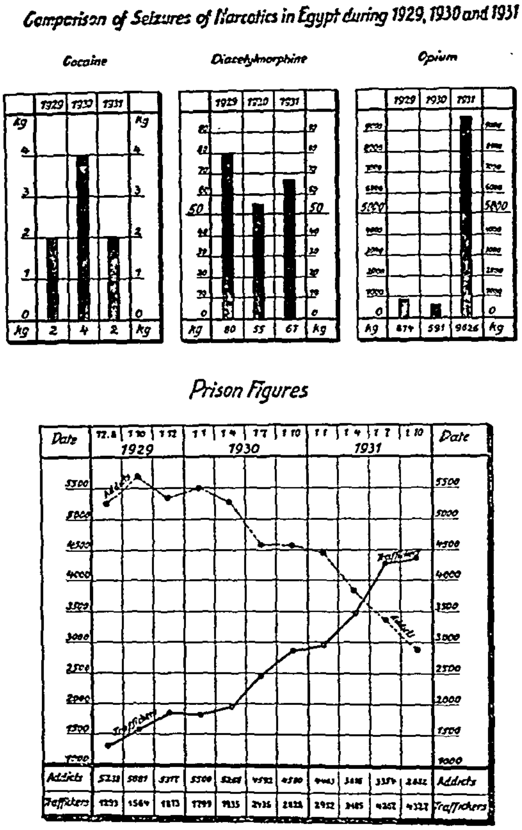

Fig. 4.—Narcotics in Egypt.

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3. Chopra, R. N.: The Present Position of the Opium Habit in India, Indian J. M. Research **16:** 389 (Oct.) 1928.

4. Chopra, R. N.; Grewal, K. S.; Chowhan, J. S., and Chopra, G. S.: Addiction to "Post" in India, Indian J. M. Research **17:** 985 (April) 1930.

of its limited occurrence, it represents an interesting divergence from the usual methods of opium consumption. The effect is weaker and of shorter duration, as might be expected from its composition. It is more an excitant than a sedative and has a less marked effect on the alimentary tract. It has a more pronounced diuretic action and a certain restorative effect. The addicts show pronounced loss of memory, and in spite of the small morphine content considerable physical, mental and moral degeneration sets in. While an opium addict taking small doses may not be easily differentiated from a normal individual, a person taking even small quantities of "post" at once gives himself away—so much so that in the Punjab a lazy, slovenly, dull and unintelligent-looking person is often called a "posti." The results of abstinence recall to a great extent those observed with opium withdrawal. The habit becomes deeply ingrained. "Post" addiction thus forms an interesting variation in drug addiction which is fortunately not widely spread.

Finally, a glimpse into the conditions existing in a part of North Africa, Egypt.[5] The cradle of civilization has become the chief battlefield in the fight against the trade in illegal drugs. Russell Pasha, the chief of the Cairo police, recently stated that among a population of 14 millions, there are, at a moderate estimate, some half a million addicts. This figure includes, however, the many hashish smokers, the total number of whom, however, appears to be rapidly decreasing as a result of the energetic measures directed against the practice. While all classes of society suffer from the scourge, it is chiefly the poorer classes who are involved. In the central prison there is at the present time a constant population of some 7,000 addicts and dealers sentenced for participation in drug traffic. In all necessary cases these prisoners receive medical treatment in the form of withdrawal cures. It is interesting to note from figure 4 that, while the number of addicts has fallen considerably, the number of dealers has risen.

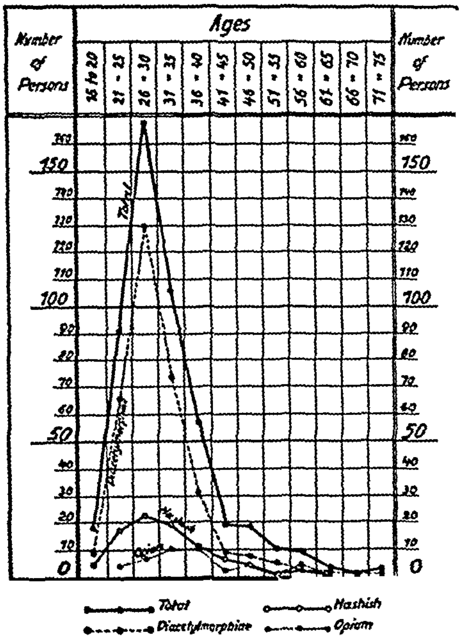

Fig. 5.—Ages of 500 prisoner addicts in 1931 in Egypt.

Whereas in two years the number of persons convicted for trafficking has increased nearly threefold, the number of persons sentenced for addiction has fallen by 50 per cent. The same causes as in 1930 have been helping in 1931 to bring about this reduction in addiction: adulteration is so high that dope is hardly worth buying, and money is so scarce that the fellahs can no longer afford to waste it on drugs that give no kick.

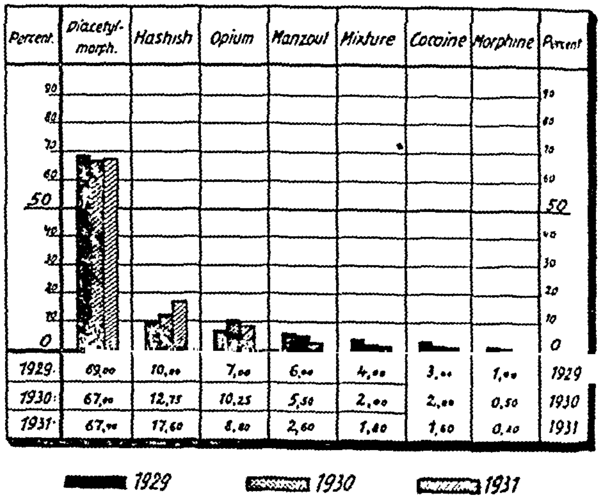

Fig. 6.—Drugs to which 200 Egyptians in 1929, 400 in 1930 and 500 in 1931 were addicted. Manzoul consists of a mixture of hashish, dry spices and herbs.

The effectiveness of the methods of control will be obvious from figures 4, 5 and 6, from which it will also be seen that diacetylmorphine plays by far the most important rôle, while the success of the measures against opium consumption is equally evident. In this country cocaine is only of slight importance. Diacetylmorphine is particularly favored by Orientals as it is thought to be an excellent aphrodisiac, though actually it exercises this effect only in the earliest stages of addiction.

Hashish is again becoming a big problem. This increase of hashish smuggling (from Syria, further supplies are now being smuggled in from Turkey and perhaps Yugoslavia) is, however, a clear sign of the increased difficulties in obtaining the white drugs. I believe that figures 4, 5, 6, 7 and 8 give a clear indication of the situation today in Egypt. Addiction to white drugs, though still terribly prevalent, is not as widespread as before. Hundreds and thousands of people, possibly formerly honest, have been tempted into trafficking by the profits to be made and are now paying the penalty. This illustrates that the damage done to a country by drug addiction is not merely the medical damage done to the addicts but is the much more serious harm done by the widespread corruption introduced by it into all classes of society.

The remaining charts confirm the experience gained in our own territories. The majority of addicts are in the prime of life; i. e., from 20 to 40 years of age, although children of 11 to 15 and even 6 to 10 years are also found. Addiction lasts as a rule from two to five years. As before stated, diacetylmorphine occupies the most prominent position, a point also borne out by analysis of the various age decades.

A further improvement in the conditions is to be expected, now that Turkey has at last introduced a control of internal production. It has been subsequently shown that enormous quantities of diacetylmorphine were manufactured in Turkey, the export of which not only to Egypt but also to Europe and the United States was attempted.

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[5] Egyptian Government, Central Narcotics Intelligence Bureau, Annual Report for the years 1929, 1930, 1931. Wolff (footnote 10).

It will thus be seen that there are many strongholds of the drug traffic and of drug addiction which remain to be seized. The front line of attack against these fortresses must be occupied by the medical profession.

As to the position in Europe there is little to add. According to our present knowledge, the general impression is that addiction is in all respects on the decline. Occasional cases of smuggling on a large scale, which provide sensational reports for the daily press, need not deter the physician from arriving at this conclusion. Great Britain, for instance, has exceptionally few alkaloid addicts, a fact of which I am constantly receiving fresh confirmation. Drug addiction has for her ceased to be an acute problem and conditions are probably much the same in Norway, Sweden and Denmark. As to the position in France there is little information. At the present time scientific investigations in this field are being carried out chiefly in the German speaking countries. The new Austrian legislation is unfortunately all too lenient, with the result that Vienna has become a center of smuggling. The Egyptian government has recently protested against this state of affairs. Thus, once again the close interdependence of the various countries is emphasized and the universal nature of the problem of drug addiction demonstrated.

### THE SITUATION IN GERMANY

In Germany the number of addicts has unquestionably greatly declined, as is shown by the decrease in the number of morphine and cocaine addicts arrested in public resorts (fig. 9). According to exact calculations made in 1928, the number of addicts, so far as the needs of these individuals are covered by medical prescriptions, varies from 4,000 to 6,000 in a total population of about 64 millions.[1] Through the "opium department" of the health office of the *reich* (reichsgesundheitsamt) it is possible for the government to obtain an extensive survey of the whole traffic in these substances and to exercise a control over prescriptions. Somewhat more than a year ago a decisive step forward was made. In full agreement with the German medical profession, the government has introduced a system of stringent restrictions:[6] Before ordering any substance covered by the German opium law (drawn up in accordance with the international convention), every physician is in duty bound to ascertain whether, according to the strictest medical principles, the prescription of the drug is definitely necessary.[7] The handing over of the substance itself is absolutely forbidden, and a pharmacist is not allowed to make up a prescription containing more than one opiate. Further, all these substances may not be present in a mixture in more than a certain percentage. For each patient, up to 0.2 Gm. of morphine may be prescribed daily without further formalities, provided the form of the prescription complies exactly with the prescribed regulation. A corresponding quantity of opium (2 Gm.) and the galenic preparations, particularly tincture of opium, is allowed. A similar amount is also allowed for general daily use in the physician's practice. The pharmacists do in fact observe these rules closely. Should the physician require larger quantities for "special cases," he must make an entry in the so-called morphine book.[8] The nature of the disease rendering such quantities necessary must be precisely stated and the period of time for which the remedy is prescribed. As in most cases the patient will be an addict, the numerous questions which the physician must answer in writing in the morphine book are specially adapted to drug addiction. The questionnaire reads as follows:

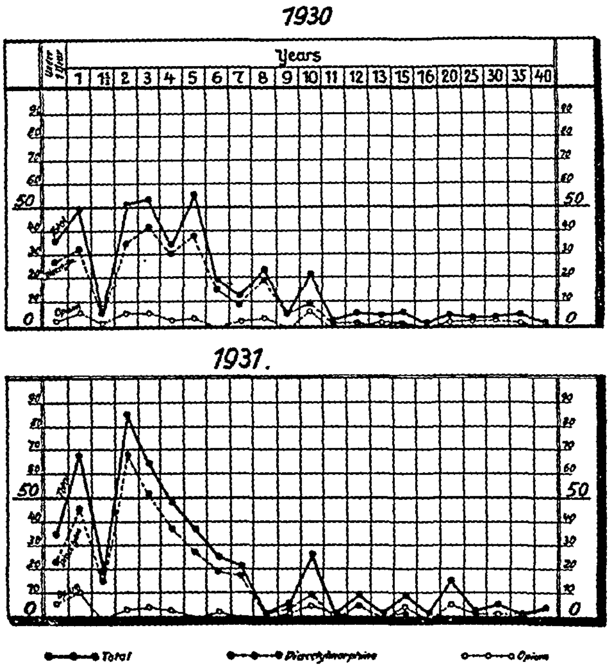

Fig. 7.—Duration of addiction of 400 Egyptian prisoners in 1930 and of 500 in 1931.

| *Age* | *1929* | *1930* | *1931* |
|---|---|---|---|
| 6 — 10 | 9 | 17 | 29 |
| 11 — 15 | 39 | 65 | 56 |
| 16 — 20 | 522 | 819 | 641 |
| 21 — 25 | 1038 | 1831 | 1486 |
| 26 — 30 | 965 | 1721 | 1696 |
| 31 — 35 | 529 | 936 | 892 |
| 36 — 40 | 382. | 658 | 571 |
| 41 — 45 | 183 | 325 | 359 |
| 46 — 50 | 188 | 310 | 428 |
| 51 — 55 | 55 | 158 | 133 |
| 56 — 60 | 58 | 67 | 125 |
| 61 — 65 | 24 | 27 | 56 |
| 66 — 70 | 24 | 49 | 39 |
| 71 — 75 | 2 | 5 | 28 |
| 76 — 80 | 5 | 9 | 25 |
| 81 — 85 | 1 | 2 | 21 |
| 86 — 90 | 1 | 2 | 19 |
| 91 — 95 | 1 | — | 9 |
| 96 —100 | — | 2 | 6 |
| *Age unknown* | 726 | 152 | 375 |
| *Total* .. | 4152 | 7155 | 6994 |

Fig. 8.—Ages of addicts and of persons involved in the trade, in Egypt.

1. What narcotic is concerned?
2. For how long has it been used?
3. Have "withdrawal cures" been carried out?
4. When?
5. In what institution or by what physician?
6. With what result?
7. What amount of the narcotic is said to be used daily?
8. What amount of morphine, opium, tincture of opium or extract of opium do you consider medically necessary at the time of making this statement?
9. Why is a "withdrawal cure" not being carried out at present?
10. When is it proposed to institute such a course of treatment?

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[6] Wolff, Paul: Zur Behandlung und Bekämpfung der Alkaloidsuchten, Deutsche med. Wchnschr., 1928, numbers 1-10; Die neue Verordnung über das Verschreiben von Opiaten und von Kokain, ibid. **57**: 113 (Jan. 16) 1931; Morphinbuch und Kokainbuch, Leipzig, Georg Thieme, 1931.

[7] Wolff, Paul; and others: Wann ist die Verschriebung von Opiaten ärztlich begründet? Deutsche med. Wchnschr. **57**: 113 (Jan. 23), 178 (Jan. 30), 223 (Feb. 6), 266 (Feb. 13), 310 (Feb. 20) 1931.

[8] Wolff (footnote 6, third reference).

Codeine and ethylmorphine hydrochloride are not practically dangerous from the point of view of habituation and, like papaverine, do not come under the German opium law.

On the other hand, the newer synthetic substitutes for morphine, which are also fundamentally habit forming, are included in that they may be prescribed only in certain amounts per patient daily. I would like to emphasize especially the fact that diacetylmorphine plays an extremely insignificant part in German medical practice and it is a matter for congratulation that it is little used by drug addicts. In this case the amount that may be legally prescribed, viz., 0.003 Gm. daily, is particularly low. If at any time it should be decided to demand the complete abolition of this preparation in the world, the slight advantages of which are by far outweighed by its disadvantages, I am firmly convinced that no opposition would be encountered from the German medical profession. More resistance would appear to be forthcoming, however, from English and French physicians, who employ small doses of diacetylmorphine to a much greater extent. This divergence of opinion was clearly perceptible at the last conference held by the League of Nations in Geneva on the limitation of the manufacture of narcotic drugs, in June, 1931.[9] Here the American delegation expressed its entire agreement with our expert attitude toward the complete suppression of diacetylmorphine. An advance was, however, made in that it is proposed to institute a special control over the traffic in diacetylmorphine between the individual countries. It is to be hoped that these restrictions will serve to convince the medical profession in countries where diacetylmorphine is still used that the drug is in no way indispensable. The recommendations appended to the minutes of the convention read as follows:

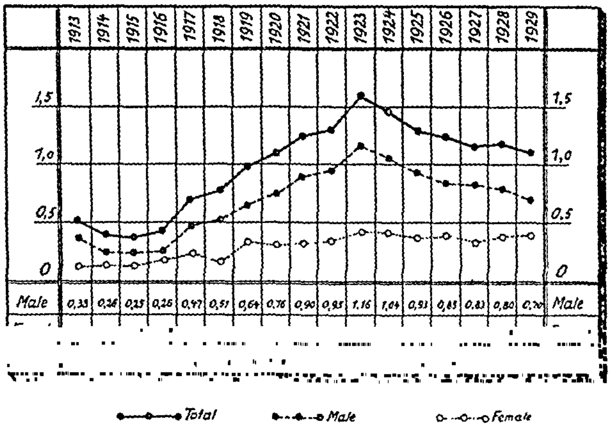

Fig. 9.—Percentage of addicts received in public mental hospitals of Prussia.

> The Conference:
>
> Recognizing the highly dangerous character of diacetylmorphine as a drug of addiction and the possibility in most, if not all, cases of replacing it by other drugs of a less dangerous character:
>
> Recommends that each government should examine in conjunction with the medical profession the possibility of abolishing or restricting its use, and should communicate the results of such examination to the secretary-general of the League of Nations.

This resolution undoubtedly constitutes a step forward in the task of suppressing this substance.

It appears to me to be of importance to give a brief outline of the other most important substitutes, without going into the details of chemical composition. It is sufficient to state that in their chemical constitution they are all closely related to morphine and are capable of giving rise to addiction. Dihydro-oxycodeinon, the oldest of the substitutes, has a marked narcotic and analgesic action. It has all the properties of morphine and is often better tolerated by sensitive patients. At times, however, it exercises a potent euphoric action which is frequently undesirable. In this connection, however, it should be emphasized that in many hopeless cases of carcinoma and tuberculosis it is essential to administer morphine or some other opiate as a euphoric. Addiction to dihydrocodeinon is not to my knowledge very common, on account of the fact that it is generally given orally rather than by injection. It frequently produces a very marked and desirable codeine effect. Dihydromorphinon has also proved valuable. It is often better tolerated and has the particular advantage that it depresses peristalsis less than morphine (hence its use after abdominal operations). Further, it has been shown both experimentally and clinically that it leads more slowly to habituation and addiction and its devotees are therefore more easily cured.

A further great advance would be made if injections of morphine, and the like, were replaced as far as possible by the use of suppositories. Not only do these produce the same qualitative and quantitative effect but also the patient is not immediately aware that he has received morphine. In many cases in which medical treatment is the origin of the addiction, numerous mental associations would be avoided in the absence of the symbol of the syringe. For example, after abdominal operations the routine use of a certain number of morphine injections is objectionable. A suppository will produce precisely the same result and, in addition, the syringe will thus be taken out of the hands of the nurse a most desirable achievement.

The strict control over the prescription of opiates, which has been described, has had its visible result in the great decline of the use of such drugs within the country. The consumption of morphine has decreased from 1,350 Kg. in 1925 and 1,600 Kg. in 1926 to 1,160 Kg. in 1930. Although the exact figures for 1931 are not yet available, a further fall of about 25 per cent is expected. Opium has similarly fallen. In 1931 some one third of the previous figure of 2,600 Kg. was used, a diminution of two thirds. The employment of diacetylmorphine in Germany has for some time been very limited. From 50 Kg. in 1925 it sank to 38 Kg. in 1930, and the figure for 1931 will be about 66 per cent less, a very small amount indeed, which need hardly be considered for practical purposes. All things considered, the sacrifices to which the medical profession has submitted have produced a marked decline in the use of habit-forming drugs.

In comparison with our experience in the war and postwar periods, cocaine addiction no longer presents a grave scientific problem. Here again I feel justified in considering the details of special pathology and therapy as well known.[10] With our present accurate knowledge of the features of the disease, it is impossible to understand that in the eighties cocaine was seriously recommended and employed for the treatment of morphine addiction and that a military physician was prompted to recommend cocaine as a method of improving the marching capabilities of soldiers. Today the uncritical praise that was accorded to cocaine in the medical literature of almost every country must be discounted. The reaction of critical and far-seeing medical men rapidly set in and the story of morphine-cocaine addiction is now only a painful memory.

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[9] Wolff, Paul: Ueber die Bewertung von Diacetylmorphin (Heroin) bei der Genfer Konventions-Konferenz und über die Sucht in Aegypten, Deutsche med. Wchnschr. **57**: 1590 (Sept. 11), 1635 (Sept. 18) 1931.

[10] Joel and Fränkel: Der Kokainismus, Berlin, J. Springer, 1924. Maier, H. W.: Der Kokainismus, Leipzig, Georg Thieme, 1926. The detailed literature may be found in Meggendorfer: Intoxikationspsychosen, Handbuch der Geisteskrankheiten, Berlin, J. Springer, **7**, 1928. Terry and Pellens: The Opium Problem, New York, 1928, Bureau of Social Hygiene. Wolff, Paul: Praktische Therapie der Alkaloidsuchten in von den Velden und Wolff: Handbuch der praktischen Therapie als Ergebnis experimenteller Forschung, Leipzig, J. A. Barth **2**, 1927; Morphinismus und verwandte Alkaloidsuchten, Neue deutsche Klinik, **7**, 1931.

I should like to refer briefly to one point in the pathology. The question of the exact relation between pure cocaine addiction and homosexuality[11] does not appear to be entirely clear. That such a relationship exists is clear from the observations of a number of experienced research workers. I have seen such cases in which, while exercising all possible critical judgment and scientific caution, it was possible to say that at any rate the homosexual activity first appeared during the period of cocaine abuse. Today we know that the female sex hormone is also present in the male organism and this fact tends to confirm what appears to me to be the most likely explanation of this phenomenon. It may well be that sexual impotence, which occurs in men as a result of cocaine addiction, brings to the surface a hitherto latent component of inversion, the degree of which is dependent on the extent to which the individual is bisexual. In this connection it is significant that after a "withdrawal cure" or, better said, after "disintoxication," a certain number of these persons recover complete heterosexuality, while others remain either homosexual or bisexual. I doubt, however, whether this is a true pharmacodynamic effect, and it must not be forgotten that among cocaine addicts it is more common to find persons of somewhat unstable mind and character than among the many types of opium addicts. Among the devotees of cocaine it is common to find unrestrained and psychically labile types of many varieties which are summed up under the somewhat vague name of psychopaths. On this point much remains to be cleared up, but from the medical point of view it would perhaps be more satisfactory if the problem remained unsolved owing to the dearth of clinical material resulting from the rapid decline of cocaine addiction. I myself am optimistic and I hope to be able to justify this attitude by showing the rapid and energetic measures which we are taking to combat cocaine addiction. At any rate, in Berlin it is now a matter of no small difficulty to find a true case of pure cocaine addiction to demonstrate to students.

### THE SPREAD OF COCAINE ADDICTION

A few words must first be said with reference to the spread of the abuse of cocaine. The wave of "snow" or "white powder" (many varieties of pet names for the drug were employed by addicts in various countries) that flowed over Europe during and after the war is now on the ebb. Before the war there was little abuse of cocaine, at least in central and western Europe. There were individuals who employed cocaine injections and also combined morphine and cocaine addicts. The habit, however, of taking the drug like snuff into the nose, which is the outward sign of the spread of the addiction (and which corresponds to the popularization of morphine by the introduction of the pravaz syringe), was not noticeable until the war, when it first broke out in France, in the Russian army and later in central Europe.

What is the method of spread of the abuse of cocaine? The answer to this question appears to me to lie in the known facts with regard to its spread in a country which remained free from war, British India.[11] The habit began by chance in a small provincial town, where a land owner employed cocaine against toothache and subsequently became an addict. The habit was then spread by proselytism, as is common with cocaine among young people. The habit then rapidly spread along the two main railway lines toward northern India, through the agency of commercial travelers and others. Towns on side-lines and the larger part of the country districts have remained free from cocaine addiction, as shown on the map (fig. 10). Many rapidly became the victims of this nefarious trade, which as usual brought in handsome profits. Cocaine was in particular demand among manual workers and other sections of the lower classes on account of its reputation as a sexual stimulant (this, as already stated, is the case only in the early stages of addiction). From an etiologic point of view it is interesting to note that only in a negligible number of cases was medical treatment with the drug the origin of the addiction, a state of affairs which contrasts with the position in Europe and, perhaps, America. Cocaine previously reached India chiefly from Europe and also from America. Since its prohibition it has been mainly obtained from Japan, mostly through the agency of Chinese smugglers. Japan has been engaged in the manufacture of habit-forming drugs for only a comparatively short time, some fifteen years, and there now exists an extensive smuggling organization. Here, as in other countries, such as Egypt and the Far East, a water-proof packet containing narcotics is frequently made up and weighted with a sack of salt. Both of these are thrown into the water and later, when the salt has dissolved, the packet containing the drug rises to the surface and is fished out. The number of cocaine addicts in India is estimated at from a fourth to half a million, most of whom are in the prime of life between 20 and 40 years of age. The extraordinarily wide extension of the addiction does not here depend on the possibility of inhaling the drug as is the case in Europe and America. In India the drug is associated with the chewing of betel nut. The snuff-

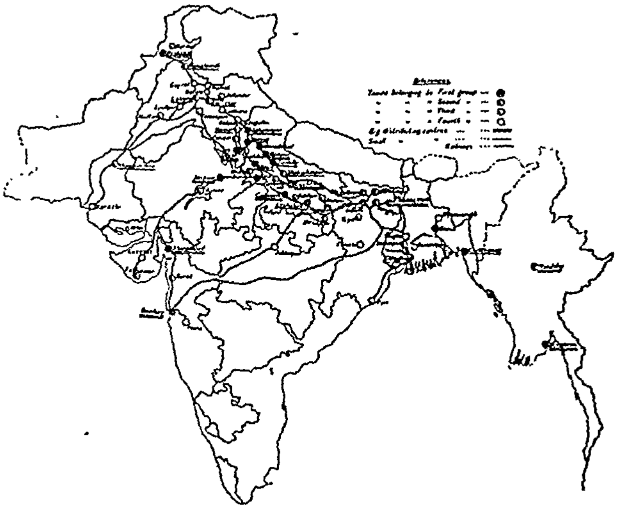

Fig. 10.—Provinces and principal cities in India, in which there is addiction to cocaine.

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11. Chopra, R. N., and Chopra, G. S.: Cocaine Habit in India, Indian J. M. Research **18**: 1013 (Jan.) 1931.

ing of the drug is, curiously enough, unknown in India up to the present.

This short account of a state of affairs which is not generally known serves to show that cocaine addiction has also spread with alarming rapidity among a population which differs markedly in many ways from that of Europe and North America. Mohammedans and Hindus are both involved in the habit, the former, however, to a considerably greater extent. Cocaine addiction is thus no less a world problem than morphinism and other opiate addictions.

In all serious consideration, however, it is possible for several reasons to regard the combating of cocaine addiction with greater optimism than is the case with addiction to opiates. Undoubtedly the great increase in the amounts available has contributed to the spread of the addiction, although South America has been ousted from the pharmaceutic market for pharmaceutical cocaine by the cultivation in the Dutch Indies of a coca leaf which has a higher content of the alkaloid. Countries that previously imported their supplies now manufacture the required amounts themselves, as for instance Japan. There are no medical grounds whatever for the justification of increased production and there is no evidence whatever that the amounts previously available in the market were not sufficient for medical purposes. On the contrary! Further, from our point of view, economic and commercial questions can carry no weight against moral and ethical considerations in the province of drug addiction.

The world problem of cocaine addiction resolves itself into the problem of its complete eradication. This is well within the bounds of possibility and, using the German legislation as an example,[12] I purpose to show that in pursuing this aim we are in no sense hunting a phantom. Prevention is here better than cure. For over a year the handing out of cocaine in substance by pharmacists has been entirely forbidden. In this respect we are merely giving practical application to the opinion expressed in the report of the German Medical Congress in 1928, an opinion with which all will surely agree. "It is absolutely unjustifiable for a physician to supply cocaine to a cocaine addict. There is no question of malpractice or of endangering the addict's life associated with the complete refusal to prescribe the drug under any circumstances whatever." Sudden withdrawal is, on the contrary, the treatment of choice.

The largest amount with which any physician may be supplied for daily use in his practice is 1 Gm., and this may be issued in at most a 10 per cent solution. When prescribing it he must make out a very accurate prescription and make a corresponding entry in the so-called cocaine book.[9] He is allowed to use this solution for operations (including diagnosis) only on the eye, larynx, nose and ear and for surgical attacks on the pharynx and maxilla. Further, it may be applied only to the mucous membrane. Any form of injection is forbidden, as also its use in internal medicine (as for instance in the treatment of painful gastric ulcer or in urology) except to a small extent; for example, the use of a 1 per cent solution with the addition of at least 0.1 per cent of atropine sulphate is permissible for nebulization in bronchial asthma. Many experts in the various branches of medicine were consulted and they were all of the same opinion. In addition, the physician may provide the patient with small amounts not exceeding 0.1 Gm. daily, for home use. Full details must, however, be entered and only a 1 or 2 per cent solution should be used. On this point the full agreement of the profession was obtained. Before the new ordinance, a large proportion of smuggled goods were obtained by prescriptions without the knowledge of the physician, through miscalculations. Apart, however, from such cases, which are exceptions, we were convinced that the consumption of cocaine was fundamentally susceptible of limitation. In many indications the non-habit-forming substitutes produce the same therapeutic effect and avoid the danger not only of addiction but also of cocaine poisoning and idiosyncrasy.

With a year's experience behind us it should be possible to introduce some alleviations into the regulations, as for example the permission to use a 20 per cent solution and the hitherto forbidden cocaine ointment. This short period of time, however, has sufficed to show that the substitute preparations, particularly ethyl aminobenzoate, procaine hydrochloride, butamin and the newer Larocain and Pantocain (local anesthetics of the paraminobenzoyl series), can in many cases completely replace cocaine, even in the upper air passages, though none of them are entirely adequate for the eye.

As a result of the measures, the consumption of cocaine in Germany, which during the years 1925-1930 was about 400 to 450 Kg. a year, has fallen to less than half this amount in 1931. It is clearly fair to my German colleagues to state that, even before the introduction of these regulations, they had been so impressed by their experience of cocaine addiction in the post-war period that they themselves had restricted as far as possible the use of cocaine. The supply of good substitutes and the increasing attention which these have received has greatly helped in this effort to avoid cocaine and to prescribe it only when it is absolutely necessary. I know of practicing otorhinolaryngologists who have entirely desisted from the use of cocaine even in major operations and who never use it under any circumstances. Furthermore, they express their satisfaction at being thus relieved of the danger of cocaine poisoning.

The therapeutic limitations which these regulations as to the prescription of opiates and cocaine have imposed on the German medical profession are certainly very strict. The physicians, however, have readily submitted to these inroads into their freedom in the choice of remedies, in order to play their part in the struggle against drug addiction, and to contribute to a really effective campaign against this evil in the interests of the nation's health.

One can only ascribe to these measures the credit for the fact that in Berlin, which was formerly, for German standards, thickly sprinkled with illegal drug dealers, there has not been a single case of falsification of a cocaine prescription for over a year, no pharmacist is permitted to hand over cocaine substance, and the weak solutions that are employed for patients are of no value to the secret dealers. Further, there has undoubtedly been a decrease in the number of these illegal dealers and I know from my own experience that it is now difficult to obtain cocaine through these channels in the night resorts of Berlin. Illegal morphine trading is also infrequent, as was always the case. Here the addicts obtain their supplies through credulous practitioners and the falsification of prescriptions. The latter have increased of late and are skilfully carried out. Two-tenths gram of morphine is always a useful amount even for nonmedical purposes, and in this case the undissolved substance is of no special importance. The postwar days, when it was easier in Berlin to obtain 1 Kg. of morphine illegally than 1 cg., are definitely over. From the great and rapid strides recently made, I think it may be said on mature reflection and without undue optimism that the time is not far distant when a substitute will be found for cocaine which will satisfy the most exacting demands of specialists in any branch of medicine. The time will then have come to declare cocaine to be obsolete and to destroy the plantations. Commerce should then no longer triumph over science, and cocaine addiction will no longer form a world problem.

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[12] Wolff (footnote 6, second reference).

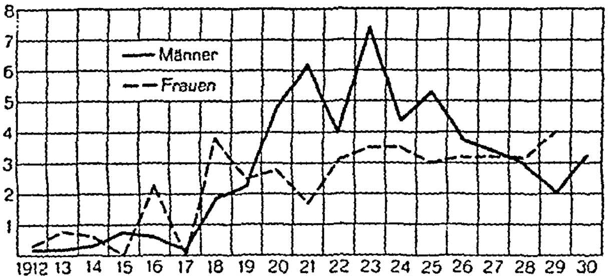

Fig. 11.—Morphine addiction at the Charité (Berlin): solid line, men; broken line, women.

Is it possible to entertain the same hope with regard to the opiates? Here I am somewhat skeptical. It is true that in this field also progress has been made in many directions, and I would like to give an example from Germany. The sharp rise in the consumption of habit-forming drugs and, for physicians, still more important, in the number of addicts which occurred after the war is well known. It is not surprising, however, that this abnormally inflated number of morphinists and cocaine addicts should again shrink with the restoration of normal conditions, as is shown in the accompanying curves. From these figures, taken from the Prussian medical statistics, it will be seen that there was a gradual increase up to 1923, when the climax of German inflation was reached (fig. 9). The same is shown in the curve obtained from the statistics of the Berlin University Psychiatric Clinic of the Charité for morphinism and cocaine addiction (figs. 11 and 12).[13] The much larger proportion of males affected is noticeable. There is no doubt that the increasing anxiety for the difficulties brought by every new day, the inflation, the uncertainty of the very necessities of life coming as a climax to the strain of the war and the tragedy of its ending, led many to seek a temporary relief in narcotics. That this was only a passing phase and that, in spite of the 'apparent abandon, the core of the nation remained sound, is shown by the rapid fall of the curves after the return of more stable conditions. Nevertheless the percentage of addicts still remains higher than it was in the prewar period. This is perhaps not surprising when it is remembered that there will always be morphine addicts so long as the physician is obliged to use this remedy which heaven has given us. The evidence that I have presented as to the rapid and at times astonishing decline in the consumption of opiates and cocaine, however, justifies the hope that the stringent regulations introduced into Germany will still further reduce the number of addicts simply because the patients and physicians are constantly confronted by increasingly difficult obstacles. Moreover, the economic position no doubt plays a part since it compels individuals to attempt to free themselves from the addiction on account of the great expenditure it entails and also because they know that it is harmful. If this is not so, the individual's family and more especially his physician must intervene. In the treatment of addicts it is essential not only that the physician be experienced and learned but also that he possess a strong personality. Important and interesting as it is, I cannot within the limits of this survey enter on a description of the details of treatment of addicts. I will only say that in Germany the bulk of opinion is in favor of the sudden withdrawal method[14] of Bonhoeffer and others as the remedy of choice, apart from a few contraindications, as I could bring evidence to show.[7] The most severe symptoms of abstinence may be tided over by the inducing of several days' sleep, and the newest method of treatment by means of insulin with or without grape sugar,[15] appears to be a scientifically justified and promising method which, however, requires further confirmation. Much work is still to be done, and the commission appointed by the health committee of the League of Nations "to study the treatment of drug addicts" should be able to collect valuable material from the scientific literature of all countries. The preliminary work is already making rapid strides.

## CONCLUSION

Thus I have once again returned to purely medical matters, which, in spite of necessary statistical material and important political considerations, is of most interest to us. The amount of opium produced at present is far in excess of what is required medically. This is known by every one. The practical difficulty lies in economic considerations, in the impossibility of obtaining accurate figures of the production in inner Asia, and finally in the question as to what the poppy cultivators can grow as a means of livelihood.

These difficulties have yet remained unsolved in spite of all the efforts of the League of Nations. The position as it exists in British India, for example, permits of a certain amount of hope. Morphine is needed and will continue to be needed so long as there is illness. A time will perhaps come, however, when in the search for a therapeutically active substance the ideal morphine will be discovered, the Eumorphin, which will possess all the properties of morphine including the euphoric effect but which will no longer lead to habituation and addiction.

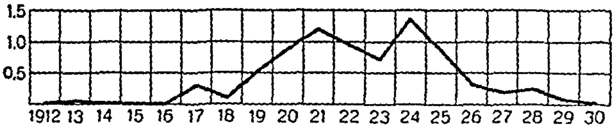

Fig. 12.—Cocaine addiction among men and women at the Charité (Berlin).

The results thus far attained in this field are encouraging, for there is reason to hope that the research work of the future will be crowned with success similar to that which has been witnessed with cocaine. That we are on the way to such a discovery I have shown by a few examples. The widespread interest in this problem is evidenced by the activities and research studies being undertaken in many countries. The coordinate program of the several agencies in the United States concerned with these matters must eventually contribute something to the sum total of knowledge on this subject. It may be that the chemical researches being carried out under the auspices of the National Research Council in the Cobb Laboratories of the University of Virginia, which have made so profound an impression on me, side by side with pharmacologic experiments and clinical trials, will lead to this achievement. Furthermore, side by side with this undertaking, which, like all research work, must be regarded for the moment as theoretical, comes another activity promising tangible and more immediate results: I refer to the program of the United States government for the control, segregation and treatment of those addicted to the use of habit-forming narcotic drugs.

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[13] Bonhoeffer: Psychopathologisches aus der Nachkriegszeit, Ztschr. f. ärztl. Fortbildg., 1931, number 5.

[14] Meggendorfer, Terry and Pellens, Wolff (footnote 11).

[15] Wolff, Paul: Behandlung mit Insulin und mit Traubenzucker bei der Entziehungskur von Morphinisten, zusammengefasst in Fortschritte der *Therapie, 1932, number 7.*

We must continue to fight against addiction and the bodily and mental decay of the individual and of large sections of the population in many lands, and must increase our efforts whenever possible. Only when we have found this ideal morphine will the physician be given an all-powerful weapon. Then only will the end of the road be in sight and, by the cooperation of physicians, scientists and governments all over the world, drug addiction will cease to be a world wide problem.

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# CHRONIC PEPTIC ULCER IN CHILDREN

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A thorough study of available reports emphasizes the infrequency of chronic peptic ulcer in children. Up to twenty years ago it was considered a rarity, but within the last few years it has been encountered more often. Too often, however, this condition remains unrecognized clinically. Ulcers in childhood are overlooked because digestive upsets are not given the careful attention they merit. It is therefore of the utmost importance to bear this possibility in mind in order that the mortality associated with profuse hemorrhage, pyloric obstruction and perforation with peritonitis may be avoided. This study does not include cases of melena neonatorum, in some of which acute ulcers are found.

Sturtevant and Shapiro[1] found only five cases of gastric ulcer in children in 7,219 necropsies. From 1906 to 1925, in 8,260 (6,664 duodenal and 1,596 gastric) peptic ulcers at the Mayo Clinic, Proctor[2] discovered only two in children, one duodenal and one gastric ulcer. Proctor analyzed the literature and by his standards accepted only nineteen cases in children: sixteen in girls and three in boys; three duodenal and sixteen gastric. Six perforated and three bled profusely. Three improved with medical management and seven came to operation. Proctor reports three cases, in two of which gastro-enterostomy brought relief. Dickey[3] states that the diagnosis is usually made at operation or necropsy, and reports three cases diagnosed clinically. Loeber[4] describes the case of a girl who vomited material containing occult blood. Roentgen examination revealed a penetrating gastric niche high on the lesser curvature. The child improved on a modified Sippy regimen. Palmer[5] studied a series of patients in whom the correct diagnosis was made or suspected in only ten cases. He stresses the need for increased diagnostic acumen. He probably led the way in surgery, having performed a gastro-enterostomy in a six months infant with a duodenal ulcer. Holt and Howland[6] advocate symptomatic treatment because of the uncertainty of diagnosis and consider surgical intervention rarely justifiable. Allen A. Jones,[7] Thiele[8] and H. M. Richter[9] concur that gastric and duodenal ulcers are rare but not unusual. Miller and Gage[10] obtained by gastro-enterostomy permanent relief for at least twenty-one years in a 7 year old girl who had had a chronic cicatrizing duodenal ulcer since 6 months of age. Hurst and Stewart[11] at Leeds, in 200 cases of peptic ulcer, found none in the first decade and only eight in the second decade of life. Proctor of the Mayo clinic, quoted by Hurst and Stewart, states that 16 of their last 1,000 gastric ulcers and 26 of their last 1,000 duodenal ulcers gave histories of gastro-intestinal upsets dating back to childhood, in some cases to 4 or 5 years of age. Barford of New Lodge clinic, also quoted by Hurst and Stewart, found no cases in the first decade of life, but traces the history in many cases of peptic ulcer to that period. Paus's[12] statistics revealed only 2 cases in children, among a total of 168 cases, in whom operation was performed. De Toni[13] considers ulcers in children to be acute and secondary in type, running a rapid course and necessitating emergency surgery. He presents one case in a child of 10. Thiele[14] gives his experience with chronic peptic ulcer in a child of 2. Moynihan[15] agrees that the symptoms of chronic peptic ulcer often date back to the age of 10 or earlier. One of us (L. B.) in a study of 450 cases of peptic ulcer found 12 patients under the age of 20. In these the symptoms had begun three to five years before the first visit to a physician. One gave a history of distress beginning at 7. Many patients presented themselves for examination in the early thirties and late twenties, with a history of symptoms of fifteen years' duration, indicating that duodenal ulcer would not appear to be rare in the second decade of life. All these cases were confirmed by roentgen examination and the finding of a duodenal defect.

The following five cases came under our observation:

## PROTOCOLS

Case 1.—B. W., a girl, aged 9½ years, who was previously in perfect health, had stomach trouble for three years. The

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From the [illegible] Enterology and Pediatrics of the Mandel Clinic, [illegible]

[1] Sturteva[illegible] L.: Gastric and Duodenal Ulcer, Arch. Int. Me[illegible]

[2] Proctor, [illegible] Ulcer in Children, Surg., Gynec. & Obst. **41:** 63 (July) 1925.

[3] Dickey, L. B.: Duodenal Ulcers in Children, Am. J. Dis. Child. **32:** 872 (Dec.) 1926.

[4] Loeber, Maud: Gastric Ulcer in Girl Three Years Old, Arch. Pediat. **46:** 578 (Sept.) 1929.

[5] Palmer, D. W.: Ann. Surg. **73:** 545 (May) 1921.

[6] Holt and Howland: Diseases of Infancy and Childhood, New York, D. Appleton & Co., 1929, p. 269.

[7] Jones, A. A., in Tice: System of Medicine **8**, 475.

[8] Thiele, P.: Gastric and Duodenal Ulcers in Children, Deutsche Ztschr. f. Chir., July, 1919, p. 275.

[9] Richter, H. M., in Abt's Pediatrics **3**, 535.

[10] Miller, Reginald; and Gage, H. C.: Gastromegaly and Chronic Duodenal Ileus in Children, Arch. Dis. Childhood **5:** 83 (April) 1930.

[11] Hurst, A. F., and Stewart, M. J.: Gastric and Duodenal Ulcer, London, Oxford University Press, 1929, p. 35.

[12] Paus, Nikolai: Ulcer of the Stomach in Childhood, Acta chir. Scandinav. **61:** 40 (Oct.) 1926.

[13] De Toni, Giovanni: Gastroduodenal Ulcer in the Child, Arch. ital. di chir. **26:** 703 (Aug.) 1930.

[14] Thiele, P.: Ueber Geschwürsbildung des gastroduodenal Tractus in Kindesalter, Ergebn. d. inn. Med. u. Kinderh. **16:** 302, 1918.

[15] Moynihan, B.: Surgical Treatment of Gastric Ulcer, Brit. M. J. **2:** 99 (July 24) 1920.

symptoms came on gradually with no apparent predisposing factors but were accompanied by an urticarial rash. At first a definite seasonal variation occurred, the child feeling worse in spring and fall, but of late the distress had been continuous. The pain, cramping or nauseating in nature, usually appeared several hours after eating but sometimes immediately before and at other times immediately after eating. Belching, sour taste and bloating were occasionally noted. External heat always brought relief, food taking did occasionally and bowel movement never. Baking soda was never tried. No relation could be traced to the type of diet. Remissions appeared spontaneously. Since the urticarial rash appeared with the "stomach trouble," skin tests were performed. The allergy tests with pork, raisins, string beans, rice, potatoes and plums were positive. At present the child eats most of the aforementioned foods with impunity. During the past three years various medicines, quartz light and diet have failed to produce relief. The child has never had acute appendicitis, jaundice, tarry or clay colored stools, diarrhea or bloody vomitus.

Examination revealed tenderness in the epigastrium. An Ewald test meal showed free acidity 28 and total acidity 48. Stool examination revealed no occult blood. Roentgen examination revealed a defect on the posterior wall of the duodenum (on four examinations) and spasticity in the colon in twenty-four hour examinations with a barium enema. Both primary and dye gallbladder plates were normal. This patient was put on a mashed, puréed diet without meat and given a mixture of tincture of belladonna and camphorated tincture of opium in April, 1931. No alkalis were advised. Relief appeared at once.

Case 2.—M. Z., a girl, aged 11 years, had been well up to six months before the time of examination, when she began to suffer with epigastric cramps and the passage of bright red blood with stools. The pains occurred at least once daily and bore no relation to food taking, type of diet or bowel movement. The pain appeared at any time of the day but not very often at night.

The patient was well developed and well nourished. Tenderness was noted in the epigastrium, right lower quadrant and left lower quadrant. Proctoscopic and rectal examinations gave normal results. An Ewald test meal aspiration contained 15 free acidity and 57 total acidity and no occult blood. Stools contained 4 plus occult blood and no ova or parasites. Roentgen examination disclosed a defect on the posterior wall of the duodenum on several examinations, a tender segmented appendix, and spasticity and tenderness of the colon. Meckel's diverticulum could not be demonstrated, and the gallbladder was normal by both primary and dye plates. This patient improved under a modified Sippy management with bed rest for three weeks.

Case 3.—N. S., a boy, aged 13 years, had been well up to five months before examination, when sharp epigastric pains began to appear quite regularly, four or five times daily, half an hour after meals and occasionally before breakfast. The pain lasted about fifteen minutes. No nausea occurred. There was no relationship to bowel movement. A low residue diet had not relieved the distress. The patient's uncle had had an ulcer.

The patient was thin and well developed; he weighed 93 pounds (42 Kg.). Marked deep tenderness was noted at the umbilicus and slight tenderness along the left lower quadrant. The Ewald test meal examination showed free acidity of 32 and total acidity of 52. Stool examination revealed positive occult blood. Roentgen examination disclosed a defective duodenal bulb on two examinations. Examination of the appendix, colon and gallbladder (primary and dye films) gave negative results. On a modified Sippy management the patient's distress disappeared except for a transitory pain two or three times weekly.

Case 4.—F. A., a girl, aged 5 years and 1 month, who was seen by one of us (L. B.) in consultation with Dr. W. J. Corcoran, had had no gastro-intestinal disorder up to one month before. Constipation had been noted for four months and abdominal pain immediately after eating for one month. Elimination of raw fruits and vegetables for one month had not improved the condition. There was no vomiting or jaundice.

Physical examination demonstrated nothing abnormal. The stools contained no occult blood. Roentgen examination revealed a duodenal defect. The patient and films were seen by one of us (L. B.) at the Mercy Hospital in Chicago. The child was put to bed and treated by a modified Sippy regimen. In one week the pain had disappeared, and although the patient is on a full diet it has not reappeared during the past two years except for one slight attack of one month's duration.

Case 5.—G. K., a girl, aged 8½ years, was referred to one of us (L. B.) by Dr. H. M. Richter. Until the age of 3 months she vomited almost everything she ate. At the age of 10 weeks she vomited some dark blood. The vomiting then lessened gradually until she reached the age of 6, after which she vomited rarely. At about this time she again vomited some dark blood. One year before she was seen by Dr. Richter she began to complain of occasional substernal heaviness coming on two hours after eating, which was relieved by taking food or soda. One month later the heaviness became a pain and occurred daily and after every meal. Taking food relieved the pain. One month before we saw her she vomited some dark blood and passed tarry stools. The patient was a well developed stout child in whom nothing abnormal was found aside from a marked pallor. Two roentgen examinations by different observers disclosed no duodenal defect. Nov. 19, 1931, the hemoglobin was 50 per cent (Dare) and red blood corpuscles numbered 3,120,000. This remained the same until the end of January, 1932, when the mother reported that the child had passed several tarry stools. The hemoglobin at this time was 35 per cent and the red blood corpuscles numbered 2,810,000. As the child had been in bed continuously for several weeks without improvement and the loss of blood continued, she was referred back to Dr. Richter. A transfusion of 300 cc. of blood was given, February 4. The next day an operation was performed by Dr. Richter and disclosed two small superficial ulcers located on the posterior wall of the duodenum about 1 cm. from the pylorus. It was necessary to incise the duodenum to find them because there were no external evidences of the ulcers on the peritoneal surface. The ulcers were cauterized and a pyloroplasty was done. The first bowel movement after the operation showed considerable blood, the following two showed a very small amount, and the subsequent one showed none.

## COMMENT

Chronic peptic ulcer in children does not produce the classic symptomatology noted in adults. Continued abdominal distress or cramps several times a day may constitute the sole subjective evidence. The hunger pain of ulcer is rarely noted. The relation to alkalis has not been worked out in children and is not important, as stated by Bloch and Serby.[16]

On examination, just as in adults, a tender point may be found in the epigastrium. The Ewald and stool examinations may not assist in making the diagnosis. Roentgen examination reveals a definite duodenal defect. The defect should be verified by subsequent examinations to rule out spasm of extrinsic origin. Four patients showed duodenal defects, although others on investigation have found more gastric than duodenal lesions. This condition must not be confused with one occurring in children in whom pain and vomiting come on a short time after meals and in whom roentgen examination shows a dilated duodenum and a slowing of the passage of duodenal contents at the duodenojejunal junction as a result of a narrowing produced by pressure of the root of the mesentery on the duodenum. The therapeutic results in these patients have proved satisfactory in four and poor in one on medical management, a modified Sippy regimen. This consisted of rest in bed for three weeks, milk and cream, 2 ounces every two hours. Three patients received calcium carbonate, 10 grains (0.65 Gm.) every hour and magnesium oxide only when constipation ensued. Tincture of belladonna, 5 minims (0.3 cc.) twice a day was administered. The diet was augmented by purées, soft-boiled eggs, cereal and custard. Later, a six meal schedule was instituted and alkalis were decreased to three times daily.

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[16] Bloch, Leon; and Serby, A. M.: Use of Alkalis in the Treatment of Peptic Ulcer, J. A. M. A. **92**: 134 (Jan. 12) 1929.

The importance of allergy as a cause of gastro-intestinal pain must not be overlooked, as stated by Rowe, Duke and others. We wish to call attention again to case 1, in which evidence of allergy accompanied the onset of symptoms. It is to be noted that the patient is now eating some of the articles to extracts of which positive tests were obtained, without being affected. It is possible that an allergic response was instrumental in producing a duodenal ulcer and that other factors such as mechanical or chemical have produced chronicity in this case.

# CORONARY ARTERY DISEASE IN THE WORKING CLASSES

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There is much evidence suggesting that angina pectoris associated with atherosclerosis of the coronary arteries, as well as thrombosis of the coronary arteries, is becoming more frequent. Many famous clinicians of the nineteenth century remarked on the rarity of angina pectoris. In Germany, Bamberger[1] wrote that it was one of the rarest symptoms of heart disease. He had seen only six cases when he published his book in 1857. In the year 1845, of 5,171 deaths in Hamburg, only 3 were attributed to angina pectoris.[2] In Great Britain this syndrome seems to have been more common, for such men as Latham and Stokes write as though they had seen many cases; yet as recently as 1896 the distinguished Edinburgh consultant Balfour[3] wrote that he had seen ninety-eight cases of angina pectoris in ten years. In the United States, Flint[4] found angina pectoris a rare disease. He encountered only 15 cases in 338 consecutive cases of heart disease. Osler,[5] in 1897, had seen only forty cases of true angina pectoris. Today every internist sees these patients in far greater numbers. We have seen 225 new cases of angina pectoris or coronary thrombosis in less than two years. This discrepancy can be explained only in part by greater precision in diagnosis. Undoubtedly the increasing custom of special cardiologic examinations, and especially the recognition of the value of electrocardiographic examinations in the diagnosis of coronary disease, brings many more of these patients to the office of the specialist than in former generations.

Many authors are of the opinion that the great stress and hurry of modern life has brought about a greater frequency of disease of the coronary arteries. In support of this assumption they point out that it is encountered especially among the well-to-do and among men of big affairs and great responsibilities; it is assumed that the strain of modern business and professional life in some subtle way leads to early degenerative changes in the coronary arteries. Phillips[6] speaks of angina pectoris "occurring in people who work with their brains at high pressure"; it has often been referred to as the doctor's disease. Osler, Huchard,[7] Allbutt, Gallavardin,[8] Danielopolu and Brooks[9] all support this view. It is true that Allbutt expresses some doubt as to the validity of the published statistics and that Huchard and Gallavardin add that they have seen many cases in workmen. Gibson[10] seems to be alone in emphasizing that in districts where hard mechanical occupation is the rule, angina pectoris is far from uncommon among the working people.

During the past two years one of us, as cardiovascular consultant to a large organization composed almost exclusively of industrial workers, has had the opportunity of studying more than 600 patients of this social group who were referred by their family physicians because of symptoms that suggested heart disease. The clinical material included the male wage earners, their wives, who for the most part took care of their homes, as well as their children. The patients were all Jews, and the largest number of the wage earners were employed in the garment industry in New York City. The present study comprises 615 consecutive cases of this group. Although in this paper we wish to direct attention particularly to those patients suffering from disease of the coronary arteries, a few general statistics will serve as a background. These are presented in table 1.

Table 1.—*Etiologic Classification of Patients with Cardiac Disease*

| Condition | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Coronary artery disease* | 144 | 45.5 | 27 | 13.7 | 171 | 33.4 |
| Rheumatic valvular disease | 52 | 16.4 | 53 | 27.0 | 105 | 20.5 |
| | 36 | 11.4 | 56 | 28.5 | 92 | 17.9 |
| | 34 | 10.8 | 32 | 16.3 | 66 | 12.8 |
| | 28 | 8.8 | 16 | 8.1 | 44 | 8.6 |
| Syphilis of the aorta | 2 | 0.6 | 0 | .... | 2 | 0.4 |
| Congenital heart disease | 2 | 0.6 | 1 | 0.5 | 3 | 0.6 |
| Thyrogenic heart disease | 2 | 0.6 | 2 | 1.0 | 4 | 0.8 |
| Miscellaneous cardiac conditions | 16 | 5.0 | 9 | 4.5 | 25 | 4.9 |
| Totals | 316 | | 196 | | 512 | |

* Patients with coronary artery disease and hypertension are listed only under the heading coronary artery disease. There were forty-nine males and twenty-two females, or a total of seventy-one patients with both conditions.

Of the 615 persons, 233, or 38 per cent, were women; 97 were children under the age of 16. The age and sex distribution is given in detail in table 2. One hundred and three, or 17 per cent of the whole series, were found to have no cardiovascular disease, no functional murmurs and no neurocirculatory asthenia. This leaves 512 cases in which a cardiovascular diagnosis was made: 171, or 27.8 per cent, of the whole series; and if the 103 cases without cardiovascular disease are subtracted, fully one third of the remainder had evidence of disease of the coronary arteries. This is an exceptionally high incidence.

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[1] von Bamberger, Heinrich: Lehrbuch der Krankheiten des Herzens, Vienna, 1857, p. 367.

[2] von Dusch, Theodor: Lehrbuch der Herzkrankheiten, 1868, p. 334.

[3] Balfour, G. W.: The Senile Heart, ed. 2, London, A. & C. Black, 1896.

[4] Flint, Austin: Diseases of the Heart, ed. 2, Philadelphia, 1870, p. 297.

[5] Osler, William: Lectures on Angina Pectoris and Allied States New York, 1897.

[6] Phillips, John: Angina Pectoris, South. M. J. **19**: 95 (Feb.) 1926.

[7] Huchard, Henri: Traité clinique des maladies du coeur, Paris **2**: 524, 1899.

[8] Gallavardin, L.: Les angines des poitrines, Paris, Masson & Cie, 1925.

[9] Brooks, Harlow: Angina Pectoris, New York, Harper & Brothers, 1929.

[10] Gibson, G. A.: Diseases of the Heart and Aorta, Edinburgh, Y. J. Pentland, 1898, p. 763.

We employed strict criteria for the diagnosis of coronary artery disease. The diagnosis of angina pectoris was made only if the history revealed a typical Heberden's syndrome, i. e., substernal pressure or pain provoked by effort, compelling the patient to halt his activities. In many instances there was typical radiation to the left arm. Coronary sclerosis with myocardial degeneration was diagnosed when, in addition to the classic history, there were electrocardiographic changes, which are generally accepted as indicative of myocardial injury, such as deformation of the RT segment, or the T wave, or marked alteration of the QRS complex. Coronary thrombosis was diagnosed when the history revealed a severe attack of substernal pain, lasting two or more hours, accompanied by symptoms of shock, usually with subsequent cardiac insufficiency compelling bed rest for a period of weeks following the attack. Most of these patients also exhibited electrocardiograms accepted as characteristic of myocardial injury. Those who did not had such typical histories and physical manifestations that there could be no doubt as to the nature of their attacks. We tried to include only cases in which the symptoms were attributable to disease of the coronary arteries, and excluded all cases of syphilitic aortitis, as well as all with aortic insufficiency of whatever origin.

Few statistics of the incidence of various types of heart disease are given in sufficient detail to make them available for comparison. We have checked table 2 on page 302 of White's [11] book and have been unable to convince ourselves that the diagnostic criteria of the various authors who have been drawn on are sufficiently uniform to warrant a direct comparison of their experiences, certainly not in the categorical manner in which they are made to appear. The data of White and Jones,[12] however, are specific enough to allow of a direct comparison. Their material, too, was drawn from a region in which rheumatic fever occurs with about the same frequency as in New York City. Table 3 presents a compilation of their experience with disease of the coronary arteries, and of ours.

In a series of 300 cases, Wood [13] found angina pectoris in 10 per cent of the white and in 5 per cent of the Negro race. In about the same number of cases observed in a chest clinic in Iowa, 7 per cent had angina pectoris, and 0.7 per cent coronary thrombosis.[14] Schwab and Schulze,[15] among 1,660 patients with organic heart disease seen in the outpatient department of a hospital in Texas, found 20 per cent with arteriosclerotic heart disease. The majority of these apparently had symptoms or signs of coronary artery disease. Thus, in a consultation practice among industrial workers we encountered twice as many cases of disease of the coronary arteries as did White and Jones, whose figures seem to be representative of the general experience. This is all the more remarkable in view of the age distribution of our patients, for in our series there is a predominance of the younger age groups. Eighty-four per cent of our whole series, as contrasted with 52 per cent of White's patients, were under the age of 50. Nor did we have an undue preponderance of males; 62 per cent of our series and 56 per cent of White's were males. In table 4 the incidence of angina pectoris in White's consultation series and in ours is tabulated according to age groups. Even at the same ages there is a much higher frequency of angina pectoris in our series.

The conclusion seems inescapable that in our clinical material, composed of Jewish industrial workers and their wives, disease of the coronary arteries is much more frequent than in other comparable published series. It seems that coronary sclerosis, far from finding the majority of its victims among individuals of wealth and learning, cripples with especial frequency at least certain groups of workmen.

Indeed, certain evidence suggests that the disease is more malignant among these workmen. This implication lies chiefly in the age distribution of our cases, compared to that of other published series. In table 5 the age distribution of 2,454 published cases is recorded. Whereas 71 per cent of our patients with coronary artery disease were under 51 years of age at the time of onset of their symptoms, the combined experience of all the other observers gives only 33 per cent of cases under the age of 51. Only Huchard [7] and Kahn and Barsky,[16] whose figures are respectively 50 and 60 per cent, approach our figures. It is most interesting to note that, at the time their paper was written, Kahn and Barsky were seeing the identical class of patients who form the subject of our analysis and that their figures most closely approximate ours. Conner and Holt [17] found that one third of their patients

Table 2.—*Age and Sex Distribution of Six Hundred and Fifteen Patients Referred for Cardiovascular Examination.*

| Ages | 1-10 | | | 11-20 | | | 21-30 | | | 31-40 | | | 41-50 | | | 51-60 | | | 61-70 | | | 71-80 | | | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T |
| Angina pectoris | .. | .. | .. | .. | .. | .. | .. | .. | .. | 9 | 5 | 14 | 23 | 5 | 28 | 10 | 5 | 15 | 3 | 1 | 4 | .. | .. | .. | 45 | 16 | 61 |
| [illegible] | .. | .. | .. | 1 | 0 | 1 | .. | .. | .. | 5 | 0 | 5 | 31 | 4 | 35 | 6 | 4 | 10 | 2 | 0 | 2 | .. | .. | .. | 45 | 8 | 53 |
| [illegible] | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 | 0 | 7 | 30 | 2 | 32 | 14 | 0 | 14 | 4 | 0 | 4 | .. | .. | .. | 55 | 2 | 57 |
| Total coronary disease | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | 21 | 5 | 26 | 84 | 11 | 95 | 30 | 9 | 39 | 9 | 1 | 10 | .. | .. | .. | 145 | 26 | 171 |
| Rheumatic | 7 | 3 | 10 | 24 | 15 | 39 | 3 | 4 | 7 | 8 | 18 | 26 | 7 | 12 | 19 | 3 | 1 | 4 | .. | .. | .. | .. | .. | .. | 52 | 53 | 105 |
| Noncardiac | 4 | 5 | 9 | 18 | 11 | 29 | 3 | 2 | 5 | 7 | 9 | 16 | 26 | 8 | 34 | 3 | 3 | 6 | 4 | 0 | 4 | .. | .. | .. | 65 | 38 | 103 |
| Hypertension | .. | .. | .. | .. | .. | .. | 0 | 1 | 1 | 6 | 13 | 19 | 20 | 26 | 46 | 8 | 10 | 18 | 1 | 6 | 7 | 1 | 0 | 1 | 36 | 56 | 92 |
| Neurocirculatory asthenia | .. | .. | .. | 6 | 4 | 10 | 5 | 7 | 12 | 14 | 19 | 33 | 9 | 2 | 11 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 34 | 32 | 66 |
| Functional systolic murmurs | 13 | 5 | 18 | 9 | 5 | 14 | 0 | 1 | 1 | 2 | 4 | 6 | 3 | 1 | 4 | 1 | 0 | 1 | .. | .. | .. | .. | .. | .. | 28 | 16 | 44 |
| Miscellaneous | 0 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 3 | 3 | 4 | 7 | 8 | 1 | 9 | 2 | 0 | 2 | .. | .. | .. | .. | .. | .. | 16 | 9 | 25 |
| "Thyroid hearts" | .. | .. | .. | .. | .. | .. | .. | .. | .. | 0 | 1 | 1 | 2 | 1 | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 4 |
| Congenital | 1 | 1 | 2 | .. | .. | .. | 1 | 0 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 1 | 3 |
| Syphilis of aorta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 0 | 1 | 1 | 0 | 1 | .. | .. | .. | .. | .. | .. | 2 | 0 | 2 |
| Totals | 25 | 15 | 40 | 60 | 36 | 96 | 13 | 17 | 30 | 61 | 73 | 134 | 160 | 62 | 222 | 48 | 23 | 71 | 14 | 7 | 21 | 1 | 0 | 1 | 382 | 233 | 615 |

M = male; F, female; T, total.

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[11] White, P. D.: Heart Disease, New York, Macmillan Company, 1931.

[12] White, P. D., and Jones, T. D.: Heart Disease and Disorders in New England, Am. Heart J. 3: 302 (Feb.) 1928.

[13] Wood, J. E.; Jones, T. D., and Kimbrough, R. D.: The Etiology of Heart Disease, Am. J. M. Sc. 172: 185 (Aug.) 1926.

[14] Myers, M. M., and Peck, J. H.: Chest Clinics in Iowa, Am. Heart J. 3: 287 (Feb.) 1928.

[15] Schwab, E. H., and Schulze, V. E.: The Incidence of Heart Disease and of the Etiological Types in a Southern Dispensary, Am. Heart J. 7: 223 (Dec.) 1931.

[16] Kahn, M. H., and Barsky, Joseph: Angina Pectoris, Ann. Int. Med. 2: 401 (Nov.) 1928.

[17] Conner, L. A., and Holt, Evelyn: The Subsequent Course and Prognosis in Coronary Thrombosis, Am. Heart J. 5: 705 (Aug.) 1930.

with coronary thrombosis had experienced their first attack before the fifty-first year of life, and they concluded that coronary thrombosis must be regarded as a disease of early middle life.

The organization from which our patients were drawn, and which has approximately 70,000 members, is composed largely of men in the third to fifth decades of life. Eighty-eight per cent of the members are between 20 and 50 years of age. This explains why so few of our patients are in the older age groups and why the percentage incidence of the cases under the age of 50 is so high. Yet, as is shown in table 4, in which White's cases and ours are arranged according to age groups, angina pectoris is much more frequent in our series at all ages. The very fact that the population from which our material is drawn is preponderantly young makes it all the more remarkable that one third of all the cardiac patients were suffering from disease of the coronary arteries.

Table 3.—*Percentage Frequency of Coronary Artery Disease Among Cases of Heart Disease*

| | Percentage Frequency Among All Cases of Heart Disease | | | |
|---|---|---|---|---|
| | White and Jones | | | Boas and Donner |
| | Consultation Practice 1,000 Cases | General Practice 1,000 Cases | Hospital and Dispensary 1,000 Cases | Consultation Practice, Workmen, 512 Cases |
| Angina pectoris......... | 4.2 | 2.8 | 0.7 | 11.9 |
| Angina pectoris and myocardial degeneration... | 7.7 | 10.0 | 5.9 | 10 3 |
| Coronary thrombosis.... | 4.2 | 2.3 | 0.6 | 11.1 |
| Total coronary disease | 16.1 | 15.1 | 7.2 | 33.3 |

It may be suggested that the marked discrepancy between our experience and that of others may be due primarily to different diagnostic criteria; that possibly we are too facile with the diagnosis coronary artery disease. That this does not obtain is shown by a study of the fifty-four cases of coronary artery disease seen by one of us in private consultation practice during the same period in which the workmen were observed. Here the age distribution corresponds to that of other observers; only 35 per cent were under the age of 51.

We can discover no unusual factors predisposing to disease of the coronary arteries in our patients. Hypertension was present in seventy-one, or 41.5 per cent of the cases. A systolic blood pressure of 150 or over was regarded as evidence of hypertension. This corresponds to the incidence of hypertension reported by Levine.[18] Two thirds of the patients with hypertension and coronary artery disease were under the age of 51—corresponding to the age distribution of the whole series. Thus an exceptionally high incidence of hypertension cannot be regarded as the cause of the frequency of coronary artery disease in the younger age groups.

In spite of the relative frequency of diabetes among Jews, only eight, or 4.7 per cent, of our series had diabetes. This contrasts with an incidence of 7 per cent found by Levine.[19] Thus the early development of coronary artery disease in these workmen cannot be attributed to an excessive frequency of diabetes. The experience of others has been that, as a complication of diabetes, angina pectoris or coronary thrombosis appears on the average at the age of 60.[20] The comparative youth of our patients probably explains the low incidence of diabetes.

We have divided our patients with coronary artery disease into three groups: those with angina pectoris, those with coronary artery sclerosis and myocardial degeneration, and those with coronary thrombosis. The criteria for these diagnoses have been indicated at the beginning of this paper. From table 2 it appears that the patients were fairly evenly divided among these three categories. There were sixty-one with angina pectoris, fifty-three with coronary sclerosis and myocardial degeneration and fifty-seven with coronary thrombosis. Thus, in about two thirds of the cases there was definite evidence of myocardial damage when first examined. The younger age groups, under 51 years, were represented in the same high proportion in those patients with coronary artery sclerosis and thrombosis as in those with symptoms of angina pectoris, but with no physical or electrocardiographic signs of myocardial disease. Since myocardial degeneration and coronary thrombosis is diagnosed on objective evidence, the high incidence of coronary disease cannot be explained by an increased nervous sensitivity of these patients, which might lead them to consult a physician on slight provocation.

Hypertension occurred in about one half of the patients with simple angina pectoris and with myocardial degeneration, and in one fourth of those with coronary thrombosis. In view of the frequent permanent drop in blood pressure following coronary thrombosis, this is readily explained. It is fairly safe to assume that most patients who have experienced coronary thrombosis and who have a low blood pressure but a large heart had hypertension before the attack. If these are added to the hypertension column, hypertension will be found as frequently among the group with coronary thrombosis as among the others.

Moderate or considerable cardiac enlargement was observed in more than one half of all the cases.

Twenty-six, or 15 per cent, of the 171 patients with disease of the coronary arteries were women, and 22 of these women had hypertension, often of considerable degree, whereas only one third of the men had hypertension. Sixteen of the twenty-six women were under the age of 51, corresponding to the age distribution of the men. Sixteen women had only symptoms of angina pectoris, eight had coronary sclerosis with myocardial degeneration, and only two had coronary thrombosis.

Table 4.—*Incidence of Angina Pectoris by Age Groups*

| | White and Jones Consultation Series | | | Boas and Donner | | |
|---|---|---|---|---|---|---|
| | Number of Cases | | Percentage Frequency of Angina Pectoris | Number of Cases | | Percentage Frequency of Angina Pectoris |
| Ages | Total | Angina Pectoris | | Total | Angina Pectoris | |
| 0-10 | 25 | 0 | .... | 31 | 0 | .... |
| 11-20 | 55 | 0 | .... | 67 | 0 | .... |
| 21-30 | 110 | 1 | 0.9 | 25 | 0 | .... |
| 31-40 | 141 | 0 | .... | 118 | 14 | 11.8 |
| 41-50 | 190 | 8 | 4.2 | 188 | 23 | 14.0 |
| 51-60 | 204 | 21 | 10.2 | 65 | 15 | 23.0 |
| 61-70 | 208 | 11 | 5.3 | 17 | 4 | 23.5 |
| Over 70 | 67 | 1 | 1.5 | 1 | 0 | .... |

The reason for the high incidence of disease of the coronary arteries in our series which comprised largely individuals under the age of 50, is not apparent.

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[18] Levine, S. A.: Coronary Thrombosis: Its Various Clinical Features, Baltimore, Williams & Wilkins Company, 1929.

[19] Levine, S. A.: Angina Pectoris: Some Clinical Considerations, J. A. M. A. **79**: 928 (Sept. 16) 1922.

[20] Levine (footnote 18). Root, H. F., and Graybiel, Ashton: Angina Pectoris and Diabetes Mellitus, J. A. M. A. **96**: 925 (March 21) 1931.

We have shown that it is not determined by an undue frequency of hypertension or diabetes mellitus. Nor does obesity play a rôle. All the patients were Jews, and it is possible that there is a racial predisposition. Both Edens[21] and White[22] have remarked that Jews seem especially prone to this disorder, although they offer no data to fortify their statements. White believes that disease of the coronary arteries is also more common in Italians. In this connection it is interesting to recall the supposed rarity of angina pectoris among Negroes, and the finding of Schwab and Schulze that arteriosclerotic heart disease occurs less frequently among Negroes.

Table 5.—*Age Distribution of Published Cases of Coronary Artery Disease*

| | Ages | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | 51 to 60 | 61 to 70 | 71 Plus | Total Cases | Per Cent Under the Age of 50 |
| Forbes * | .. | .. | .. | 12 | ... | ... | 72 | 84 | 14.3 |
| Huchard [7] | 3 | 5 | 44 | 87 | 59 | 45 | 34 | 277 | 50.0 |
| Osler: Lancet **1**: 697, 1910 | .. | 9 | 41 | 59 | 81 | 62 | 16 | 268 | 40.0 |
| Herrick-Nuzum: J. A. M. A. **70**: 67 (Jan. 12) 1918 | .. | .. | .. | 32 | 84 | 48 | 36† | 200 | 16.0 |
| Gallavardin [8] | .. | 2 | 36 | 139 | 186 | 97 | 16 | 476 | 37.1 |
| Phillips [6] | .. | 2 | 5 | 32 | 73 | 44 | 18 | 174 | 22.4 |
| Brooks [9] | .. | 1 | .. | 72 | 130 | 101 | 25 | 329 | 22.0 |
| Edens [21] | .. | 1 | 9 | 46 | 69 | 50 | 12 | 187 | 30.0 |
| Levine [18] | .. | .. | 3 | 29 | 44 | 55 | 14 | 145 | 22.0 |
| Priest: Illinois M. J. **60**: 319 (Oct.) 1931 | .. | .. | 3 | 13 | 29 | 10 | 5 | 60 | 26.6 |
| Boas (private) | .. | .. | 5 | 14 | 20 | 12 | 3 | 54 | 35.1 |
| Kahn-Barsky [16] | .. | .. | 43 | 78 | 55 | 22 | 2 | 200 | 60.5 |
| Total | 3 | 20 | 189 | 613 | 830 | 546 | 253 | 2,454 | 33.6 |
| Boas-Donner | 1 | | 26 | 95 | 39 | 10 | | 171 | 71.3 |

* J. Forbes (Cyclopedia of Practical Medicine, London, 1833) just divides his patients into two groups, those below 50 and those above 50.

† The age of these thirty-six patients is not mentioned, except that they were not under 50.

The frequency of angina pectoris among Jews and Italians, and its rarity among Negroes, has usually been explained by their differing "nervous constitution." The high strung, sensitive individual is supposed to develop symptoms of angina pectoris more readily than one who is phlegmatic and care free.

Czyhlarz[23] in this way explained his observation that at the Allgemeine Krankenhaus in Vienna, where the patients for the most part are of the "neurasthenic middle classes," there is much angina pectoris, while at the Franz Josef Hospital in the same city, where the patients are chiefly manual workers, the disease is rare. A hypersensitive nervous system may send a greater proportion of patients to consult a physician, but it does not account for the development of the underlying atherosclerosis of the coronary arteries, nor does it explain the many coronary thromboses, coming without previous warning and first drawing attention to the cardiac incapacity. It will be recalled that one third of our patients had coronary thrombosis, and another third evidences of myocardial degeneration. We are inclined to the belief that the nervous system plays a secondary rôle in the genesis of the syndromes of coronary artery disease, and that some unknown factors are more fundamental. Whether heredity, occupation or diet are important in this connection remains a matter for speculation.

We have gained the impression that, roughly speaking, there are two types of disease of the coronary arteries. The one occurs as a phase of a general arteriosclerosis; it is part of the process of senescence. It is encountered in the elderly, in men over the age of 60, who have hardened and tortuous peripheral arteries, dilated sclerotic aortas, and often a well marked arcus senilis. In these patients the interference with the blood supply of the heart is but an incident of the general arterial disease. The second type occurs in young vigorous men between the ages of 35 and 50 who give few other indications of arterial disease but who may have an essential hypertension. In them the cardiac signs and symptoms stand out as the only evidences of body deterioration. In them, too, it seems as though the progress of the disease was more malignant.

## SUMMARY

An analysis was made of 615 males and females of the industrial class in New York City who were referred with the presumptive diagnosis of heart disease. Eighty-eight per cent of the population from which these patients were drawn were under the age of 50. Almost one third of the 615 referred patients had disease of the coronary arteries. Of those with disease of the coronary arteries, 71 per cent were under the age of 51. This represents an exceptionally high frequency of coronary artery disease, which is all the more remarkable in view of the preponderance of individuals under the age of 50. Our data demonstrate that coronary artery disease, contrary to general belief, is more common, and occurs earlier in life, at least in certain groups of industrial workers. They suggest the desirability of further studies along similar lines with different racial and occupational groups.

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# HOOKWORM DISEASE IN WHITE SCHOOL CHILDREN

## COMPARISON OF TWO METHODS OF SURVEY

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It is rather generally acknowledged that a microscopic examination should precede treatment in all cases of hookworm disease. This view is based on sound experience and sound theory. The microscopic examination is especially important if carbon tetrachloride is to be used in treatment, for if the case is complicated with Ascaris infection, the clinician should know this fact before treatment is instituted.

Opinion is perhaps not nearly so unanimous as to whether one is justified in drawing conclusions regarding the status of hookworm disease on the basis of symptoms observed in a brief inspection of school children unless the diagnosis is made and confirmed in the individual cases by microscopic examination. My position in this matter is that any person experienced in the clinical side of this infection is thoroughly justified by a brief inspection (sometimes referred to as "street car diagnosis") of white children in arriving at conclusions as to whether hookworm disease is playing any material rôle among the children and that for purposes of general estimate the only additional support necessary for a survey of this kind is an occasional check up with the microscope by the person making the inspection or a record of definite microscopic examinations showing that hookworm disease has been demonstrated in the school or in the immediate locality in question. In severe and marked cases it is difficult for an experienced inspector or clinician to go astray in his conclusions in this disease among white children; his mistakes occur in the very light cases or in cases of other conditions, (such as Ascaris infection, and malnutrition) simulating hookworm disease. I am, of course, aware that some of my colleagues, especially laboratory workers, are not in full accord with me in this view.

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[21] Edens, Ernst: Die Krankheiten des Herzens und der Gefässe, Berlin, Julius Springer, 1929.

[22] White, P. D.: Prognosis of Angina Pectoris and of Coronary Thrombosis, J. A. M. A. **87**: 1525 (Nov. 6) 1926.

[23] Czyhlarz, E.: Zur Lehre der Angina Pectoris, Wien med. Wchnschr. **74**: 2541, 1924.

Through the cooperation of Dr. Floyd Johnson, county health officer, and Prof. C. C. Russ, county superintendent of education, of Columbus County, North Carolina, I am able to present some comparative data obtained by the two methods in question. I have recently surveyed the children of five rural white schools in Columbus County by the symptomatic method, without stopping to make microscopic examinations. All these five schools, however, were definitely known to me in former years to have had hookworm cases among the pupils.

Specimens for microscopic examination were forwarded by Dr. Floyd Johnson from two of the schools and from one additional school not included in the symptomatic survey. The comparative results obtained by the two methods are shown in table 1.

Table 1.—*Comparative Results Obtained by Two Methods*

| Symptomatic Survey Method | | | | | Microscopic Method | | | |
|---|---|---|---|---|---|---|---|---|
| | | Hookworm Suspects * | | | | | Hookworm Positives † | |
| School Number | Number of Children Seen | Number | Per Cent Uncorrected | Per Cent Corrected ‡ | School Number | Number of Children Examined | Number | Per Cent |
| 11 | 474 | 228 | 48 | 38 | 11 | .. | .. | .. |
| 12 | 345 | 132 | 38 | 30 | 12 | .. | .. | .. |
| 13 | 478 | 366 | 77 | 62 | 13 | .. | .. | .. |
| 14 | 73 | 70 | 96 | 77 | 14 | 37 | 36 | 97 |
| 15a | 79 | 78 | 99 | 79 | 15a | 87 § | 78 | 90 |
| 15b | ... | ... | .. | .. | 15b | 42 | 28 | 67 |
| Total 5 schools | 1,449 | 874 | 60 | 40 | 3 schools | 166 | 142 | 86 |

* Includes all gradations from very severe cases, such as dirt eaters, to doubtful suspects.
† Includes all hookworm infections from severe infestations to exceedingly light infections, such as carriers.
‡ Deduction of 20 per cent for average theoretical error.
§ Seven of these were of preschool age and were not seen in the original clinical survey.

As a few of the children may be absent from one of the examinations but present in the other, the figures in table 1 are, of course, a comparison of the index of the children in general and not a mathematically exact analysis of 100 per cent identical children. The data here presented are not only a comparison between the two methods of estimates (one taking from less than an hour to at most two hours for each school; the other requiring many hours of work in collecting and examining the specimens); but the data represent also microscopic confirmation of the assertion in another paper that the "widespread impression that hookworm disease in man has almost disappeared from the United States . . . is not confirmed by theoretical considerations, by laboratory examinations or by clinical observations."

In the clinical survey, a portion of a school (number 28) in another state was inspected. Among sixty-one pupils seen, fifty children, or 82 per cent (corrected estimate 66 per cent), were selected as having hookworm disease and as suspects.

Thirty-three specimens were obtained from this school for microscopic examination and, of these, sixteen, or 48.5 per cent, were positive for hookworm. There is no way of knowing how many of these thirty-three children were among the sixty-one pupils seen in the symptomatic survey, nor is this matter of any particular importance. The important point is that for this school also the "widespread impression that hookworm disease in man has almost disappeared from the United States . . . is not confirmed by theoretical considerations, by laboratory examinations or by clinical observations." It is interesting to note that a prominent resident in this town said that hookworm was formerly very prevalent in his locality but that it had been eradicated.

As stated in another paper of this series, persons working by the quick method should hold in mind the theoretical error, which varies according to conditions of light, and so on; they are justified in estimating the approximate prevalence of hookworm disease of a school on this basis, but, as already emphasized several times, they are not justified, in my opinion, in instituting mass treatment, at least in this country, where a microscopic examination can be obtained free of cost to the patient.

In comparing the figures obtained in schools 14 and 15a (77 and 79 per cent) based on the symptomatic method with those (97 and 90 per cent) based on the microscopic method, it is seen that the former are distinctly conservative; for all practical purposes, in judging whether this infection is of educational and administrative importance to the school, the conclusion reached is as sound and valuable (perhaps more so) as (than) the conclusion based on the microscopic observations, for the latter considers only the worms, while the former considers the effect of the worms on the children.

Table 2.—*Microscopic Examination of Four Schools (Numbers 14, 15a, 15b, 28)*

| | |
|---|---|
| Total number of schools (in two counties, two states) in question.. | 4 |
| Total number of children examined microscopically............... | 199 |
| Positive for hookworms only .................................. | 104 |
| Positive for hookworms and Ascaris only........................ | 44 |
| Positive for hookworms, Ascaris and Enterobius only............. | 3 |
| Positive for hookworms and Enterobius only...................... | 5 |
| Positive for hookworms and Trichuris only....................... | 1 |
| Positive for hookworms and undetermined nematode egg............ | 1 |
| Total *positive for hookworms*................................. | 158 |
| Positive for Ascaris only...................................... | 6 |
| Total positive for Ascaris..................................... | 53 |
| Positive for Enterobius only................................... | 3 |
| Total positive for Enterobius ................................. | 11 |
| Total positive for Trichuris .................................. | 1 |
| Total positive for an undetermined nematode egg................. | 1 |
| Total number of children infected by one or more species of worm... | 167 |
| Total percentage of children infected by one or more species of worm | 84 |

The worm statistics cited for the seven schools have been confined entirely to hookworm infection. Taking other intestinal worms into account also, I obtained the data on the basis of microscopic examination in table 2.

# SPECIFIC IMMUNOTRANSFUSION IN THE TREATMENT OF SEPTICEMIA

## REPORT OF A CASE

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AND
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The treatment of septicemia is frequently attended with great difficulties. Physicians often clamor for something specific and fall victims to many of the newer chemicals alleged to be of value in combating infections of the blood stream. In 1919, Sir Almroth Wright[1] pointed out several important principles in the treatment of septicemia: First, that adequate surgical drainage of infected foci is extremely important. Second, that it is possible to produce nonspecific bactericidal agents by inoculating blood in vivo or in vitro with different types of killed organisms; that such blood, from six to eight hours after the vaccination, has definite curative effects in many types of infections of the blood stream. Third, that specific immunization is of even greater value than the nonspecific procedures noted. Fourth, that ordinary blood transfusions may actually do harm in infections of the blood stream. He reported a case of septicemia treated with nonspecific immunotransfusion, with recovery.

In 1923, Colebrook and Storer[2] described their technic of nonspecific immunotransfusion. Comparatively little practical use has been made of their observations. More clinical application of nonspecific immunotransfusions should be made, because of their simplicity and possible good effect.

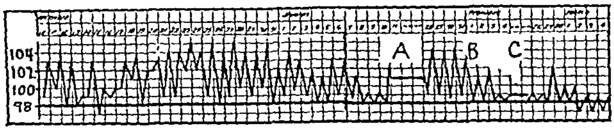

Chart 1.—Rectal temperature, with two gaps indicated by horizontal broken lines, through which periods there was little significant change: *A*, no significant change in remittent fever during this period; *B*, specific immunotransfusion; *C*, normal during this period.

Specific immunotransfusions require the aid of a competent bacteriologic laboratory. It is time consuming, but if one is fortunate in keeping the patient alive for four or five weeks and if the infection does not progress to a pyemic state, specific immunotransfusion may be a life-saving measure. Linser,[3] in 1925, and Hébert,[4] in 1928, reported favorable results with specific immunotransfusions in septicemia.

Our object in this paper is to report a case of septicemia due to Streptococcus hemolyticus occurring in a child, aged 9 years, who was treated by the usual methods without improvement. Treatment with blood from a specifically immunized donor produced remarkable improvement and led to the ultimate recovery of the patient. The treatment and laboratory studies will be reported in some detail.

## REPORT OF CASE

*History.*—E. P., an Italian boy, aged 9 years, admitted to the Children's Ward of the Philadelphia General Hospital, had been perfectly well until Dec. 3, 1930, when he first complained of headache. This was accompanied by some elevation in temperature. In spite of treatment by his family physician, his condition grew worse. A painful swelling appeared in the left temporal region. He became delirious at night and intermittent fever persisted. The patient was hospitalized. The past medical history was negative except for a tonsillectomy in 1929. The family history was irrelevant.

*Examination.*—The boy was markedly undernourished, quite ill, and in a semistuporous condition. The skin and mucous membranes were dry. Examination of the head revealed a tense, tender, painful, nonfluctuant swelling measuring 7 by 5 by 1 cm. in the left temporal region. The ears, eyes and nose were normal. There was no tenderness over any of the paranasal sinuses. The mouth presented sordes at the left angle and a dry, red tongue. The teeth were in excellent condition. The pharynx was slightly injected. The tonsils were missing. The neck was normal except for palpable nodes at the angles of both jaws. The chest wall was emaciated; the lung fields showed nothing of note. The heart was not enlarged; the rate was rapid and the rhythm regular. No murmurs were heard. The blood pressure was 108 systolic and 86 diastolic. The liver and spleen were not palpable. Some hyperperistalsis was noted. The genitalia and extremities were normal. No abnormal reflexes were elicited.

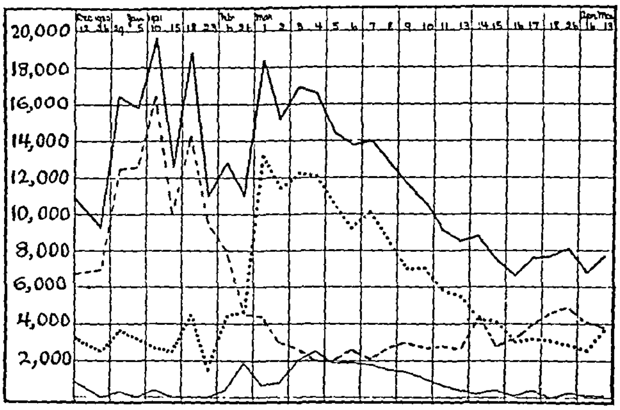

Chart 2.—Total and differential leukocyte counts expressed in absolute numbers throughout the hospitalization period: heavy solid line, total number of leukocytes; broken line, polymorphonuclears; dotted line, lymphocytes; light solid line, monocytes. Immunotransfusion, February 1.

*Laboratory Studies.*—Roentgenographic studies of the chest and teeth were negative. The ethmoid cells and left antrum showed some haziness and were considered suspicious foci of infection. The blood showed a neutrophilic leukocytosis. The Widal reaction was negative. A blood culture was positive for Streptococcus hemolyticus. No ova or parasites were present in the stools. The spinal fluid was normal.

TABLE 1.—*Blood Cultures*

| Date | Culture | Organisms |
|---|---|---|
| Dec. 13, 1930 | Positive | |
| Dec. 18, 1930 | Positive | |
| Dec. 21, 1930 | Positive | |
| Jan. 8, 1931 | Positive | |
| Jan. 15, 1931 | Positive | |
| Jan. 24, 1931 | Positive | |
| Feb. 1, 1931 | Transfusion of immunized blood, [illegible] cc. | |
| Feb. 6, 1931 | No growth | |
| Feb. 19, 1931 | No growth | |
| Feb. 26, 1931 | No growth | |

*Clinical Course.*—Blood cultures were repeatedly positive for Streptococcus hemolyticus (table 1). The child had chills and fever almost daily (chart 1) and a varying polymorphonuclear leukocytosis. He lost much weight and his general condition grew steadily worse in spite of surgical, chemical, serologic and ordinary blood transfusion therapy. (A complete summary of

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From the Division of Pathology and Clinical Pathology of the Laboratories of the Philadelphia General Hospital.

[1] Wright, A. E.: New Prospects in the Field of Therapeutic Immunization, Lancet **1**: 489 (March 29) 1919.

[2] Colebrook, L., and Storer, E. J.: Immunotransfusion, Lancet **2**: 1341 (Dec. 22), 1394 (Dec. 29) 1923.

[3] Linser, P.: Treatment of Sepsis with Immunized Blood Serum, Munchen. med. Wchnschr. **72**: 1281 (July 31) 1925.

[4] Hébert, P.: Cure of a Case of Septicemia by Transfusion of Blood from Immunized Person, Bull. et mém. Soc. méd. d. Hôp. de Paris **52**: 1354 (July 26) 1928.

treatment is given in table 2.) Anticipating that the therapeutic measures outlined in table 2 might not be curative, we started early to prepare a specifically immunized donor. We selected a donor who had previously been used with no beneficial effects for a transfusion of the patient. This donor was immunized with a vaccine prepared from the bacteria isolated from the patient's blood stream (table 3).

At weekly intervals for four weeks the donor received subcutaneously increasing numbers of killed organisms, beginning with 50 million and reaching 250 million. One week following the last injection the donor was bled of 150 cc. of blood and a transfusion of the patient was performed by the citrate method. No reaction followed the transfusion. Forty-eight hours after this transfusion his temperature came down to the normal level for the first time. Blood cultures thereafter were negative (table 1).

Agglutination studies with the causative organisms were done with the donor's and the recipient's blood serum, serum from convalescent erysipelas patients and serum used in the treatment of scarlet fever (table 4).

Three weeks following the immunotransfusion, the patient developed marked, right-sided, anterior, cervical adenopathy, coryza, a slightly injected throat and fever. The blood revealed a white cell count of 11,000; neutrophils were 41 per cent and lymphocytes 59 per cent, the latter being mostly of the young large forms.

Four days later the white count rose to 18,200, with 22 per cent neutrophils and 88 per cent young large lymphocytes. Daily blood studies were made of this phase (chart 2). The blood continued to show a marked absolute lymphocytosis; gradually the white cell count fell to normal and in about two weeks the differential approached normal. An increasing agglutination titer was observed during the latter phase of the disease (table 4).

Table 2.—*Treatment Received Previous to Transfusion with Immunized Blood*

| Date | Chemical Agents | Biologic Preparations | Transfusions Donor | Transfusions Amount | Surgical Procedures | Comment |
|---|---|---|---|---|---|---|
| 12/17/30 | ... | 10 cc. antistreptococcic polyvalent serum intravenously | | | | |
| 12/18/30 | ... | 20 cc. of same | | | | |
| 12/19/30 | ... | ... | ... | | Incision and drainage of abscess over left temporal region | Streptococcus hemolyticus |
| | | | | | Left antrum irrigated | Clear fluid obtained |
| 12/21/30 | ... | ... | ... | | ... | Developed hives and adenopathy |
| 12/23/30 | Pregl's iodine, 10 cc. intravenously | ... | ... | | ... | Temperature, 105; patient critically ill |
| 12/26/30 | Pregl's iodine, 10 cc. intravenously | ... | ... | | ... | Temperature, 105 |
| 12/27/30 | ... | ... | Citrated blood | 150 cc. | ... | No reaction |
| 12/30/30 | ... | ... | D. P. brother | 150 cc. | ... | No reaction |
| 12/31/30 | Pregl's iodine, 10 cc. intravenously | | | | | |
| 1/ 3/31 | Metaphen, 10 cc. of 1:1,000 intravenously | | | | | |
| 1/ 4/31 | ... | ... | ... | | ... | Bloody diarrhea and tenesmus, 2 days' duration |
| 1/ 5/31 | ... | ... | B. D. | 150 cc. | ... | No reaction |
| 1/ 6/31 | ... | ... | B. D. | 150 cc. | ... | No reaction |
| 1/10/31 | ... | ... | R. B. | 150 cc. | ... | Violent reaction |
| 1/14/31 | Metaphen, 5 cc. of 1:1,000 intravenously | ... | ... | | ... | No reaction |
| 1/20/31 | Metaphen, 5 cc. of 1:1,000 intravenously | ... | Own blood injected in thigh | 5 cc. | ... | No reaction |
| 1/23/31 | Metaphen, 5 cc. of 1:1,000 intravenously | ... | Own blood injected in thigh | 5 cc. | | |
| 1/24/31 | ... | ... | W. B. | 50 cc. | ... | Transfusion stopped; severe reaction |
| 1/26/31 | Metaphen, 5 cc. of 1:1,000 intravenously | | | | | |
| 1/30/31 | ... | ... | Own blood injected in thigh | 5 cc. | | |
| 2/ 1/31 | ... | ... | D. P. (immunized blood) | 150 cc. | ... | Fever came down to normal in 48 hours; blood cultures thereafter were negative |
| 2/ 8/31 | ... | ... | ... | | Incision and drainage of swelling on right side of neck | Streptococcus hemolyticus |

Table 3.—*Preparation and Progress of Donor*

Donor, D. P., Age 19, Brother of Patient, Type 2 Moss.

| Date | Vaccination Dose in Millions Subcutaneously | Reaction | Agglutination | Blood Removed for Transfusion | Comment |
|---|---|---|---|---|---|
| 12/30/30 | ... | ... | ... | 150 cc. | Nonimmunized |
| 1/ 4/31 | 50 | None | ... | ... | |
| 1/11/31 | 100 | ... | ... | ... | |
| 1/12/31 | ... | Sore throat, coryza and malaise lasting one day | ... | ... | |
| 1/18/31 | 200 | Headache, xerostomia, sore throat, epistaxis, general aches and pains | ... | ... | Confined to bed 2 days |
| 1/25/31 | 250 | None | ... | ... | |
| 2/ 1/31 | ... | ... | 1:80 | 150 cc. | Felt weak for one day |

Table 4.—*Agglutination Studies Against Causative Organisms*

| | Dilution |
|---|---|
| Donor's blood serum | |
| At time of immunotransfusion | 1:80 |
| Four weeks after | 1:640 |
| Patient's blood serum | |
| Two weeks after | 1:640 |
| Four weeks after | 1:1,280 |
| Other serums | |
| Convalescent erysipelas blood serum | No agglutination |
| Scarlet fever antiserum | No agglutination |

## COMMENT

A case of Streptococcus hemolyticus septicemia was cured by transfusion from a specifically immunized donor, after five 150 cc. and one 50 cc. nonmodified blood transfusions had failed. In addition to the latter, surgical drainage of suspicious foci, Pregl's solution of iodine, intravenous injections of metaphen, polyvalent antistreptococcus serum and autohemotherapy were used without avail.

The blood picture from the beginning of the illness until three weeks following the immunotransfusion was one of a neutrophilic leukocytosis. A definite lymphocytic leukocytosis then occurred. At first large young lymphocytes appeared that were difficult to differentiate from monocytes, but, as time went on, these cells matured and were more easily identified. This reaction was accompanied by fever, adenopathy and a rising serum agglutination titer. The blood picture gradually returned to normal.

Nonspecific immunotransfusion should be performed primarily in septicemia. Specific immunotransfusion should be made possible by early isolation of the causative organism, preparation of a vaccine and active immunization of a suitable donor.

Cooperation between bacteriologist and attending physician is most important.

# EDEMA AS INFLUENCED BY A LOW RATIO OF SODIUM TO POTASSIUM INTAKE

## CLINICAL OBSERVATIONS

M. HERBERT BARKER, M.D.
CHICAGO

The purpose of this paper is to present a few of many observations made on cases of edema which have been influenced chiefly by the dietary mineral control. This material is offered only as evidence of the probable importance of the daily intake of sodium and potassium in the control of chronic cases of disturbed water balance of cardiac and renal origin.

It is not necessary to enter into a long discussion of sodium, potassium, the chlorides and acid-base equilibrium, which have been so ably discussed by Blum, Widal, Bunge, Peters, Van Slyke, Keith and many others included in the editorials of The Journal. It is sufficient to say that there have been repeated statements of the importance of sodium rather than the chlorides in fluid storage and that there is abundant evidence of the antagonistic or the displacing influence of sodium by potassium with a resultant fluid loss. However, no definite program has come out of this great amount of work which has been of real practical clinical use.

Important advances have been made by Haldane, Keith, Gamble, Linder, their co-workers and others who have shown the great influence that acid-forming salts (calcium chloride, ammonium chloride, ammonium nitrate) and the mineral acids (hydrochloric acid) have on base excretion and water balance. The important relation of serum osmotic pressure to edema as influenced by the levels of the serum proteins has been emphasized by Starling, Epstein, Van Slyke, Leiter, Barker and Kirk, Shelburne and Egloff, and others. The rôle played by the motor power of the heart, the quality of the blood and renal function need no emphasis. Realizing that there are many influences concerned in controlling body fluid equilibrium, any one or all of which may be at fault at the same time in an edematous patient, I wish to suggest that a dietary regimen in which the sodium and potassium intake are carefully controlled can be instituted which may bring about an occasional clinical improvement after all other measures seem to have failed.

### EXPERIMENTAL EVIDENCE

In the course of study of experimental edema, the possibility of throwing further light on some of the clinical observations immediately suggested itself.[1] As a result, a series of experiments was planned whereby dogs were made edematous or potentially edematous by reducing their blood serum proteins. Various salts were added to their diets and the most striking of these experiments were those in which sodium and potassium chloride were given.[2] When sodium chloride was added to the diet of such potentially or slightly edematous animals, fluid storage was prompt and often marked (as much as 40 per cent of the animal's weight in five days) and continued as long as sodium chloride was given. If sodium chloride was omitted, the edema would very gradually wear away. If, however, potassium chloride was substituted for the sodium chloride in equal amounts at any period during fluid storage, a prompt and marked diuresis occurred. Similar observations have been made independently by Shelburne and Egloff.[3] Not only would the animals lose all their edema but their weight would run below that of the control periods even though the serum proteins remained at the same levels. When these observations were made and repeatedly confirmed, it became obvious that a clinical application should be attempted.

### CLINICAL SODIUM-POTASSIUM STUDIES

Patients with gross edema were selected for this study. They were chiefly of two classes; first, cases in which treatment had not been given so that they might be considered untreated cases; and, second, those in which all the present-day accepted forms of treatment had been given either without improvement or, if improvement had occurred in the past, with present failure.

The first step taken was to restrict the sodium intake in all its forms, the fluid intake being unregulated. Occasionally, a rather remarkable and prolonged improvement would occur following this one change alone. Going into the diet of these cases, it was found all too frequently that a patient with severe congestive heart failure, although he was on a salt poor diet and taking full doses of digitalis, together with ammonium chloride or ammonium nitrate and diuretics, was allowed at the same time large quantities of citrus fruits, or baking soda for gas and distention, or was given alkaline waters by his physician. It was immediately obvious why the salt free diet, digitalis and the diuretic regimen had failed.

The second step consisted in giving the patient a full maintenance diet of foods which were thought to be adequate in every respect except that the foods containing sodium were restricted when possible, while foods high in potassium were given. It is difficult to get a patient to take a diet for a long period unless it meets the physiologic requirements, and he will find great difficulty in taking any diet without salt. Both objections have been quite overcome by making the diet very liberal and by allowing the patient to shake potassium chloride on his food for taste. To make diets successful in the ambulatory clinic, they must be simple in outline. The plan now in use in the renal clinic at

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Read in part before the Chicago Society of Internal Medicine, Dec. 15, 1930.

From the Departments of Medicine and Physiology of Northwestern University School of Medicine and the Medical Department of Passavant Memorial Hospital.

[1] Barker, M. H., and Kirk, E. J.: Experimental Edema in Dogs in Relation to Edema of Renal Origin in Patients, Arch. Int. Med. **45**: 319 (March) 1930.

[2] Barker, M. H.: The Effect of Low Proteinemia as Related to Specific Ions, read in a symposium on the kidney in health and disease at Minneapolis in July, 1930.

[3] Shelburne, S. A., and Egloff, W. C.: Experimental Edema, Arch. Int. Med. **48**: 51-69 (July) 1931.

Northwestern University Medical School is scheduled in tables 1 and 2.

When the diet outlined in the tables is started, 5 Gm. (one teaspoonful) of potassium chloride crystals is placed in a salt shaker in the morning. The patient uses from the shaker all he wishes on his food during the day and at the end of the day places the remainder in water and drinks it. It may be necessary to give more potassium chloride to promote diuresis in obstinate cases of the nephrotic type, but 5 Gm. is ordinarily sufficient in the edemas of cardiac or cardiovascular origin. In a few cases, a rather severe dehydration has resulted, so that the potassium chloride had to be reduced greatly or omitted for a time. Such cases, however, appear to be rare.

TABLE 1.—*Diet: Low Sodium-High Potassium with Acid Excess*

Fruits
  3 servings daily, fresh or stewed, but should include either prunes, plums, cranberries or currants once daily.
Vegetables
  2 large servings daily, especially beets, carrots, brussels sprouts, yellow corn, kohlrabi, lettuce, mushrooms, peas, spinach, kidney beans, *parsnips*.
Meat
  2 servings daily.
Eggs
  2.
Milk
  1 glass.
Cream
  ½ glass.
Butter
  Salt-free, 6 squares.
Cereal
  Oatmeal or wheatena; farina, puffed wheat or rice occasionally.
Bread
  Graham bread, 3 large slices or 6 small slices daily.
Rice, macaroni or spaghetti
  1 serving daily.
Potato
  1 serving.
Jelly, preserves or honey
  2 level tablespoons.
Sugar
  ad libitum—at least 1 tablespoonful.

NOTES

All foods are to be prepared without salt and no salt is to be served with meals. Potassium chloride (from 2 to 5 Gm. in shaker) may be given as salt substitute. Spices—cinnamon, sage, paprika, pepper, cloves, nutmeg, allspice—may be used. Small servings of citrus fruits may be added after fluid volume is established. Additional vitamin D to be supplied.

Coffee or tea, 1 cup daily.

A neutral diet may be obtained in one of the following three ways:
1. Reduction of meat, rice, macaroni, bread, cereal.
2. Increase of fruit and vegetables.
3. Addition of figs, molasses, raisins.

The latter method is recommended.

This diet is designed preferably for the treatment of convalescent and ambulatory patients. Very ill patients will have difficulty in eating all the diet, in which event, the diet may be reduced, the same food substances to be given, but in smaller amounts.

CHEMICAL STUDIES

Frequent determinations of the sodium, potassium, calcium, carbon dioxide combining power, $p_H$ and cholesterol of the blood were done. No attempt will be made to discuss the results of these observations except to state that in general nothing striking appeared.[4] No significant changes in blood sodium or potassium were noted. Certainly there was no potassium storage as measured by increased levels in the blood stream. Tissue sodium and potassium determinations were not made. Occasionally a slight elevation of potassium above the control level of 17 to 19 mg. to a level of 21 to 25 mg. was noted after a few days, but this always fell back to the original level in one or two weeks. Blood serum proteins occasionally were reduced in the edemas of cardiac origin and they would return to normal as the edema reduced. Brown and Rowntree[5] have indicated that hydremic plethora does not exist in nephrotic and cardiac edemas in which there is no anemia, but the frequent apparent concentration of the proteins following diuresis in this group of cases speaks for some dilution. No shift in acid-base equilibrium was noted even after months of such management, which is in contrast to the acid-base balance following the administration of full doses of calcium chloride and hydrochloric acid.

REPORT OF CASES

The following case reports will serve to illustrate the types of patients used in the study and some of the results obtained.

CASE 1.—E. S., a man, aged 56, a manufacturer, came with a history of weakness, dyspnea, orthopnea, irregular heart action, edema and ascites of five years' duration. A past history of chorea, rheumatic fever or syphilis could not be obtained. His symptoms had been slight at the beginning and he had been relieved by digitalis. Later, his symptoms became more severe and he was again quite relieved by taking ammonium chloride. In 1929, he became severely edematous and was forced to give up work. When I first saw him, in July, 1930, he was taking 0.1 Gm. of digitalis leaves three times daily, from 6 to 8 Gm. of ammonium chloride daily, and salyrgan once or twice a week.

TABLE 2.—*Sample Menus*

| 1 | 2 | 3 |
|---|---|---|
| *Breakfast* | *Breakfast* | *Breakfast* |
| Stewed currants | Plums | Stewed prunes |
| Oatmeal | Wheatena | Farina |
| Two poached eggs | Scrambled eggs | Soft cooked eggs |
| Graham toast | Graham toast | Graham toast |
| Sweet butter | Sweet butter | Sweet butter |
| Honey | Jelly | Honey |
| Cream | Cream | Cream |
| Sugar | Sugar | Sugar |
| *Dinner* | *Dinner* | *Dinner* |
| Roast beef | Broiled steak | Broiled lamb chop |
| Mashed potatoes | Buttered macaroni | Buttered spaghetti |
| Buttered beets | Stewed tomatoes | Buttered spinach |
| Sliced peaches | Banana salad | Grapefruit cup |
| Graham bread | Graham bread | Graham bread |
| Sweet butter | Sweet butter | Sweet butter |
| ½ glass milk | ½ glass milk | ½ glass milk |
| *Supper* | *Supper* | *Supper* |
| Broiled chicken | Broiled liver or sweetbreads | Broiled whitefish |
| Buttered rice | Baked potato | Mashed potatoes |
| Jelly | Celery salad | Buttered brussels sprouts |
| Lettuce salad | Cherries | Pineapple and nut salad |
| Orange cup | Graham bread | Graham bread |
| Graham bread | Butter | Sweet butter |
| Sweet butter | Jelly | Jelly |
| ½ glass milk | ½ glass milk | ½ glass milk |

| Menu | Protein | Fat | Carbohydrate | Cal. | Vitamin A | Vitamin B | Vitamin C | Vitamin D | Vitamin E |
|---|---|---|---|---|---|---|---|---|---|
| 1.... | 89.3 | 140.4 | 235.9 | 2565 | ++++ | +++ | +++ | + | ++ |
| 2.... | 77.2 | 131.4 | 215.7 | 2355 | ++++ | +++ | +++ | + | ++ |
| 3.... | 84.2 | 130.1 | 227.6 | 2417 | ++++ | +++ | +++ | + | ++ |

*Mineral Content*

| Ca | Mg | K | Na | P | Cl | S | Fe | Acid | Base |
|---|---|---|---|---|---|---|---|---|---|
| 0.660 | 0.278 | 3.362 | 1 126 | 1.514 | 1.485 | 1.139 | 0.0177 | 46.4 | 34.0 |
| 0.627 | 0.268 | 3.263 | 1.038 | 1.332 | 1.556 | 0.975 | 0.0156 | 42.6 | 34.6 |
| 0.638 | 0.299 | 3.483 | 1.061 | 1.471 | 1.47 | 1.177 | 0.0168 | 45.4 | 40.5 |

The patient was a large man with marked dyspnea, orthopnea, and cyanosis of the lips, hands and lower extremities. He was coughing up large quantities of liquid sputum. The pupils reacted to light and the fundi were not remarkable except for some caliber changes and narrowing of the arteries with nicking at the arteriovenous crossings. The chest was barrel-shaped. There were no signs of fluid, but there was a large amount of moisture all through the bases. The heart was enlarged to percussion, the right border dulness being 4 cm., the left border 13 cm. and the base seemed not to be increased. No thrills were felt, but the apex was forceful. The rhythm was absolutely irregular, with a pulse of 56 and an apex rate of 88. A rough blowing systolic murmur was heard at the apex and transmitted to the base. There were no diastolic murmurs. Abdominal examination revealed a large amount of ascites and a tender liver 8 cm. below the costal margin. The lower extremities showed marked cyanosis and deep pitting edema.

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[4] The mass of clinical observations and the chemical data accumulated in the study will be published elsewhere.

[5] Brown, G. E., and Rowntree, L. G.: The Volume and Composition of the Blood and Changes Incident to Diuresis in Cases of Edema, Arch. Int. Med. **35**: 129 (Jan.) 1925.

The blood pressure was 156 systolic and 90 diastolic. The blood showed: red blood cells, 4,990,000; white blood cells, 9,600; hemoglobin 77 per cent (Newcomer). The Wassermann and Kahn tests were both negative. The urine showed a specific gravity of 1.018 and a slight trace of albumin, and was acid. The sediment showed an occasional hyaline and granular cast and an occasional white blood cell, but there were no red blood cells. Electrocardiography showed auricular fibrillation with a rather low electromotive force and considerable spread and slurring of the QRS complex. The T waves were inverted in lead 3 and they were regarded as a digitalis effect in that they became upright when digitalis was omitted.

A diagnosis of chronic myocarditis with auricular fibrillation, probably of hypertensive origin, was made, and after five days the patient was placed on the diet low in sodium with normally high potassium. All other medication was stopped, but he was given 5 Gm. of potassium chloride daily to shake on his food. As he had been ambulatory at home, he was discharged from the hospital so that he would be in his most natural state. Two days after starting this regimen, he noted a slight increase in the volume of urine and a decrease in body weight (chart 1). His weight fell from 92 to 75 Kg. in thirteen days and at that time he was entirely free from edema, and his skin hung in folds. Under this marked edema, which he had carried for years, there was rather severe wasting of the muscles. The liver gradually decreased in size and six months later his cough had cleared up and he was back at his work. Now, after a year and a half, he is very active; he feels well and has no cardiac symptoms. About one month after starting the diet he became extremely dehydrated, so the potassium was reduced to 2 Gm. daily and he was allowed small feedings of citrus fruits. He has been more careless of his diet in the past six months but, on the whole, he adheres closely to the plan outlined and seems remarkably well. He has taken 0.2 Gm. of digitalis folia daily during the past six months because the heart rhythm is more regular, but no symptomatic benefit has been observed.

This case seemed to be one of congestive heart failure which had finally failed to respond to management that was above criticism. The patient was apparently taking sufficient digitalis (0.3 Gm. daily) and he was on a low salt diet. He was taking ammonium chloride and finally he was forced to take salyrgan to hold the edema down. The response to the low sodium-high potassium management after a discontinuance of all other forms of therapy was striking. The events are best shown in chart 1. The inset shows a rather sharp concentration of the serum proteins coincident with the loss of the edema.

CASE 2.—M. R., a married woman, aged 27, developed acute nephritis in August, 1929, which subsided, leaving her with an albuminuria of 16 Gm. a day. Four months later (December, 1929) the serum proteins had became gradually depleted, so that she presented the classic symptoms and indications of the so-called nephrosis group. She felt well except that she was tired. Physical examination was negative except for marked pitting edema of the ankles and thighs, and a moderate ascites. The blood pressure ranged about 90 systolic and 55 diastolic. The urea nitrogen of the blood was characteristically low at 8 mg. per hundred cubic centimeters. There was no anemia, and the Wassermann test of the blood was negative. Renal function tests were entirely normal. The urine contained from 12 to 18 Gm. of albumin daily and the sediment was entirely negative except for numerous hyaline casts, a rare hyaline cast with granules and numerous doubly refractile lipoid bodies in the casts and free in the urine. With physical strain or exposure and in the presence of infections of the upper respiratory tract, a shower of red blood cells would be seen in the urine for a few days.

Management consisted of a low sodium-high potassium diet and the protein was increased to 150 Gm. This diet was tolerated very well and she seemed to feel much stronger, but the proteinuria and edema persisted. Eight grams of ammonium chloride daily reduced the edema materially but it failed to keep her free from edema. The same was true of ammonium nitrate in 10 Gm. daily feeding. The sharpest diuresis and the most prolonged effect was caused by giving 4 cc. of dilute hydrochloric acid in water with each meal. However, in all these periods of therapy with the acid-forming salts and the hydrochloric acid, there was an associated decrease in the carbon dioxide, an increase in the chlorides and proteins, and a shift of the $p_H$ from 7.22 to as low as 7.14. When this shift occurred, water was released from the body but the patient complained of not feeling well. She complained of dull headaches, weakness and loss of appetite. No aggravation of the renal picture was noted. Finally, potassium chloride was given in daily amounts of 5 Gm. A sharp diuresis occurred with a loss of all the ascites and the edema. When the potassium salt was discontinued, the fluid gradually returned, and with the resumption of potassium chloride feeding the edema again disappeared (chart 2). The patient was maintained free from edema for weeks at a time by this method.

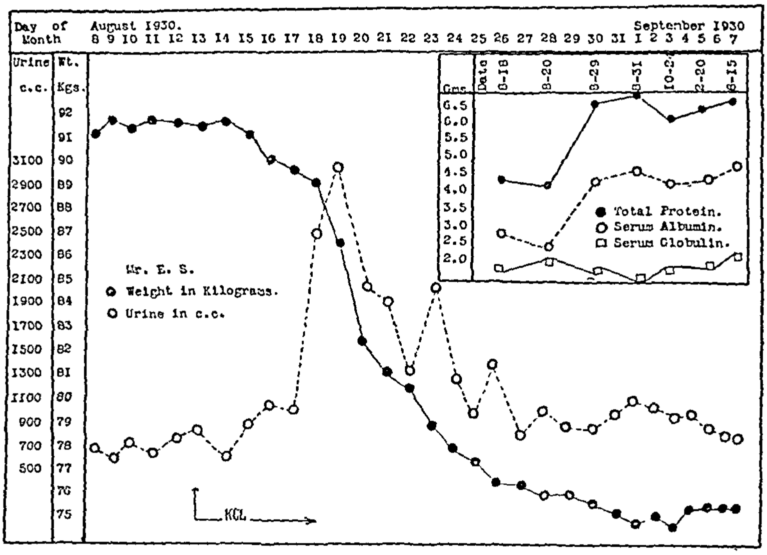

Chart 1 (case 1).—Diet started and 5 Gm. of potassium chloride started Aug. 13, 1930, and continued. The urinary output and the weight loss are graphed. The inset shows a rather reduced total serum protein, chiefly at the expense of the albumin fraction. A quite normal level of 6.5 per cent was found on the 29th after the edema had disappeared. These normal levels have obtained since that time. The last protein levels graphed were determined after one year.

This case is of interest in that the patient presented a nephrotic syndrome which not only responded to the giving of acid and acid-forming salts but relieved her of edema by the neutral salt, potassium chloride. The diuretic influence of large amounts of alkali as given by Osman [6] in this type of case is of interest in that he gives potassium salts in large amounts. Again, an apparent concentration of the serum proteins was associated with diuresis whether it was produced by ammonium chloride, hydrochloric acid or potassium chloride (inset, chart 2). The patient was much more willing to eat the low salt-high protein diet as soon as she was given potassium chloride, which served as a salt substitute as well as a diuretic. It was especially gratifying that the patient had no depressing symptoms while taking potassium chloride, and there were no measurable changes in the acid-base equilibrium, which was in contrast to the acidosis and symptoms produced by hydrochloric acid and the ammonium salts.

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[6] Osman, A. A.: The Use of Alkalis in the Treatment of Bright's Disease, Guy's Hosp. Rep. 77: 386 (July-Aug.) 1927.

Case 3.—L. L., a laborer, aged 36, began to suffer weakness, dyspnea and nocturia from five to eight times in July, 1931, and later edema of the ankles appeared. The patient had had left hemiplegia in 1925, for which he had been observed in the neurologic clinic. Albumin and hyaline casts were found in the urine and the blood pressure was 225 systolic and 150 diastolic, so he was referred to the renal clinic. Physical examination showed only a slight residual of the old hemiplegia. The pupils reacted sharply to light and in accommodation. The fundi showed edema of the disk margins. The retinal vessels were small and tortuous, and there was nicking at the arteriovenous crossings. No hemorrhages were seen, but there were two small areas of exudation in the inferior temporal quadrant of the right eye. The throat and neck were normal and the chest was clear. The heart was moderately enlarged, the right border dulness being 3 cm. and the left border dulness 13 cm. The rate was regular at 90, and no murmurs were heard except for a slight systolic blow at the apex. The liver was about 5 cm. below the costal margin and it was very tender. There was marked edema of the legs and thighs. The blood pressure was now 196 systolic and 138 diastolic. There was no anemia; the Wassermann reaction was negative and the renal function tests were essentially negative. The day volume was 250 cc. with a specific gravity of 1.022, and the night volume was 1,440 cc. with a specific gravity of 1.012. The phenolsulphonphthalein excretion was reduced to 15 per cent, as might be expected in congestion of the liver. The urea nitrogen of the blood was only 14.5 mg. The electrocardiogram showed a rate of 88, a sinus mechanism, low P waves in all leads and a slurring of the RS complex in all leads. The T wave was inverted in lead 1 and diphasic in lead 2.

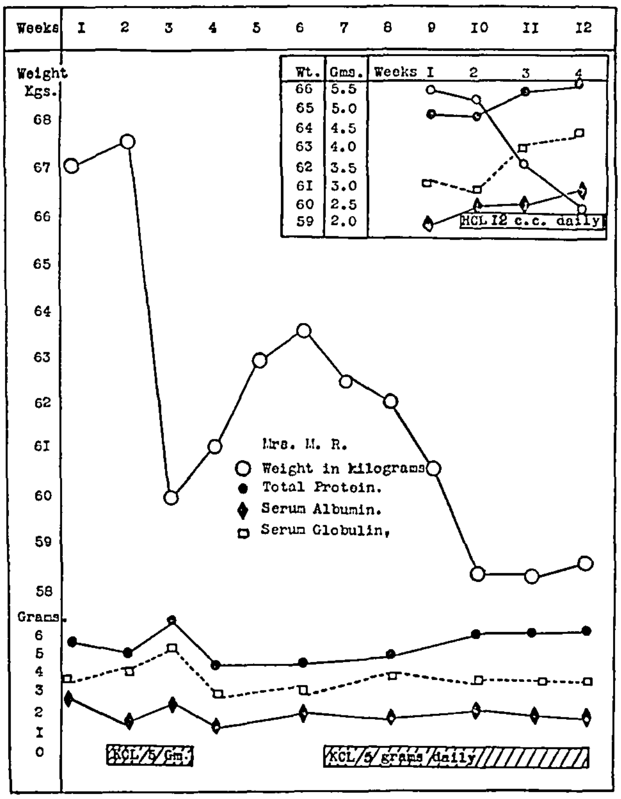


Chart 2 (case 2).—In addition to the diet, 5 Gm. of potassium chloride was given daily beginning with the second week. A great reduction in edema followed as shown by the fall in body weight. The potassium chloride was discontinued and a gradual increase in weight was noted, which again fell to normal when the potassium chloride feedings were resumed. The lines at the bottom of the chart show an increase in the level of the total serum proteins as the edema disappeared. Both serum albumin and serum globulin seemed somewhat increased. The inset shows a similar drop in weight and an increase in serum proteins in one patient associated with the giving of 4 cc. of dilute hydrochloric acid in water with each meal.

The patient was regarded as one having hypertensive vascular disease in which congestive heart failure had developed. He remained ambulatory and continued on the low salt diet of the preceding five years. He was given 5 Gm. of potassium chloride to sprinkle on his food; within a week he noted an increase in the urinary output and a decrease in the dyspnea, and his friends told him that his color was improved. The edema began to disappear rapidly and after two months' time he was quite dehydrated, having lost 30 pounds (13.6 Kg.) (chart 3). He was no longer cyanotic or dyspneic, and he boasted that he was walking two miles daily. He contracted an influenzal type of infection in January, 1932, followed by pneumonia and death.

This patient is of especial interest in that he was known to be hypertensive for six years during which time he had been on a low salt-low protein diet. He had taken no medication except potassium iodide from time to time. He finally developed a typical congestive heart failure from which he seemed to be entirely relieved by taking 5 Gm. of potassium chloride daily (chart 3). No cardiac therapy, bed rest or other circulatory supportive measures were instituted. It was striking to watch the circulatory picture improve as fluid balance was established. The table inserted in chart 3 indicates a rather concentrated state of the serum proteins. A slight return toward normal levels seems to follow clinical improvement.

## COMMENT

To date, sixteen suitable cases have been studied in detail; four of them failed to respond. Clinical differences or laboratory observations have not been determined on which to predict which cases will respond and which cases will not. The cases that have been helped most have been those of congestive heart failure of the nonvalvular type. Two cases of chronic cardiac valvular disease with massive edema have shown good responses. One patient with high-grade mitral stenosis remained edema free for four months and he was up and around, when he suddenly died of pulmonary embolism. The second was a case of stenosis of the mitral and pulmonary valves. This patient was kept edema free for six months and then she went on to congestive failure similar to that present when she was first seen. One severe nephrotic syndrome has been maintained edema free only by the giving of 10 Gm. of potassium chloride daily. The standard care of numerous cases of congestive failure not included in this paper has apparently been greatly augmented by the general plan described.

The diet employed is general and it is felt that it is well adapted to the maintenance of a person with chronic disease. Great care must be given in prescribing diets that are deficient in any way if they are to be taken for a long period of time. This point is not sufficiently emphasized in the clinical literature. Too many patients are placed on unbalanced or deficient diets which render them less able to maintain their body weight during the long strain of chronic disease. In many prescribed diets, it seems that the normal sodium to potassium ratio is greatly disturbed owing to the restricting of meats and the feeding of more fruit and vegetables. In the same fashion a great excess of alkaline ash is introduced into the body, which probably greatly facilitates fluid storage. Lashmet[7] has recently emphasized the addition of acid substances to the neutral diet. It will be noted that the diet outlined in table 2 leaves a definitely acid ash. That may explain why it has rarely been necessary to prescribe acid-forming salts.

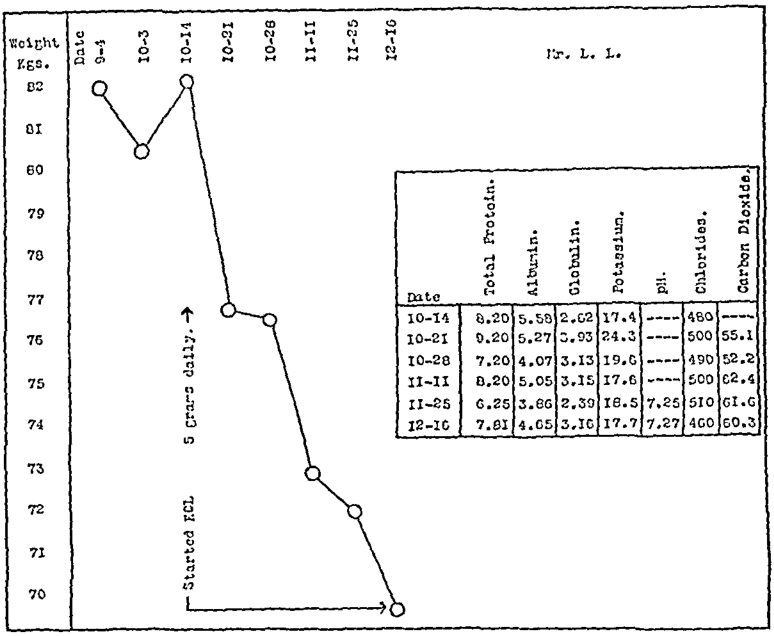
The total amounts of specific mineral given in the diet agree quite closely with the averages given by Sherman[8] in 150 American dietaries. His figures are 1.94 Gm. of sodium and 3.39 Gm. of potassium a day, as compared to 1.07 and 3.33 Gm., respectively, given to our patients. The chief difference is the increased ratio of potassium to sodium, but often no diuretic influence was noted until further potassium was added as potassium chloride. The helpful diet of Keith, Smith and Whelan[9] differs from the plan used in these cases in that they attempt to keep all minerals low. Their first diet contained 3.74 Gm. of potassium, but this was reduced to 1.62 so that all ions were low in amount. The possible dangers of restricting important minerals such as sodium, calcium, phosphorus and potassium is not to be discussed here. The other chief difference is that the Keith low mineral diet leaves an excess alkaline ash.

Although no deleterious effects have been noted in this group of cases in which potassium chloride was given, the extreme toxicity of the potassium ion should be kept in mind. Several observers, Osman,[6] Addison[10] and others, have used large doses of potassium substances over long periods without trouble even in severe cases of vascular and renal disease. However, overdosage and, especially, poor excretion of potassium should be closely watched in that either may result in storage sufficient to produce severe symptoms and death.

In connection with the occasional marked diuretic response to potassium chloride feeding, the work of Harrison and Pilcher and their co-workers[11] should be borne in mind. These workers have shown that tissue potassium is often at a low level in cases of congestive heart failure. Whether or not a relation exists between their observations and the clinical studies presented here will be worked out in the future. The influence of the potassium ion alone or its action in the presence or absence of sodium and in special circumstances or combinations with the chlorides will be answered only by much careful study. Certainly more thought should be given to the minerals ingested by the patient chronically ill with edema.

## SUMMARY

Experimental observations on the relation of sodium and potassium to body fluid balance have been applied to cases of cardiac and nephrotic edema. It has been found that twelve of sixteen patients lost their edema when given potassium chloride, provided they were placed on a full general diet with an acid ash excess in which a low ratio of sodium to potassium was maintained. Some cases responded dramatically and others less. No cause for the success or failure of this regimen has been found. No ill effects from the procedure have been noted in cases followed as long as a year and a half. No conclusions can be drawn from these observations, but it is hoped that this material might be of help to an occasional patient who has failed to respond to the usual measures.



| Date | Total Protoin. | Albunin. | Globulin. | Potassiun. | pH. | Chlorides. | Carbon Dioxide. |
|---|---|---|---|---|---|---|---|
| 10-14 | 8.20 | 5.58 | 2.62 | 17.4 | ---- | 480 | ---- |
| 10-21 | 9.20 | 5.27 | 3.93 | 24.3 | ---- | 500 | 55.1 |
| 10-28 | 7.20 | 4.07 | 3.13 | 19.6 | ---- | 490 | 52.2 |
| 11-11 | 8.20 | 5.05 | 3.15 | 17.6 | ---- | 500 | 62.4 |
| 11-25 | 6.25 | 3.86 | 2.39 | 18.5 | 7.25 | 510 | 61.6 |
| 12-16 | 7.81 | 4.65 | 3.16 | 17.7 | 7.27 | 460 | 60.3 |

Chart 3 (case 3).—This graph shows the dramatic loss of body weight in congestive heart failure, associated with the giving of 5 Gm. of potassium chloride daily when the *sodium intake* was reduced. A complete symptomatic restoration of circulatory efficiency was effected without specific cardiac therapy. The small table inset shows a rather high percentage of serum proteins. The chlorides, carbon dioxide and *p*H remained essentially unchanged.

303 East Superior Street.

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[7] Lashmet, F. H.: The Treatment of Nephritic Edema by Acid, J. A. M. A. **87**: 918 (Sept. 26) 1931.

[8] Sherman, H. C.: Chemistry of Food and Nutrition, ed. 3, New York, Macmillan Company, 1930, p. 271.

[9] Keith, N. M.; Smith, Florence F., and Whelan, Mary: The Therapeutic Use of Diets Low in Water and in Mineral Content, Arch. Int. Med. **37**: 550 (April) 1926.

[10] Addison, W. L. T.: The Use of Sodium Chloride, Potassium Chloride, Sodium Bromide and Potassium Bromide in Cases of Arterial Hypertension Which Were Amenable to Potassium Chloride, Canad. M. A. J. **18**: 281 (March) 1928.

[11] Pilcher, Cobb; Calhoun, J. A.; Cullen, G. E., and Harrison, T. R.: Studies in Congestive Heart Failure: Potassium Content of Skeletal Muscle Obtained by Biopsy, J. Clin. Investigation **9**: 191 (Oct.) 1930.

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**Spermatogenesis in Advanced Age.**—Recently I appeared as an expert witness in the law courts in a suit which turned on whether a man of 83 could be the father of a child. We won our case, not only because the collateral evidence was strong, but because I could quote many instances of spermatogenesis in the testes of men of 80 and even of 90. Metchnikoff actually cites the case of a man of 103 in whose testes spermatozoa were found. And if examples are required of the retention of sexual passion we have only to think of Goethe, who at the age of 74 fell so desperately in love with a girl of 17 that when his suit went badly he was prostrated with grief and no longer desired to live. Indeed, it was this episode in his life, and a previous one in which he had been more successful, that suggested to him the theme of Faust.—Walker, Kenneth: The Accidents of the Male Climacteric, *Brit. M. J.* **1**: 50 (Jan. 9) 1932.

# *Clinical Notes, Suggestions and New Instruments*

## SPONTANEOUS HYPOGLYCEMIC SHOCK IN CHILDREN: REPORT OF FOUR CASES

Herbert L. Elias, M.D., Rockville Centre, N. Y., and
Reuben Turner, M.D., New York

During the past three years, four children have been observed with syncope associated with an idiopathic hypoglycemia. Three patients were admitted with complete loss of consciousness, one with semiconsciousness, and all appeared to be extremely sick. The blood sugar values ranged from 27 mg. to 73 mg. per hundred cubic centimeters. Two of the patients recovered immediately after receiving dextrose intravenously, the third after dextrose by mouth and rectum, the fourth recovered spontaneously. None of these patients had convulsions.

In view of the recent reports in the literature of patients with convulsions due to hypoglycemia, it seems desirable to report this group of cases presenting unconsciousness due to hypoglycemia but not convulsions. There is little reference in the pediatric literature to hypoglycemia as a cause of syncope alone.

Seale Harris[1] was the first to call attention to the possibility of hyperinsulinism in adults as a cause of spontaneous hypoglycemic symptoms. Subsequently several authors reported hypoglycemia associated with hypertrophic disease of the pancreas. Allan[2] in 1929 reported hypoglycemia not associated with any organic disease of the pancreas. Carr[3] has recently discussed the neurologic syndromes associated with hypoglycemia in adults and referred to his interesting case of epilepsy due to hypoglycemia. This patient recovered after the removal of an adenoma of the pancreas. Carr lists the following symptoms of spontaneous hypoglycemia, reported by various authors: weakness, anxiety, restlessness, stupor, diplopia, convulsions, hemiparesis, and automatic behavior.

Josephs in 1926[4] and again in 1929[5] reported a group of cases in which children had convulsions associated with a low blood sugar. In 1929 Griffith[6] attempted to show a relation between the convulsions of early life and hypoglycemia. Others (Talbot,[7] Shaw and Moriarty,[8] Weymuller[9]) have reported low blood sugar values in epileptic patients on a fasting or on a ketogenic diet. It is assumed that the mechanism here was a low sugar intake. No cause for the lowered blood sugar level could be found in our cases. In one case fatigue may have been a factor. Levin[10] has reported low blood sugar values in men after a marathon race.

### REPORT OF CASES

Case 1.—R. B., a white American boy, aged 3½ years, was admitted, Jan. 21, 1931, in a state of unconsciousness of five hours' duration. The blood sugar was 27 mg. per hundred cubic centimeters. He recovered while receiving an intravenous injection of dextrose.

The family history and the past history were negative.

The child had failed to eat his supper eighteen hours before admission, but otherwise he had acted normally until the following morning, when his mother found him lying in bed in a deep stupor from which he could not be aroused. He was brought to the hospital several hours later, still in a comatose condition.

The boy was unconscious. His eyes were slowly oscillating from side to side with alternating internal strabismus, first on the right and then on the left. His neck was not stiff. He had bilateral Kernig and Babinski signs. The throat was injected. The rest of the physical examination was negative. The pulse was 96; respiratory rate, 24; temperature, 97 F.; blood pressure, 88 systolic and 64 diastolic. Examination of the urine showed 2 plus acetone, no sugar, no albumin and nothing abnormal microscopically. The blood sugar was 27 mg. per hundred cubic centimeters of blood with a carbon dioxide combining power of 45 volumes per cent; plasma protein, 4.7; calcium, 8.7; phosphorus, 4.2. The spinal fluid was normal (sugar 12 mg., protein 22 mg.).

While still in the admitting room, after a sample of blood had been taken for examination, the child was given an infusion of 50 cc. of 50 per cent dextrose solution. When about 25 cc. of this solution had been given, the patient was wide awake and crying for his mother. The blood pressure immediately rose to 124 systolic and 60 diastolic. The following day the blood sugar concentration was 86 mg. per hundred cubic centimeters.

The sugar tolerance test is recorded in table 1.

Table 1.—*Sugar Tolerance Test in Case 1*

| Fasting Blood Sugar | 30 Minutes | 1 Hour | 2 Hours |
|---|---|---|---|
| 90 mg. | 121 mg. | 138 mg. | 105 mg. |

Case 2.—J. H., a white American boy, aged 8 years, was admitted July 2, 1930, because of semiconsciousness of four hours' duration. His blood sugar was 53 mg. per hundred cubic centimeters. He recovered slowly after receiving dextrose by mouth and by rectum.

The family history and the past history were negative.

One hour before admission the patient's mother had been hurriedly summoned to the street, where she found the boy in a stuporous condition in the arms of a policeman. She was told that the boy had been frightened by a dog. The patient had had no lunch on the day of admission. He was admitted at about 4 p. m.

On examination he was found to be semiconscious and irrational. Respirations were alternatingly rapid and slow. This irregularity in breathing continued for half an hour after admission. The rest of the physical examination was negative. Neurologic examination, except for semiconsciousness, was negative. The urine showed 4 plus acetone. The spinal fluid was normal. White blood cells, 3,700; polymorphonuclears, 89 per cent; lymphocytes, 11 per cent; blood sugar, 53 mg. per hundred cubic centimeters of blood.

He was given dextrose by mouth and by rectum, and he fully recovered in about six hours after admission.

The results of sugar tolerance tests on two occasions are shown in table 2.

Table 2.—*Sugar Tolerance Tests in Case 2*

| Date | Fasting Blood Sugar | 30 Minutes | 1 Hour | 2½ Hours |
|---|---|---|---|---|
| 7/3/30..... | 56 mg. | 93 mg. | 90 mg. | 93 mg. |
| 7/8/30..... | 87 mg. | 122 mg. | 112 mg. | 63 mg. |

The case showed a low fasting blood sugar preceding the first test but a normal level before a second test five days later.

It is interesting to note that this patient had a slow pulse, whereas a rapid pulse is usually found in patients with hypoglycemic shock.

Case 3.—This case was observed in the examining room. L. R., an Italian girl, aged 11 years, weighing 82 pounds (37 Kg.), had been seen on several occasions because of left facial hemiatrophy, right tibial atrophy and leukoderma following an attack of measles at the age of 2 years.

At the completion of prolonged roentgenologic, physical and anthropometric examinations a sample of blood was drawn

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From the Department of Pediatrics, New York University, and the Children's Medical Service, Bellevue Hospital.

[1] Harris, Seale: Hyperinsulinism and Dysinsulinism, J. A. M. A. **83:** 729-733 (Sept. 6) 1924.

[2] Allan, F. N.: Hyperinsulinism, Arch. Int. Med. **44:** 65-70 (July) 1929.

[3] Carr, A. D.; Parker, Robert; Grove, Edward; Fisher, A. O., and Larimore, J. W.: Hyperinsulinism from B-Cell Adenona of the Pancreas, J. A. M. A. **96:** 1363-1367 (April 25) 1931. Carr, A. D.: Neurologic Syndromes Associated with Hypoglycemia, ibid. **97:** 1850-1852 (Dec. 19) 1931.

[4] Josephs, Hugh: Fasting as a Cause of Convulsions, Am. J. Dis. Child. **31:** 169 (Feb.) 1926; Recurrent Vomiting, ibid. **31:** 657 (May) 1926.

[5] Josephs, Hugh: Spontaneous Hypoglycemia in Childhood, Am. J. Dis. Child. **38:** 746 (Oct.) 1929.

[6] Griffith, J. P. C.: Hypoglycemia in the Convulsions of Early Life, J. A. M. A. **93:** 1526 (Nov. 16) 1929.

[7] Talbot, F. B.; Shaw, E. B., and Moriarty, Margaret E.: Hypoglycemia and Acidosis, J. A. M. A. **83:** 91 (July 12) 1924.

[8] Shaw, E. B., and Moriarty, Margaret, E.: Hypoglycemia and Acidosis in Fasting Children with Idiopathic Epilepsy, Am. J. Dis. Child. **28:** 553 (Nov.) 1924.

[9] Weymuller, C. A., and Schloss, O. M.: Nondiabetic Ketosis in Children, Am. J. Dis. Child. **34:** 549 (Oct.) 1927.

[10] Levin, S. A.; Gordon, Burgess; and Derick, O. L.: Some Changes in the Chemical Constituents of the Blood Following a Marathon Race, J. A. M. A. **82:** 1778 (May 31) 1924.

from an arm vein. A few minutes later the child became covered with perspiration and fainted. The pulse was thin and rapid; the skin was cold. The faint lasted about five minutes. The child recovered spontaneously and returned home. There were no previous or subsequent attacks. Examination of blood taken showed the following: blood sugar, 35 mg. per hundred cubic centimeters; calcium, 12 mg.; phosphorus, 5.1; serum protein, 11.2.

Case 4.—J. T., a girl, aged 26 months, was seen in consultation by Dr. Giuseppe Previtali and Dr. Charles Hendee Smith, who kindly permitted us to report the case.

The family history and the past history were essentially negative.

The mother found the baby unconscious, lying in bed at about 8 a. m. The patient was taken to a hospital, where an intravenous injection of dextrose was given soon after admission and immediately after which she regained consciousness. On the next day blood sugar was 73 mg. per hundred cubic centimeters of blood. The urine showed a heavy trace of acetone and a faint trace of sugar. Unfortunately, no blood sugar examination was done before the intravenous administration of dextrose. The blood sugar the next day showed a low normal level.

### SUMMARY

Four patients with attacks of unconsciousness associated with an idiopathic hypoglycemia recovered rapidly following administration of dextrose.

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## HEMATOMA OF RECTUS ABDOMINIS MUSCLE

Sidney Vernon, M.D., Norwich, Conn.

This case is reported because of its unusual character. Rupture of a blood vessel in the abdominal wall occurred, causing symptoms suggestive of an intra-abdominal pathologic condition.

Mrs. M. R., aged 54, was admitted to the W. W. Backus Hospital, Aug. 21, 1931, complaining of pain in the lower part of the abdomen. She had had a spasm of severe coughing, August 16, which caused a sudden sharp pain in the left lower quadrant of the abdomen. A large globular swelling formed shortly afterward at the site of pain. She remained in bed for four days, but when she arose pain recurred with renewed severity which caused her to seek advice. She was sent to the hospital.

The patient had had a chronic cough for fourteen years, which was painful at times and produced white expectoration. She was married at 18, had twelve children, and passed the menopause at 48. She had had a "fallen womb," which condition was gradually increasing, giving her no great discomfort, however.

The patient was well developed and well nourished. The heart and lungs were normal. Blood pressure was 154 systolic and 90 diastolic. A hard, ovoid mass, the size of a small grapefruit, was felt below and to the left of the midline. Ecchymotic areas about the pubis and perineum, and a marked procidentia with complete eversion of the vaginal wall were present. The abdominal mass did not change its position when the patient turned from side to side but appeared to be adherent to the left side of the abdominal wall.

The patient's temperature, August 21, was 100 F., the pulse rate 110, and respiration 24. Blood count showed 4,400,000 erythrocytes, 70 per cent hemoglobin and 10,400 leukocytes, with 80 per cent polymorphonuclear cells, 12 per cent lymphocytes, 5 per cent eosinophils and 3 per cent mononuclear cells. The urine showed occasional hyaline casts on one examination but none at another examination. Roentgen examination of the chest was negative except for peribronchial thickening probably due to chronic bronchitis.

The patient came to operation, August 26. Under spinal anesthesia a lower midline incision was made and bluish discoloration was noted before the sheath of the rectus muscle was incised. When the sheath was opened a large black clot, which had already begun to undergo hemolysis, presented itself to the left of the midline. The clot displaced the fibers of the rectus muscles. Black clots weighing about 500 Gm. were removed and the cavity remaining was sponged out. Several large veins were seen, which were clamped and tied. The posterior rectus sheath and the peritoneum were then incised and Olshausen suspension of the uterus was performed. The abdomen was closed in layers; a rubber drain was left in the cavity from which the blood clot had been removed. The drain was removed on the third day after operation and a dark serous discharge continued for two days later. The patient made an uneventful recovery and was discharged from the hospital seventeen days after the operation.

### COMMENT

This case illustrates an uncommon condition wherein a hematoma of the abdominal wall occurred not due to direct trauma. It is conceivable that a large vein was ruptured in the violent fit of coughing that occurred. Physical signs noted at the first examination pointed to the condition found at operation.

326 Washington Street.

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## MASTOIDITIS WITHOUT APPARENT OTITIS MEDIA IN A PATIENT WITH DIABETES

J. H. Childrey, M.D., and P. A. Gray, M.D.
Santa Barbara, Calif.

Mastoiditis without apparent disease of the middle ear is unusual and its occurrence in a diabetic patient makes the following case doubly interesting:

### REPORT OF CASE

F. S., a white man, aged 27, had had diabetes for ten years. He had taken insulin since 1923.

There was no history of previous ear, nose or throat disease. One month before admission the patient had apparently contracted a slight cold. The next day the left ear felt a little stuffy; later he noted autophony. There was neither earache nor aural discharge. A week later he became dizzy and weak and experienced considerable pain in the left temporal region. A swelling appeared in the left temporal and preauricular regions. This was associated with slight trismus. Two weeks before admission the pain caused him to consult an otolaryngologist, who believed that the condition was a parotitis secondary to an external otitis.

The temporal headache became continuous and more severe; the swelling and trismus increased and the temperature was elevated. A roentgenogram of the mastoid process showed only a slight cloudiness of the cells on the left, but there was no change in the tympanic membrane and no tenderness over the mastoid process, and for this reason the physician hesitated to advise surgery. Because of this infection the symptoms of diabetes became more marked. For a week before admission the patient had vomited all his food and had stopped taking insulin because he could not eat. He was admitted to the diabetic service of Dr. W. D. Sansum at the Santa Barbara Cottage Hospital, Sept. 9, 1931, at 12:30 a. m. in a semicomatose condition. The temperature was 101.2 F., pulse 100, and respiration rate 30 per minute. The breath smelled strongly of acetone; urinalysis showed sugar + + + +, acetone + + + +, and diacetic acid + + + +. Blood sugar was 500 mg. per hundred cubic centimeters. There was an extensive, moderately tender swelling involving the left preauricular, zygomatic and temporal regions of the head. There was no swelling over the mastoid process; only slight tenderness could be elicited by firm pressure in this region. There was no drooping of the posterosuperior wall of the external canal. The tympanic membrane, except for a loss of luster, was normal in appearance. Tests of the hearing showed moderate conduction deafness on the left. Repetition of the roentgen examination of the mastoid again showed a well developed cellular structure, the cells being of the small type. There was considerable increase in density, and trabecular detail was poorly defined, but there was no extensive solution of cell wall integrity. The condition was interpreted as early second degree mastoiditis. The blood picture was as follows: hemoglobin, 75 per cent; red blood cells, 4,830,000; white blood cells, 13,100. Differential count: small lymphocytes, 6 per cent; large lymphocytes, 12 per cent; polymorphonuclears, 82 per cent.

The patient was prepared by appropriate insulin and dietetic management for operation.

Mastoidectomy was performed, September 10, under ether anesthesia. When the cortex was exposed, a small perforation

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From the Sansum Clinic.

was noted midway between the tip and the spine of Henle. A second cortical perforation was present at the root of the zygomatic process. Approximately half of the cells over a large area were filled with pus, particularly those in the region of the antrum and zygoma. There was beginning destruction of the bony trabeculae. The antrum contained a considerable amount of granulation tissue. Because the inner plate over the sinus and the middle fossa was apparently intact, the dura was not exposed. A huge subperiosteal abscess in the temporal fossa was drained. A rubber drain was introduced into the upper portion of the wound extending to the subperiosteal abscess, and the mastoid wound was packed loosely with petrolatum gauze. The wound was closed with silkworm catgut and dermal. Myringotomy done at the completion of the operation revealed no pus. The drum was healed in a few days without discharging. Culture of the pus obtained at operation revealed Streptococcus mucosus.

September 31, the temporal abscess had to be reopened and drained because the rubber drain had become loosened prematurely. Otherwise, convalescence was uneventful and the mastoid wound healed cleanly.

The patient was discharged, October 14. The urine was sugar free on a maintenance diet with 33 units of insulin daily. The blood sugar fasting was 148 mg. per hundred cubic centimeters. Trismus was almost entirely cleared up and hearing tests showed normal response with both the C and $C_4$ forks.

## COMMENT

Infection of the mastoid process, in which a zygomatic abscess is the principal finding, presents a problem in diagnosis, the difficulty of which is increased in the absence of any apparent disease of the middle ear. That the preceding otitis media was probably slight was shown by the facts that the drum appeared practically normal, that myringotomy disclosed no pus, and that the drum healed early and the function of hearing returned promptly. The infection in the mastoid antrum and cells evidently became walled off from the tympanum by obstruction of the aditus by the firm granulation in the antrum. The early appearance of the cortical perforation and subperiosteal abscess is characteristic of this type of infection and demonstrates the insidious, destructive action of Streptococcus mucosus. The concurrence of diabetes increased the hazard and may have hastened the formation of the subperiosteal abscess.

A review of the literature fails to reveal any report of a case of zygomatic mastoiditis among diabetic patients.

317 West Pueblo Street.

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# PIGMENTATION OF THE FACE AND NECK DUE TO FRECKLE CREAM

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Goeckermann[1] reported two cases in 1922 of pigmentation of the face and neck which he proved by deductive reasoning to be due to face cream. As to whether the discoloration was a pigment or a metallic deposit, no definite answer was given at that time. In order to show the frequency of such cases, and also to bring out more facts regarding the etiology, the same author[2] reported thirteen additional cases in 1925. At this time he demonstrated by microscopic section the distribution of the pigment in all layers of the skin and subcutis, thus indicating to him that a gradual absorption of the metal took place; also, the pigment in the skin as removed by biopsy was destained by Zenker's solution, which differentiated mercurial deposits from other forms of pigmentation.

Hollander and Baer[3] in 1929 reported a case in which they proved conclusively by a very sensitive electroqualitative chemical method that the discoloration was a metallic deposit. These are the only authors and cases in the literature. I am presenting another such case.

Mrs. G. B., aged 47, a Roumanian, without children, was seen at the clinic, July 22, 1931, for conditions other than the discoloration of the face and neck. However, on seeing the patient come in the door, one was struck by the dark dirty color of the face and neck. On questioning, she stated that she was using "Othine Double Strength Ointment" for the removal of freckles. She had been using the cream for the past year and a half, but no notice of the discoloration was made until a year before admission. The neighbors were the first to notice the change in the color of the face. She then told me that her husband often accused her of having a dirty face and neck. The patient, nevertheless, had kept on using the cream. She stated that she was in the habit of massaging the face and neck with the cream and allowing it to stay on over night. The face and neck were continually becoming more discolored.

The past history is essentially negative. No medicine had been taken or other substances used that might explain the discoloration.

The examination revealed, apart from the facial appearance, two deep rectal fissures and four moles, one of which was situated on the left anterior surface of the neck and which was subsequently removed, another on the forehead over the left orbital ridge, and the other two in the hair line on the posterior surface of the neck. The discoloration was seen to begin on the neck and was rather sharply demarcated. The pigmentation extended on up to include the face and forehead. The posterior surface of the neck was also involved. The face and neck were of a slaty gray with a bluish cast. The color was deeper in the folds of the neck. Although the patient was of Roumanian descent and naturally dark, at a distance the face and neck did look dirty.

Laboratory examinations showed a negative Wassermann reaction, a normal urine analysis, and a very mild secondary anemia (80 per cent).

F. E. Voist, chemist of the Detroit Board of Health, reported that the sample of Othine submitted contained ammoniated mercury and bismuth subnitrate in a cold cream base.

The mole on the anterior left surface of the neck was removed by excision under a local anesthetic. A small piece of skin, 1 by 4 cm., was removed in conjunction with the mole. This was examined both chemically and pathologically. Chemically silver nitrate was used to precipitate the mercury if present. This analysis was negative, probably because the test was not fine enough. The pathologist, Dr. Osborne A. Brines, reported finding many pigment granules in the corium subcutaneous zone of the skin. Because of the position of these pigment granules, one can readily understand how ineffectual treatment would be.

These cases have been confused with many types of diseases, such as, Addison's disease, argyria, exophthalmic goiter, and cardiac and other chronic conditions. The frequency of such cases would be greater if they would not be confused with the conditions just mentioned.

Treatment is of slight value, as has been brought out, because of the situation of the granules deep down in the subcutaneous tissues. Some have advocated the use of a 0.5 to 1 per cent solution of acetic acid, a 0.5 to 1 per cent aqueous solution of potassium cyanide, or weak solutions of iodine rubbed on the skin, followed by removal with alcohol. Some have proposed the use of potassium iodide and sodium thiosulphate internally. Probably the withdrawal of face cream for about six months will be sufficient to show a difference in color, because of the constant absorption that is taking place. Several of the foregoing have been tried with a very gradual clearing up of the skin.

Why one person should become discolored, and another not, is probably based on a difference of susceptibility. I have in mind one person who has been using a triple strength of the same cream for several years, but without any discoloration. This individual, however, does not use it constantly nor does she massage it in and allow it to remain for several hours.

The following points need emphasis:

1. Cases of this type should not be confused with Addison's disease, cardiac disease or other chronic diseases.
2. No treatment is probably any more effectual than allowing the pigment to become absorbed by itself.
3. Susceptibility probably explains why some individuals become discolored and others do not.

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[1] Goeckermann, W. H.: A Peculiar Discoloration of the Skin, J. A. M. A. **79**: 605 (Aug. 19) 1922.

[2] Goeckermann, W. H.: A Peculiar Discoloration of the Skin, J. A. M. A. **84**: 506 (Feb. 14) 1925.

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## *Special Article*

# REVIEW OF RECENT STUDIES ON THE ANTINEURITIC VITAMIN

## ITS CHEMICAL AND PHYSIOLOGIC PROPERTIES, AND THE EFFECTS OF ITS DEPRIVATION ON THE ANIMAL BODY

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[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

For more than a decade the antineuritic principle has been designated as vitamin B, but developments of the past two years have imparted to the latter term an ambiguity that has led to much perplexity. Not only is the chemical nature of vitamin B still unknown, but just what should be included under the term has become largely a matter of individual preference or persuasion. It is not without interest to trace the varied changes which the concept of this vitamin has undergone. What was originally the antineuritic substance of Eijkman and Funk,[1] which was a specific for the cure of polyneuritis in pigeons, and what was the independently discovered water-soluble B of McCollum,[2] which was demonstrated to be necessary for growth in the rat, became merged into the substance vitamin B,[3] following the demonstration that those natural foods curing polyneuritis likewise promoted growth in animals.[4] Thus vitamin B was regarded as one substance, capable of both preventing polyneuritis and furthering growth. But the simplicity of the view was dispelled by convincing evidence that this vitamin actually comprised at least two substances, differentiated on the basis of sensitivity to heat.[5] After a period of utmost confusion in terminology, agreement was finally reached in this country [6] by designating the antineuritic, thermolabile component as vitamin B, and the antidermatitis,[7] thermostable substance as vitamin G. The British, preferring the subscript system, retained the names $B_1$ and $B_2$ for the respective fractions. As the result of this insight into the multiple nature of water-soluble B, there was no longer a water-soluble B growth factor per se; both components, B and G, were deemed necessary for increase of weight in rats.

At once it was appreciated that much of the vast accumulation of facts concerning the distribution, properties and physiologic behavior of vitamin B, recorded when it was held to be a unit substance, would have to be exhumed and reexamined in the light of its dual nature. For the production of uncomplicated vitamin B deficiency, the method now usually involved inclusion of autoclaved yeast as a source of vitamin G in the basal diet. But the provision of vitamin B alone was not so readily achieved because of its instability to heat and because so relatively few foodstuffs contained it to the exclusion of vitamin G. However, by suitable selection of such grains as wheat and corn, which were found to be relatively richer in B than in G, and by taking advantage of the greater solubility of B in strong alcohol, extracts were prepared containing predominantly the B component. With the perfection of this technic, investigations on vitamin B were renewed with an intensity that even yet has only slightly abated. But new complications appeared with the use of moderately refined concentrates of vitamin B, because these products, while curing polyneuritis, very often would not support growth, even when supplemented with a source of vitamin G. So, almost before the novelty of the dual nature of the B complex had worn away, studies with highly purified fractions indicated the possible existence of seven components in the complex, some of which, however, may conceivably be shown later to be identical.

At present there is no adequate nomenclature for these various components, although British practice requires the use of a numerical subscript following the letter B. The situation is made doubly intricate because there is no simple method of differentiating the various factors; it is difficult to dissociate them even by chemical means. Manifestly, in view of the present knowledge concerning the multiplicity of the B complex, an exposition on vitamin B must contain an arbitrary assertion as to just which one of the seven factors is meant. In the present paper we shall regard vitamin B as the thermolabile, antineuritic substance, necessary for growth in both the pigeon and the rat. But such restriction of the term at once impairs the value of the data recorded on the chemical and physiologic properties of the antineuritic vitamin, together with the pathologic changes ensuing from its deprivation. To the disturbing effect of multiplicity on the vitamin B literature may be added the complications arising from inanition, discrepant species requirements, and the divergent criteria of animal tests.

When vitamin B was originally regarded as a growth entity, information regarding its physiologic rôle and the pathologic processes arising in its absence was gathered by the simple expedient of omitting sources of it from a diet adequate in all other respects. Addition of natural foods to such a diet constituted the accepted method of assay for the distribution of the vitamin. By this procedure a tremendous literature on this dietary essential was accumulated. With the acceptance that the vitamin really represented two substances, differentiated by heat, some of the properties previously ascribed to the antineuritic vitamin were shown to be due to the adventitious presence of the second component. Similarly, the multiplicity of vitamin B created erroneous ideas regarding the distribution of the antineuritic component. It is quite clear that when cure of polyneuritis in the pigeon or growth in the rat was obtained, vitamin B was present in the test substance. In the case of negative experiments in the past, however, it was possible that the vitamin B content of foods may have been underestimated because

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[1] Eijkman, Christiaan: Virchows Arch. f. path. Anat. **148**: 523, 1897. Funk, Casimir: J. Physiol. **43**:395, 1911.

[2] McCollum, E. V., and Davis, Marguerite: J. Biol. Chem. **23**: 181, 1915.

[3] Drummond, J. C.: Biochem. J. **14**: 660, 1920.

[4] McCollum, E. V., and Kennedy, Cornelia: J. Biol. Chem. **24**: 491 (April) 1916.

[5] Smith, M. I., and Hendrick, E. G.: Pub. Health Rep. **41**: 201 (Feb. 5) 1926.

[6] Committee on Vitamin B Nomenclature, American Society Biological Chemists: Science **69**: 276 (March 8) 1929.

[7] Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 297 (Feb. 19) 1926.

vitamin G was the limiting factor for growth. When the basal diet for the test of the B growth complex was so supplemented by a source of vitamin G that only the antineuritic B factor was missing, reappraisal of foods for their B values brought some changes. At least foods were now evaluated for their relative richness in B or G.

All such revisory work on the distribution of vitamin B and the physiologic and anatomic consequences of its absence, which have been undertaken with a basal diet supplemented by a source of G, has been assumed to deal with an "uncomplicated vitamin B deficiency." If the claims for the existence of seven factors in the B complex are seriously considered, it is readily seen that in most studies the technic has not been sufficiently refined to permit the production of an "uncomplicated B deficiency." Particularly is this situation encountered in those instances in which yeast provided the G factor in growth experiments; the absence of other thermolabile factors than B may have easily complicated the results. Sufficient evidence has been adduced to indicate that the physiologic and pathologic effects ascribed to the antineuritic vitamin, at least in growth experiments on rats, are in reality the resultant of a multiple deficiency and are subject to revision as the nature of the B complex is amplified. We might be tempted to brand as premature many of the studies on vitamin B in which the effects of a multiple B deficiency have not been eliminated, if it were not for the fact that their potential clinical value outweighs all the fine and academic distinctions that have been emphasized. Nevertheless, in all fairness the exact status of knowledge of vitamin B should be recognized; for the unequivocal production of an uncomplicated vitamin B deficiency cannot in most instances be said to have been established. Obviously, satisfactory studies on the biologic rôle of vitamin B in the strictest sense must await the time when the number of factors in the B complex is definitely settled and when the preparation of concentrates will enable the production of a specific deficiency for each component.

Inanition is the second complication calling in question how much of the recorded morbid anatomy and physiology is rightly ascribable to a deficiency of the antineuritic vitamin. That the presence of vitamin B furnishes a stimulus to the appetite has been convincingly demonstrated by Karr and Cowgill, and by the same token inanition enters as a disturbing element in instances of vitamin B deprivation.[8] It has long been recognized that inanition, whether by direct or by indirect starvation, leads to definite alteration in the physiology of the animal and to a distinct pathologic picture.[9] Just what part of the morbid processes in vitamin B deficiency is due to inanition and what part is due to lack of the vitamin per se has until recently received scant attention. Hence, an imposing group of functional disturbances and anatomic changes have been accepted for years as the effects of B avitaminosis, when in reality they are the manifestations of inanition. It is to the credit of Kon and Drummond[10] that they circumvented the technical difficulties of separating the effects of inanition from B deficiency by feeding an adequate diet to control animals, but at a caloric level equivalent to that consumed by animals on the B deficient diet. In considering the work of the past, they make the sweeping comment that all the pathologic changes observed in beriberi pigeons are directly attributable to inanition.

Another condition that has cast doubt on the interpretation of vitamin B observations has been the use of two species in the animal tests. By far the larger part of vitamin B experimentation has been performed on the pigeon and the rat. Unfortunately the B requirements of these two species for increased weight appear to be widely different. Of the seven components at present advanced as constituents of the water-soluble B complex, the pigeon needs three,[11] and the rat requires five[12] for optimum nutrition. Thus far only one component, the antineuritic vitamin B, has been shown to be definitely needed in common by the two species;[13] on the other hand, there is some evidence that certain components are required by one species but not by the other. The entire question of the nutritive needs of the pigeon and the rat for growth is in a transitional state, and judgment concerning it may well be reserved. It is not impossible that the estimated number of B components may be reduced by the demonstration that certain of them are identical. However, the available evidence that the pigeon and the rat require different components of the B complex for maximum weight is of such convincing character that it cannot be dismissed. Certainly there is abundant opportunity for error in attempting to correlate the pathologic and the physiologic manifestations of the rat and the pigeon on a defective diet: unless the ration of each species is made adequate with respect to all factors required by it, with the exception of the antineuritic component, the observations may not be comparable. The same conditions must be met in assaying foods for their content of the antineuritic vitamin, if the weight test is to be employed. An alternative procedure in assay experiments, strongly advocated by Peters and Smith, is the alleviation of symptomatology specific for polyneuritis in the pigeon[14] or the rat;[15] i. e., the so-called curative test.

The fourth source of confusion with regard to knowledge of vitamin B, particularly of its distribution and properties, has been the lack of uniform criteria in tests. Even with one species, some investigators have used freedom from polyneuritis as the basis of a positive test, while others have chosen to judge success by increase in weight. In general, the B requirements are much more extensive for growth than for treatment of polyneuritis. In the rat, for instance, it has been mentioned that five components of the B complex are thought to be necessary for growth, while only one is needed for prevention or cure of polyneuritis. It is obvious that substances may exhibit antineuritic activity without promoting growth in an animal, because of their deficiency in the additional components necessary for increase of body weight.

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[8] Karr, W. G.: J. Biol. Chem. **44:** 255, 1920. Cowgill, G. R.: Am. J. Physiol. **57:** 420 (Oct.) 1921.

[9] Jackson, C. M.: *The Effects of Inanition and Malnutrition on Growth and Structure*, Philadelphia, P. Blakiston's Son & Co., 1925.

[10] Kon, S. K., and Drummond, J. C.: Biochem. J. **21:** 632, 1927.

[11] Jansen, B. C. P., and Donath, W. F.: Mededeel. v. d. dienst. d. volksgezondh. in Nederl.-Indie., 1927, pt. I, p. 186. Williams, R. R., and Waterman, R. E.: J. Biol. Chem. **78:** 311 (July) 1928. Kinnersley, H. W., and Peters, R. A.: Biochem. J. **22:** 419, 1928. Guha, B. C., and Drummond, J. C.: Ibid. **23:** 880, 1929. Carter, C. W.; Kinnersley, H. W., and Peters, R. A.: Ibid. **24:** 1832, 1844, 1930.

[12] Smith and Hendrick (footnote 5). Reader, Vera: Biochem. J. **23:** 689, 1929; **24:** 77, 1827, 1930. Hunt, C. H.: J. Biol. Chem. **78:** 83 (June) 1928; **79:** 723 (Oct.) 1928. Hunt, C. H., and Wilder, Willard: Ibid. **90:** 279 (Jan.) 1931. Williams, G. Z., and Lewis, R. C.: Ibid. **89:** 275 (Nov.) 1930. Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **23:** 498, 1929. Roscoe, Margaret H.: Ibid. **24:** 1754, 1930. Chick, Harriette; and Roscoe, Margaret H.: Ibid. **24:** 105, 1930. Chick, Harriette; and Copping, Alice M.: Ibid. **24:** 932, 1764, 1930.

[13] Kinnersley, H. W.; Peters, R. A., and Reader, Vera: Biochem. J. **24:** 1820, 1930.

[14] Kinnersley, H. W.; Peters, R. A., and Reader, Vera: Biochem. J. **22:** 276, 1928; footnote 13.

[15] Smith, M. I.: *Pub. Health Rep.* **45:** 116 (Jan. 17) 1930. Sebrell, W. H., and Elvove, E.: Ibid. **46:** 917 (April 17) 1931.

Most of the studies on the function and properties of vitamin B and the effect of its deprivation on the body have been open to criticism on one if not all of the foregoing points. Therefore, as the facts concerning vitamin B are presented in succeeding paragraphs, it should be borne in mind that the data in many instances lack the touch of finality, and they should be accepted only with reservation.

### TESTS

For determination of the presence of an antineuritic vitamin in natural foods, extracts and chemically treated fractions, eight possible procedures are open, depending on the animal used, the criteria of the test, and the preventive or curative technic. These procedures can be most conveniently condensed into diagrammatic form:

$$\begin{array}{l}\text{Prophylactic}\\ \\ \text{Curative or}\\ \text{Restorative}\end{array}\left\{\begin{array}{l}\text{Polyneuritis}\\ \text{Loss of Weight}\end{array}\right.\left\{\begin{array}{l}\text{Rat}\\ \text{Pigeon}\end{array}\right.$$

The details of the various methods have been previously presented,[16] and the only essential modification has been the inclusion of a source of thermostable G in the basal diet to render it more specific for antineuritic B. Obviously, in the weight test the basal diet for both the rat and the pigeon will undergo further supplementing in the future for the sake of greater specificity.

### PHYSIOLOGY OF VITAMIN B

In the main, the normal physiology of the antineuritic factor has been learned by study of impaired function or abnormal conditions arising from varying degrees of B avitaminosis. Outstanding among the symptoms of vitamin B deficiency is anorexia. Comparatively early in the study of the B growth factor it was observed that the food consumption of rats was dependent directly on the amount of vitamin B in the diet.[17] This seeming influence of vitamin B on appetite was interpreted as secondary to the more direct effect on growth processes, in which an improved general condition led the animals to raise their level of food consumption to meet the increased needs arising from more rapid growth. However, the desire to partake of food seems to be related directly to the vitamin B intake, because failure of appetite intervenes in vitamin B deficiency and resumption of eating follows separate administration of the vitamin to starving animals.[8] Further, changes in body weight of animals follow food intake; the sequence of events is B deficiency, anorexia, diminished intake, loss of weight. But anorexia from B deficiency is not qualitatively different from loss of appetite due to other reasons; therefore, loss in weight is not pathognomonic of vitamin B deficiency. That the influence of the antineuritic vitamin acts specifically on appetite has been corroborated by restoring a failing appetite by means of a vitamin B concentrate.[18] Which individual component of the B complex is responsible for anorexia has been investigated with results that are equivocal, but it is believed that another component, not vitamin G, is required to supplement the antineuritic B factor in stimulating the appetite.[19]

As might be expected, it was suggested that the striking influence of vitamin B over appetite could be attributed to stimulation of secretion in certain glands, particularly those important in digestion. Accordingly, evidence for the identity of vitamin B with secretin was presented,[20] but eventually this attractive theory succumbed for want of confirmation.[21]

The cause for the loss of appetite occurring with avitaminosis B was then sought in disturbed functions elsewhere in the alimentary tract. From pathologic observations recorded by McCarrison it appeared that vitamin deficiencies induced intestinal lesions, among them degeneration of Auerbach's plexus.[22] The connotation of an effect on intestinal activity appeared to be borne out by the observation of marked intestinal stasis in vitamin B deficient animals.[23] This stasis was attributed, in the chain of reasoning, to gastric and intestinal atony with decreased alimentary rate. By means of a gastric fistula[24] the association of gastric atony with vitamin B deficiency was established; fluoroscopic examination showed hypomotility of the gastro-intestinal tract.[25] Despite these data, the difficulty in demonstrating that diminished gastric tone impairs the appetite was freely admitted; generalized systemic disturbances could as well be responsible for the anorexia. Further, the failure of Kon and Drummond to establish any difference in the alimentary rate between B deficient and normal pigeons seems to indicate that anorexia in the deficient birds is not necessarily connected with impaired motile function of the alimentary canal.[10]

Disturbed digestion has been advanced as a possible explanation of the symptomatology seen in vitamin B deficient pigeons. It was not unreasonable to suspect that polyneuritic pigeons suffered from digestive disorders, because a complete loss of amylolytic and lipolytic,[26] together with a marked decrease of proteolytic enzymes,[27] was reported as characteristic of the birds. Yet, repeated functional analyses on starch and protein digestion in polyneuritic pigeons and rats have invariably failed to show any impairment.[28]

Even the absorptive and assimilatory processes of animals have been assumed to be at fault in B avitaminosis. This theory rests on the anatomic evidence that vitamin B deficiency causes atrophy of the lymphoid tissue of the ileum.[29] Unfortunately, determinations of absorption of dextrose from the alimentary tract have not furnished a convincing answer.[30] In regard to malassimilation ensuing from a vitamin B deficiency, it is not uninteresting to recall Bichel's demonstration that dogs suffering from multiple vitamin deficiencies excreted proportionately more carbon than nitrogen in the urine, leading to an increased

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[17] Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **31**: 149 (July) 1917.

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[20] Uhlmann, F.: Ztschr. f. Biol. **68**: 419, 1918. Voegtlin, Carl; and Myers, C. N.: J. Pharmacol. & Exper. Therap. **13**: 301 (July) 1919.

[21] Anrep, G. V., and Drummond, J. C.: J. Physiol. **54**: 349 (March) 1921. Cowgill, G. R.: Proc. Soc. Exper. Biol. & Med. **18**: 148, 1921. Downs, A. W., and Eddy, N. B.: Am. J. Physiol. **58**: 296 (Dec.) 1921. Cowgill, G. R., and Mendel, L. B.: Ibid. **58**: 131 (Nov.) 1921.

[22] McCarrison, R.: Brit. M. J. **2**: 36 (July 12) 1919; **1**: 823 (June 19) 1920.

[23] Gross, L.: J. Path. & Bact. **27**: 27 (Jan.) 1924.

[24] Cowgill, G. R.; Deuel, H. J.; Plummer, Norman; and Messer, F. C.: Am. J. Physiol. **77**: 389 (July) 1926.

[25] Menville, L. J.; Ané, J. N., and Blackberg, S. N.: Proc. Soc. Exper. Biol. & Med. **27**: 894 (June) 1930.

[26] Farmer, C. J., and Redenbaugh, H. E.: Am. J. Physiol. **75**: 45 (Dec.) 1925.

[27] Rosedale, J. L., and Oliveiro, C. J.: Biochem. J. **22**: 1362, 1928.

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[29] Cramer, W.: Lancet **1**: 1046 (May 26) 1923.

[30] Pierce, H. B.; Osgood, H. S., and Polansky, J. B.: J. Nutrition **1**: 247 (Jan.) 1929.

C/N ratio. This condition was attributed to the appearance of partially oxidized carbon compounds in the urine.[31] Of possible significance in this connection was the later separation of a large amount of a lipoidal substance from the urine of dogs on a B deficient diet.[32] The thought was expressed that the fatty substance might be responsible for the increased carbonuria; but, whatever importance this observation seemed to portend for vitamin B physiology was soon seen to be misplaced because the increased urinary C/N ratio has been shown to occur when the diet is deficient, not in antineuritic B, but in the heat-stable component G.[33]

Akin to the hypothesis that vitamin B presides over the activities of the gastro-intestinal tract has been the view that it is necessary for the utilization of the principal types of foodstuffs. On diets with high protein content, for example, nursing young were said not to thrive unless the proportion of vitamin B was commensurately increased; [34] and substantially the same relation was found to prevail for young growing rats.[35] Further, renal hypertrophy results from ingestion of diets rich in protein but low in the antineuritic substance, according to Reader and Drummond.[36] But, again, vitamin B has apparently been credited unwittingly for a function exerted by another component; the protective factor rendering high protein diets adequate for growth has now been characterized as alkali-stable [37] and heat-stable.[38] It should be mentioned that any ration of high protein requiring liberal amounts of vitamin B is at variance with Funk's views, who holds that high protein demands less B.[39] More recently the increased B requirements of rats on high protein diets has not been corroborated, Renal enlargement occurs on high protein diets regardless of the content of vitamin B,[40] and during the growth period at least the B requirement of the rat is not influenced by protein intake.[41]

Curiously enough, Hopkins [42] has noted that a moderate excess of cod liver oil is often injurious to rats unless "balanced" by an increased marmite (yeast preparation) allowance. Indeed, an increase of cod liver oil concentrate necessitates a pro rata addition of vitamin B, if the animal is to escape death.[43] It was suggested that between vitamin A and the B complex exists an antagonistic relation. The striking feature about animals given large doses of cod liver oil, even in the presence of adequate yeast, is their manifestation of symptoms resembling those of a vitamin B deficiency; the condition is alleviated by further increments of yeast.[44] Moreover, certain amines found in cod liver oil produce the same effects seen in B avitaminosis. That the toxic action of cod liver oil may, therefore, not be due to hypervitaminosis is a valid possibility.

Considerable attention has long been attracted to the place of vitamin B in carbohydrate metabolism. Because of the more rapid production of polyneuritis by carbohydrate-rich diets, the necessity of the antineuritic vitamin for utilization of carbohydrates was early emphasized.[45] Yet unhappily the evidence dealing with such a purported relationship has been so consistent in its contradictions that it almost defies a decision. Whereas in one instance the respiratory quotient failed to rise following the injection of dextrose into polyneuritic animals,[46] in another instance the quotient increased slowly but definitely.[47] Again, dextrose tolerance remained undisturbed in B deficient animals, it was asserted by Eggleton and Gross,[48] while diminished tolerance definitely characterized the moribund state of animals of other investigators.[49] As corroborative evidence that vitamin B actually does participate in carbohydrate metabolism, the presence of a hyperglycemia in polyneuritic pigeons has been repeatedly reported; [50] but the complication of inanition has so confused the results that present interest centers on acceptable technic to the neglect of the major issue. It now appears that the course of events for both rats [51] and pigeons [52] on B deficient diets is a hyperglycemia during the greater part of the deficiency period, followed by a hypoglycemia in the moribund stage due to a reduced metabolism. Since starving pigeons likewise show a hyperglycemia [52] which cannot be altered by administration of B concentrates,[53] it seems highly probable that the hyperglycemia in polyneuritic pigeons is the manifestation of inanition.[10] On this basis the normal sugar values reported by Stucky and Rose for dogs on B deficient diets indicate that their animals were not yet suffering from inanition.[54]

In line with the view that a lowered blood sugar represents the true terminal picture of B avitaminosis, Sure and Smith assert that when the maternal diet is deficient in the antineuritic B factor the nursing young show either a progressive hypoglycemia or a slight hypoglycemia followed by a precipitous drop in the premortal stage.[55] Under these conditions, vitamin B therapy produces a rapid increase in the concentration of blood sugar. In their studies on the blood sugar values of weaned and adults rats, they employed a method for determining sugar which removed nonfermentable reducing substances, thus providing data on true as well as apparent sugars. They found in antineuritic deficiency a rise in nonreducing sugars; on the other hand, no disturbance in the concentration of true sugar occurred until the later stages of avitaminosis.[56]

Another bodily function that has been supposed to undergo change in vitamin B deficiency is oxidation. Lowered oxygen consumption has been described for polyneuritic tissues,[57] but repetition of the work by other investigators has shown only normal oxidative capacity for muscle tissue from B deficient pigeons, even when the bird was moribund.[58] Yet it seemed advisable to test the oxygen requirements of the intact animal in want of the antineuritic substance, because conceivably the tissues might have normal oxidative agents while the whole body for some reason was showing a lowered gaseous exchange. This contingency was not borne out on investigation; the mechanism for cellular oxidation was unimpaired in the deficient birds, and the low values obtained in the final stages were comparable to those seen in inanition with exhaustion of food reserves.

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[32] Collazo, J. A., and Munilla, A.: Compt. rend. Soc. de biol. **99:** 1448 (Nov. 9) 1928.

[33] Kon, S. K.: J. Nutrition **1:** 467 (July) 1929.

[34] Hartwell, G. A.: Biochem. J. **15:** 140 (Nov. 8) 1921; **16:** 78, 1922; **18:** 785, 1924; Lancet **2:** 956 (Nov. 8) 1924; Biochem. J. **19:** 1075, 1925.

[35] Drummond, J. C.; Crowden, G. P., and Hill, E. L. G.: J. Physiol. **56:** 413 (Oct.) 1922.

[36] Reader, Vera; and Drummond, J. C.: J. Physiol. **59:** 472 (March) 1925; Biochem. J. **20:** 1256, 1926.

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[38] Hartwell, G. A.: Biochem. J. **22:** 1212, 1928.

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[46] Magne, H., and Simonnet, H.: Bull. Soc. chim. biol. **4:** 419, 1922.

[47] Mattill, H. A.: J. Biol. Chem. **55:** 717 (April) 1923.

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[49] Lepkovsky, Samuel; Wood, Clarence; and Evans, H. M.: J. Biol. Chem. **87:** 239 (June) 1930.

[50] Funk, Casimir; and von Schönborn, E.: J. Physiol. **48:** 328, 1914. Funk, Casimir: Ibid. **53:** 247, 1919. Redenbaugh, H. E.: Proc. Soc. Exper. Biol. & Med. **24:** 842 (June) 1927.

[51] Eggleton and Gross (footnote 48). Drummond, J. C., and Marrian, G. F.: Biochem. J. **20:** 1229, 1926.

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[53] Marrian, G. F.; Baker, L. C.; Drummond, J. C., and Woollard, Herbert: Biochem. J. **21:** 1336, 1927.

[54] Stucky, C. J., and Rose, W. B.: Am. J. Physiol. **89:** 1 (June) 1929.

[55] Sure, Barnett; and Smith, Margaret E.: J. Biol. Chem. **82:** 307 (May) 1929.

[56] Sure, Barnett; and Smith, Margaret E.: J. Biol. Chem. **84:** 727 (Nov.) 1929.

[57] Abderhalden, Emil; and Schmidt, L.: Arch. f. d. ges. Physiol. **185:** 141, 1920.

The most recent developments in this phase of vitamin B physiology are of unusual interest. Directly in opposition to the observations recorded in the foregoing paragraph, fresh evidence now implicates the oxidative processes for responsibility in the neurologic disturbances of polyneuritis. According to Kinnersley and Peters,[59] pigeons showing symptoms of opisthotonos in the terminal stages of avitaminosis B have an increased amount of lactic acid in their brains. This accumulation of lactic acid is concomitant with neurologic symptoms in avitaminosis B, and it disappears within a short period after vitamin B therapy. Quite naturally, the mechanism of increase of lactic acid in the brain next excited inquiry. Available data indicated that it was the consequence not of a hyperglycemia but of a lacto-acidemia. But the importance attached to the blood-lactic acid in the process was short lived. Careful search in the brain to ascertain whether the increased lactic acid content was diffuse or focal in its distribution revealed that the acid accumulation was localized largely in the lower part.[60] Such a distribution restricted to one region indicated that no direct relation existed between the lactic acid of the blood and that of the brain; but it did suggest some localized abnormality, perhaps an oxidative deficiency in a small area, not detectable grossly in studies on the brain in toto. True to presumption, a lowered power of oxygen uptake was found in the brain, with the exception of the cerebellum, of pigeons with impending polyneuritic symptoms.[61] An enzyme deficiency was cited as the cause. But Guha [62] prefers to believe that the lactic acid accumulates in foci of the brain, owing to interference with its synthetic rather than its oxidative removal. Dissenting somewhat from all these details, Vogt-Møller [63] has expressed the view that the symptoms of B avitaminosis are caused by intoxication with accumulated methyl glyoxal rather than lactic acid. He attributes an increased methyl glyoxal concentration to a deficiency not of glyoxalase but of a co-enzyme.

As Drummond has emphasized, many of the abnormalities exhibited by animals deprived of vitamin B, such as lowered body temperature and respiratory metabolism, loss of weight, and hyperglycemia, are the result of inanition arising from anorexia rather than from a specific deficiency of the antineuritic vitamin per se. True vitamin B deficiency is characterized by anorexia and convulsive seizures associated with focal accumulation of lactic acid in the brain. At this point it is pertinent to mention that rats depleted of vitamin B during their nursing period are definitely inferior in maze learning to normal rats.[64] The offspring of the depleted animals, however, are able to attain the normal level of learning ability, provided they are raised on a diet rich in vitamin B complex. Whether impaired mental processes have a basis in the local increase of lactic acid in the brain is an engaging item for speculation.

To the list of true symptoms associated with B avitaminosis, Drury and his co-workers [65] would make an addition; namely, severe bradycardia, not ascribable to inanition, and relieved at once by administration of vitamin B. Then, too, other functional disorders have been described in animals suffering from lack of the antineuritic principle. As regards the reproductive system, females show delayed sexual maturity and a definite disturbance in the estrous cycle, whereas males manifest a lessened sexual interest, although the anatomic and functional integrity of their germinal elements is unaffected.[66]

In the blood, changes in both cellular and chemical content have been charged to vitamin B deficiency. Disturbance in the hematopoietic function, associated with anhydremia, is said to occur in B avitaminosis, but the anhydremia is attributed to inanition.[67] Lymphopenia in the absence of leukopenia also occurs in vitamin B deprivation.[68] Considering changes of the usual chemical constituents of the blood and tissues, we find that polyneuritic rats, whether in the nursling, growing or mature age, show no lowering of alkali reserve.[69] Nurslings on B deficient diets are subject to extreme decrease of liver glycogen.[70] In lactating mothers, nursing young, and weaned animals there is marked lipemia, in which lecithins, fatty acids, and the iodine number of the fatty acids are markedly increased.[71] Attempts to correlate the convulsive seizures of B avitaminosis with low blood calcium have been uniformly unsuccessful.[72]

### PATHOLOGY

In the past, almost all pathologic records on polyneuritic pigeons have listed, as typical of the results of vitamin B deficiency, the following anatomic changes: nerve fibers in varying stages in degeneration; atrophy of the thymus and voluntary muscle; enlargement of the heart and suprarenals; atrophy of mucous and muscular layers of the gastro-intestinal tract, together with an enteritis; and degeneration of the mesenteric plexus of Auerbach.[73] In accord with these observations, histologic examination of both the central and the peripheral nervous system in B deficient dogs has revealed a myelin degeneration patchily distributed in the vagus, brachial and sciatic nerves, and in the focal degenerative lesions in the cerebrum and pons.[74]

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[58] Drummond and Marrian (footnote 51).

[59] Kinnersley, H. W., and Peters, R. A.: Biochem. J. **23:** 1126, 1929.

[60] Kinnersley, H. W., and Peters, R. A.: Biochem. J. **24:** 711, 1930.

[61] Gavrilescu, Nicolai; and Peters, R. A.: Biochem. J. **25:** 1397, 1931.

[62] Guha, B. C.: Biochem. J. **25:** 1367, 1931.

[63] Vogt-Møller, P.: Biochem. J. **25:** 418, 1931.

[64] Maurer, Siegfried; and Tsai, Loh Seng: J. Comp. Psych. **11:** 51 (Oct.) 1930; J. Nutrition **4:** 507 (Nov.) 1931.

[65] Drury, A. N.; Harris, L. J., and Maudsley, Cecil: Biochem. J. **24:** 1632, 1930.

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[68] Cramer, W.; Drew, A. H., and Mottram, J. C.: Lancet **1:** 963 (May 7) 1921; **2:** 1202 (Dec. 10) 1921. Sure, Barnett; Thatcher, H. S., and Walker, Dorothy J.: Avitaminosis, Arch. Path. **11:** 413 (March) 1931.

[69] Sure and Smith (footnote 56). Sure, Barnett; and Kik, M. C.: Proc. Soc. Exper. Biol. & Med. **27:** 860 (May) 1930.

[70] Sure, Barnett; and Smith, Margaret E.: Proc. Soc. Exper. Biol. & Med. **27:** 861 (May) 1930.

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[73] Vedder, E. B., and Clark, E.: Philippine J. Sc., B **7:** 423, 1912. Funk, Casimir; and Douglas, M.: J. Physiol. **47:** 475, 1914. McCarrison, R.: Indian J. M. Research **6:** 275 (Jan.) 1919; **7:** 269 (Oct.) 1919; footnote 22, first reference.

However, reexamination of the tissues of B deficient animals under more carefully controlled conditions has brought an altered conception of the pathology specific for B avitaminosis. Because of the slight nerve degeneration in polyneuritic birds, and because of the remarkable promptness with which vitamin B alleviated the neuritic condition, Schnyder [75] could not believe that the nervous symptoms resulted from degenerative changes in the nerves. Moreover, Kon and Drummond [10] assert that there is little neurologic ground for supposing that head retraction in polyneuritic pigeons depends on changes in the nerves of neck muscles; for they saw large numbers of normal fibers and endings in the intermuscular nerves. What is even more cogent, they confirmed Woollard's [76] view that starvation and cachexia are largely, if not entirely, responsible for the nerve changes seen in vitamin B deficient pigeons. In reiterating Schnyder's conclusions, they said: "No nerve regeneration is possible in the course of a few hours, so nervous symptoms, vanishing so rapidly under action of vitamin B, must be due to a quite different cause."

In his original report, McCarrison [22] described hypertrophy of the suprarenal glands and increased output of epinephrine not only in B deficiency but also in inanition. In addition to confirming the hypertrophy of suprarenals in beriberi pigeons, Beznak [77] could find no enlargement in starving pigeons receiving only vitamin B. In his opinion, suprarenal hypertrophy was specific for B deficiency. After weighing the contradictory evidence, Drummond and Marrian [51] straddled the question by pointing out that the hypertrophy "is not characteristic of vitamin B deficiency, unless starvation be regarded as a form of this disorder." Thereafter, Kon and Drummond [10] tended to subscribe to Beznak's view that the suprarenal enlargement was due specifically to avitaminosis B, but they called attention to the inadequacy of their data. Further investigation, however, failed to substantiate their preliminary results, since the hypertrophy, occurring in the late stage of starvation, was not prevented by extracts rich in vitamin B.[53] Finally, new evidence led Marrian to return virtually to Beznak's stand, except that a deficiency of the two factors, B and G, was believed to play a part in the enlargement of the suprarenals, the vitamin B deficiency being the more important.[78] It was stated that the cortex is the site of suprarenal hypertrophy in most cases of B deficiency, the medulla being involved when starvation complicates the picture.

In rats stunted by deficiency of vitamin B, body form is different from that of normal animals of the same age.[79] In proportion to body length, the deficient animals have smaller chests and longer bones of all extremities. Moreover, they have bone lesions that are essentially identical with those seen in guinea-pigs suffering from acute and uncomplicated scurvy.[80] Marrow elements are destroyed and replaced by reticular tissue supporting widely dilated, congested blood vessels. Hemorrhages may occur later. Similarly, nurslings succumbing to B deficiency show hemorrhages in the osteogenic tissues, particularly near the occipitoparietal sutures.[81] High protein or low protein plus glycine and alanine, with an inadequate amount of vitamin B, is said to produce atrophy of the thymus and hypertrophy of the thyroid in adult rats.[82] In the same species suprarenal glands are enlarged as the result of either B or G deficiency, but the greater degree of hypertrophy under the latter condition is ascribed to the longer survival period.[83] Atrophy of both the spleen and the thymus has been reported.[84]

### BODILY REQUIREMENTS OF VITAMIN B

It is believed that the vitamin B requirements are increased during lactation, but the view is by no means generally accepted.[85] In studies on the physiology of the mammary gland, McCollum [85] found that vitamin B passes into the mother's milk only when it is present in her diet. According to Macy, lactating rats fed human milk as a source of vitamin B at a level previously ascertained to be adequate for growth and reproduction showed unsuccessful lactation, in that there was a high mortality of nursing young and those surviving were much debilitated. The adverse conditions could be alleviated by addition of yeast to the diet of the mother. It was determined that the vitamin B requirement of the lactating rat is from three to five times its growth need. The increased requirement of the antineuritic vitamin for successful mammary function is due to the inability of the lactating mother to secrete the vitamin quantitatively in the milk. Whether the antineuritic factor is the only component of the B complex, which must be furnished in liberal amount to the lactating rats, is a matter in which there is a difference of opinion. Evans advises that the additional B required in the maternal diet may be supplied just as successfully by antineuritic B concentrates as by yeast; therefore, the animal needs a surplus of B, not G. Contrary to that conclusion, Sure adduces evidence that B and G are the limiting factors in lactation, and that proportionately greater amounts of each are necessary for normal lactation, in contrast to growth. In this stand, Sure was confirmed by Husseman and Hetler. In contrast to the question of how many components of the B complex are involved in the magnified needs of lactation is the belief that an insufficiency of the B complex is in no way responsible for unsuccessful lactation. Although superheated milk as the source of B in the maternal diet failed to support lactation, Daniels saw no symptoms indicative of a B deficiency in the nursing young. Rather, she attributed the debilitation of the nursing young to the inability of the maternal rat to ingest sufficient milk to meet the caloric requirements; i. e., poor mammary function was a matter of inadequate milk secretion instead of a qualitative deficiency in B. Waddell subscribes to this interpretation, but Sure takes issue on the basis of technic. In the same vein of skepticism regarding the direct relation of vitamin B to lactation, the argument has been presented that lactating rats on diets deficient in B consume approximately 50 per cent less food than do those on the same rations fortified with an abundance of B. The inference is obvious. But the use of the paired feeding method, in which control animals on an adequate diet are limited in their caloric intake to the same level recorded for the experimental animals on the B deficient diet, has shown that the antineuritic vitamin exerts a specific action on lactation, unrelated to the plane of nutrition.

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[75] Schnyder, K.: Arch. f. Verdauungskr. **20:** 147, 1914.

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[78] Marrian, G. F.: Biochem. J. **22:** 836, 1928.

[79] Quinn, E. J.; King, C. G., and Dimit, B. H.: J. Nutrition **2:** 7 (Sept.) 1929.

[80] Shipley, P. G.; McCollum, E. V., and Simmonds, Nina: J. Biol. Chem. **49:** 399 (Dec.) 1921.

[81] Sure, Barnett; and Schelling, S. J.: Vitamin Requirements of Nursing Young, Am. J. Dis. Child. **35:** 811 (May) 1928. Sure, Thatcher and Walker (footnote 68).

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[83] Findlay, G. M.: J. Path. & Bact. **31:** 353 (April) 1928. Sure, Thatcher and Walker (footnote 68). Thatcher, H. S.; Sure, Barnett; and Walker, D. J.: Avitaminosis, Arch. Path. **11:** 425 (March) 1931.

[84] Sure, Thatcher and Walker (footnote 68).

[85] McCollum, E. V.; Simmonds, Nina; and Pitz, W.: J. Biol. Chem. **27:** 33, 1916. McCollum, E. V., and Simmonds, Nina: Am. J. Physiol. **46:** 275 (June) 1918. Sure, Barnett: J. Biol. Chem. **62:** 371 (Dec.) 1925. Macy, Icie G.; Outhouse, Julia; Long, M. Louisa; and Graham, Alice: Ibid. **73:** 153 (May) 1927. Macy, Icie G.; Outhouse, Julia; Graham, Alice; and Long, M. Louisa: Ibid. **73:** 189 (May) 1927. Sure, Barnett: Ibid. **74:** 55 (July) 1927. Evans, H. M., and Burr, G. O.: Ibid. **76:** 263 (Jan.) 1928. Sure, Barnett: Ibid. **76:** 685 (March) 1928; ibid. **80:** 297 (Nov.) 1928. Husseman, D. L., and Hetler, R. A.: J. Nutrition **4:** 127 (May) 1931. Sure, Barnett; and Walker, Dorothy J.: J. Biol. Chem. **91:** 69 (April) 1931. Daniels, Amy L.; Jordon, Dorothy; and Hutton, Mary K.: J. Nutrition **2:** 19 (Sept.) 1929. Daniels, Amy L.; Hutton, Mary K., and Marks, Catherine: Proc. Soc. Exper. Biol. & Med. **27:** 759 (May) 1930. Waddell, J.; Steenbock, Harry; and Hart, E. B.: J. Nutrition **4:** 53 (May) 1931. Sure, Barnett: Ibid. **2:** 485, 1929.

Nothing better reflects the unsatisfactory nature of our knowledge concerning the function of vitamin B than the number and variety of theories pertaining to its purported rôle in metabolism.[86] That protection against the deleterious effects of high protein or the toxic nitrogenous bases in fish oils necessitates a commensurately high level of vitamin B has already been mentioned. On the other hand, Funk in his early work maintained that the greater the amount of protein, the less the amount of vitamin B necessary in the diet; in fact, he assumed that protein exerts a sparing action on the antineuritic factor. Further, since carbohydrate diets seemed to induce polyneuritis more rapidly, he concluded that vitamin B requirements rose *pari passu* with increasing amounts of carbohydrate in rations. As a baffling example of diametrical results, Funk announced that excess of fat caused a nutritional disturbance in rats; whereas Evans furnished evidence that an excess of certain fats exerted a sparing action on vitamin B.

Aside from the effect of large amounts of protein, fat or carbohydrate in the diet, the condition of an animal with respect to its age, weight, and energy level is significant in fixing its vitamin B requirement.[87] Although Daniels holds the view that the vitamin B requirement per unit of body weight is higher in early infancy than later and decreases with age, most investigators agree that there is a quantitative relationship between the antineuritic vitamin and growth which reflects a greater need for B as the animal progresses through the growth period. It has been suggested that the amount of vitamin B necessary for successful nutrition is directly proportional to the calories consumed, but this view has met vigorous objection. In relating the B requirements of an animal not to one circumstance, but to both weight and caloric level, Cowgill has translated the animal's needs into terms of a comprehensive, mathematical formula.

### DISTRIBUTION

With the knowledge that vitamin B in the older sense is a complex comprising several factors, the evidence for the wide distribution of the antineuritic component, based on positive tests in the past, remains unchanged. But refined technic has shown the relative concentration of B as contrasted with G in a variety of foodstuffs. Oats, corn, wheat, wheat embryo, the outer layers of rice, rice polishings and red kidney beans are relatively richer in the antineuritic B component than in G;[88] while milk, egg-white, banana and cooked fresh spinach have a preponderance of G.[89] That yeast is an excellent source of both factors has been amply demonstrated,[90] but quantitative tests on several samples have revealed that the concentration of B varies considerably, while the G content is relatively uniform.[91] Owing to the variability of the B content, vitamin G may be the limiting factor in yeast as often as B. The relative concentrations of the B and G components in both leafy and root vegetables have been assayed by Roscoe with profitable results.[92]

### PROPERTIES

Recent work on the properties of vitamin B has been essentially a confirmation of data already recorded. The antineuritic vitamin is soluble in water and in alcohol of concentrations from 83 to 93 per cent by weight, whereas vitamin G is insoluble in 95 per cent alcohol, only appreciably soluble in 80 per cent alcohol, and its solubility becomes greater as the proportion of water in the alcohol-water mixture is increased.[93] Vitamin B is insoluble in chloroform, carbon tetrachloride, ether, acetone, and ethyl acetate. As is well known, the antineuritic vitamin is susceptible to destruction at high temperatures, the extent being dependent on the temperature, time and conditions of exposure; it is likewise sensitive to alkalis to a degree determined by the temperature, time and strength of the alkali.[94] Autoclaved yeast has been generally used as a source of vitamin G under the impression that the B component had been largely destroyed, but Williams and his associates assert that autoclaving brewers' yeast at 15 pounds steam pressure for six or even twelve hours does not insure complete destruction of the vitamin B present.[95]

The maximum adsorption of antineuritic B on fullers' earth occurs at $p_H$ 4, according to Salmon.[96] That B is adsorbable both by animal charcoal and by silica gel has been maintained, but Evans was unable to demonstrate the adsorption of B on either substance.[97] When Hogan and Hunter asserted that the vitamin B complex exposed to a quartz mercury arc suffered destruction of G but retained its antineuritic activity, high hope was held of obtaining a pure source of vitamin B.[98] The consensus is, however, that ultraviolet irradiation exerts a destructive action on both the B and G factors, with the velocity of reaction greater for the G component.

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[90] Smith and Hendrick (footnote 5). Goldberger, Wheeler, Lillie and Rogers (footnote 7).

[91] Quinn, E. J.; Whalen, F. B., and Hartley, J. G.: J. Nutrition **8:** 257 (Nov.) 1930.

[92] Roscoe, Margaret H.: Biochem. J. **24:** 1754, 1930; **25:** 1205, 1931.

[93] Kruse and McCollum (footnote 16). Goldberger, Wheeler, Lillie and Rogers (footnote 7). Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **23:** 504, 1929. Evans and Lepkovsky (footnote 88). Sherman and Sandels (footnote 18).

[94] Daniels, A. L.; Giddings, M. L., and Jordan, D. P.: J. Nutrition **1:** 455 (May) 1928. Kinnersley, H. W., and Peters, R. A.: Biochem. J. **22:** 419, 1928. Guerrant, N. B., and Salmon, W. D.: J. Biol. Chem. **89:** 199 (Nov.) 1930.

[95] Williams, R. R.; Waterman, R. E., and Gurin, Samuel: J. Biol. Chem. **83:** 321 (Aug.) 1929.

[96] Salmon, W. D.; Guerrant, N. B., and Hays, I. N.: J. Biol. Chem. **80:** 91 (Nov.) 1928.

[97] Evans and Lepkovsky (foot[illegible]38).

[98] Hogan, [illegible]: J. Biol. Chem. **78:** 433 (July) 1928. Chick, [illegible]argaret H.: Biochem. J. **23:** 504, 1929. Kennec[illegible] L. S.: J. Biol. Chem. **83:** 493 (Sept.) 1929. [illegible] and Salmon, W. D.: Ibid. **89:** 199 (Nov.) 1930.

In 1918, McCollum and Simmonds indicated that the action of nitrous acid on vitamin B left its growth-promoting properties intact. In the light of present views on the multiplicity of the vitamin, the implication is that all components of the B complex are resistant to diazotization.[99] But recent work has raised the question whether the complex is inactivated by the nitrous acid, and if so, what component suffers. Two of the British investigators, using the curative pigeon test which is specific for antineuritic B, say it is not destroyed. Reversing his previous position, Levene states that the B complex is inactivated, as a result of the destruction of the activity of vitamin G. His results, however, were not corroborated. The present trend is to the belief that drastic treatment with nitrous acid may inactivate the B component, but the destruction is attributed to side reactions. Vitamin G is regarded as being even less susceptible than B to the action of nitrous acid.

The antineuritic substance dialyzes freely through cellophane and collodion membranes; and it migrates under the influence of an electric current, behaving as a base in such experiments.[100]

### ISOLATION

All concentrates, and even crystals, of the antineuritic vitamin thus far prepared have been shown to be contaminated by the presence of other components of the B complex. It is gratifying, however, that investigations of the past four years on the isolation of the antineuritic factor have been extremely fruitful, so that it seems improbable that the identity of this substance can remain hidden much longer. Very potent B fractions have now been separated. For example, Seidell has prepared a concentrate which in doses containing 0.15 mg. of nitrogen protected pigeons from loss of weight on a diet of polished rice.[101] Peters pointed out that the maintenance requirements of the pigeon demand the presence of three B factors; hence, Seidell's concentrate must be composite.[102] By further purification Seidell obtained his most active product, which was capable of (1) relieving polyneuritis in rats in 0.05 mg. doses, containing 0.0062 mg. of nitrogen; (2) preventing loss of weight in pigeons on a polished rice basal diet in alternate day doses of 0.2 mg., containing 0.025 mg. of nitrogen; (3) promoting growth in rats in doses of 0.1 mg. daily as the sole source of the antineuritic component, when supplemented with vitamin G.[103] His most active samples contained from 10 to 13 per cent of nitrogen, about 6 per cent of organically bound sulphur, and did not give the Pauly reaction.

Using cure of head retraction in polyneuritic pigeons as a positive test, Kinnersley and Peters reported that their active preparations gave a Pauly reaction, a positive qualitative test for sulphur, a positive Molisch reaction, and a negative Benedict reaction.[104] Since their purified "torulin" would not afford maintenance in pigeons, it was regarded as a more refined product than Seidell's concentrate.[102] By use of fractional precipitation with phosphotungstic acid, they prepared an antineuritic concentrate active in curing head retraction in pigeons in doses of 0.012 mg.[105]

In 1926, Jansen and Donath announced the isolation of crystalline material which in daily doses of 0.003 mg. protected bondols (rice-birds) against polyneuritis.[106] According to Eijkman, 0.2 mg. doses of the material cured polyneuritis in pigeons.[107] Analysis of the free base gave figures corresponding to the formula $C_6H_{10}ON_2$; no mention was made whether the substance contained sulphur. Their crystals gave a positive Pauly's diazo reaction, and a positive test with the Folin-Macallum uric acid reagent.

Guha and Drummond[11] repeated Jansen and Donath's work, using wheat embryo instead of rice polishings as the starting material. They obtained a final gold precipitate and gold filtrate which were inactive in the cure of polyneuritic pigeons in doses of 0.028 mg. and 0.038 mg., respectively, but were active in combination in much smaller doses; namely, 0.014 and 0.019 mg. They felt that the action of antineuritic B probably could be ascribed to more than one factor. The gold precipitate gave both color reactions noted for the Jansen and Donath crystals.

Repeating the Jansen and Donath process with minor modifications, Williams and his co-workers did not obtain crystals, but they observed that the relative distribution of activity in the various fractions corresponded roughly with that in the original work.[108] They also tested vitamin hydrochloride crystals, furnished by Jansen and Donath, on pigeons fed a basal diet of polished rice; in doses of 0.04 mg. daily, the crystals retarded the appearance of polyneuritis and death but did not prevent the loss of weight in the birds.

Williams was "disposed to take Jansen and Donath's claims of isolation seriously." Employing the curative test on the rat, Seidell and Smith likewise tested the Jansen and Donath crystals and found that the smallest effective dose was 0.04 mg., containing 0.0069 mg. of nitrogen, which amount indicated a potency comparable to that of Seidell's concentrate.[103]

Kinnersley and Peters applied the Jansen and Donath method to some yeast fractions without success.[109] They were inclined to attribute their failure to some peculiarity of yeast extracts, a speculation borne out by Williams' similar experience with yeast. Later they were supplied with Jansen and Donath's crystals, and they noted that the crystals and torulin each gave a positive Pauly test.[110] Tests of the crystals by the curative pigeon and rat methods yielded the following positive results: pigeon, 0.007 mg. daily by injection; pigeon, 0.009 mg. daily by mouth; rat, 0.005 mg. daily. They stated that the crystals were not pure but contained another component of the B complex.

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99. McCollum, E. V., and Simmonds, Nina: J. Biol. Chem. **33:** 55 (Jan.) 1918. Levene, P. A., and van der Hoeven, B. J. C.: J. Pharmacol. & Exper. Therap. **29:** 227 (Oct.) 1926. Peters, R. A.: Biochem. J. **18:** 858, 1924. Guha, B. C., and Drummond, J. C.: Ibid. **23:** 880, 1929. Levene, P. A.: J. Biol. Chem. **79:** 465 (Oct.) 1928. Chick, Harriette: Biochem. J. **23:** 514, 1929. Narayanan, B. T., and Drummond, J. C.: Ibid. **24:** 19, 1930. Guerrant, N. B., and Salmon, W. D.: J. Biol. Chem. **89:** 199 (Nov.) 1930. Sherman, H. C., and Whitsitt, M. L.: Ibid. **90:** 153 (Jan.) 1931.

100. Chick and Roscoe (footnote 98). Williams and Waterman (footnote 11). Birch, T. W., and Guha, B. C.: Biochem. J. **25:** 1391, 1931.

101. Seidell, Atherton: J. Biol. Chem. **82:** 633 (June) 1929.

102. Carter, C. W.; Kinnersley, H. W., and Peters, R. A.: Biochem. J. **24:** 1832, 1930.

103. Seidell, Atherton; and Smith, M. I.: Pub. Health Rep. **45:** 3194 (Dec. 26) 1930.

104. Kinnersley, H. W., and Peters, R. A.: Biochem. J. **22:** 419, 1928.

105. Kinnersley, H. W., and Peters, R. A.: Biochem. J. **24:** 1856, 1930.

106. Jansen, B. C. P., and Donath, W. F.: Versl. d. k. Akad. v. Wetensch. **35:** 923, 1926.

107. Eijkman, Christiaan: Versl. d. k. Akad. v. Wetensch. **36:** 221, 1927.

108. Williams, R. R.; Waterman, R. E., and Gurin, Samuel: J. Biol. Chem. **87:** 559 (July) 1930.

109. Kinnersley, H. W., and Peters, R. A.: Biochem. J. **21:** 777, 1927.

110. Jansen, B. C. P.; Kinnersley, H. W.; Peters, R. A., and Reader, Vera: Biochem. J. **24:** 1824, 1930.

# *The Chemical Laboratory*

THE FOLLOWING IS A REPORT BY THE AMERICAN MEDICAL ASSOCIATION CHEMICAL LABORATORY. P. N. LEECH, Director.

## EXAMINATION OF ETHYLENE FOR ANESTHESIA.—V

The control of anesthetic agents requires vigilance by both manufacturers and standard-enforcing agencies. Even though impurities may be slight and relatively harmless, in anesthesia the purest product obtainable should be employed. For this reason the U. S. Pharmacopeia has required high standards for ether. One who follows carefully the Notices of Judgment of the Food and Drug Administration cannot help but appreicate how alert the government has been in enforcing these standards. Pharmaceutic manufacturers have also made large expenditures investigating the keeping qualities of ether.

Ethylene is a relatively recent addition to the agents employed widely for general anesthesia. It is not described in the Pharmacopeia and therefore does not directly concern the Drug Administration of the U. S. Department of Agriculture. When ethylene first came on the market, the Council on Pharmacy and Chemistry requested the A. M. A. Chemical Laboratory to establish standards for this substance. Not only has the Laboratory established suitable standards but, because of the nonofficial status of the gas, frequent examinations[1] have been made of the market supply of ethylene. Recently there was submitted to the Council on Pharmacy and Chemistry a new brand of ethylene. It was deemed advisable at the same time this product was examined chemically to purchase market supplies of the other products described in New and Nonofficial Remedies. Accordingly, tanks of ethylene for anesthesia were purchased both in Chicago and in Columbus, Ohio. In this work the A. M. A. Chemical Laboratory again secured the cooperation of Dr. Warren R. Smith, head of the Department of Chemistry at Lewis Institute, Chicago. The results of the examinations of ten cylinders of ethylene are given in the accompanying table.

| Brand | Source | Cylinder No. | Percentage Not Absorbed by Bromine Water | Indicated Percentage of Ethylene | Carbon Dioxide | Carbon Monoxide | Acidity or Alkalinity | Impurities by Silver Ammonia Hydroxide |
|---|---|---|---|---|---|---|---|---|
| Cheney | Chicago | 20771 | 1.1<br>1.1 | 98.9<br>98.9 | 0 | 0 | 0 | 0 |
| | Columbus | 78314 | 1.2<br>1.2 | 98.8<br>98.8 | 0 | 0 | 0 | 0 |
| C. L. P. | Chicago | 17405 | 1.2<br>1.2 | 98.8<br>98.8 | 0 | 0 | 0 | 0 |
| | Columbus | 16767 | 1.6<br>1.6 | 98.4<br>98.4 | 0 | 0 | 0 | 0 |
| Lennox | Chicago | 18337 | 1.1<br>1.1 | 98.9<br>98.9 | 0 | 0 | 0 | 0 |
| | Columbus | 25939 | 1.0<br>1.0 | 99.0<br>99.0 | 0 | 0 | 0 | 0 |
| Puritan | Chicago | 29052 | 0.5<br>0.5 | 99.5<br>99.5 | 0 | 0 | 0 | 0 |
| | Columbus | 20859 | 0.6<br>0.6 | 99.4<br>99.4 | 0 | 0 | 0 | 0 |
| Walco | Chicago | 1603 | 1.0<br>1.0 | 99.0<br>99.0 | 0 | 0 | 0 | 0 |
| | Mfr. | 1563 | 0.90<br>0.95 | 99.1<br>99.05 | 0 | 0 | 0 | 0 |

The products examined were found to comply in all respects with requirements given in New and Nonofficial Remedies for ethylene for anesthesia.

### CONCLUSIONS

1. Ten cylinders, representing five brands of ethylene for anesthesia, were recently examined by the A. M. A. Chemical Laboratory. All specimens examined conformed to the standards accepted for New and Nonofficial Remedies.

2. Physicians have a wide choice in acceptable brands of ethylene for anesthesia. All the firms listed[2] test their products according to the methods worked out by the A. M. A. Chemical Laboratory and included in New and Nonofficial Remedies. A statement of chemical investigation according to these methods should be requested by physicians with each tank of ethylene purchased.

# *Council on Pharmacy and Chemistry*

## PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT W. A. PUCKNER, Secretary.

### TRIETHANOLAMINE

Triethanolamine, having the formula $(C_2H_4OH)_3N$, is a colorless, viscous liquid with a slight ammoniacal odor, very hygroscopic, miscible with water, imparting a strongly alkaline reaction to the solution. According to Marlin T.-R. Maynard, Triethanolamine: An Adjunct to Dermatologic Therapy (*Arch. Dermat. & Syph.* **25**:1041 [June] 1932), triethanolamine is an excellent emulsificant; it has an antiseptic and penetrating power, and when added to certain preparations used on the scalp, for example, oil of cade, it makes them more easily removable. It is intended for external application only.

Triethanolamine is supplied by the Carbide and Carbon Corporation, New York (unit of Union Carbide and Carbon Corporation), which firm has supplied a specimen of the product to the Council, and a statement of the amount of mono-ethanolamine, diethanolamine and triethanolamine contained in the product as marketed. The specimen and the standards are being studied by the A. M. A. Chemical Laboratory.

Since triethanolamine gives promise of being a desirable addition to the armamentarium of the dermatologist, the Council directed publication of this preliminary report in the hope that this might encourage work which shall bring out confirmation of the reputed advantages of the drug.

## REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. W. A. PUCKNER, Secretary.

### MEDICATED CORN PLASTERS

So-called medicated corn plasters which are offered for general use by the public contain in general a caustic agent such as salicylic acid as their potent component.

The Council feels that the indiscriminate use of corn plasters containing salicylic acid by the public is not without some danger. The public is too prone to consider any lesion on the foot, especially if it is somewhat indurated, as a corn; the next step, without consulting anybody or getting medical advice, is to go to the drug store, get a corn plaster, and start its use. With the corn plaster ordinarily a razor is employed to achieve the desired results, and not infrequently a severe infection may ensue.

It is desirable and in the best interest of the public that the treatment of lesions of this type on the feet be taken care of under the supervision of a physician, for even then a case of lymphangitis may occasionally occur. Moreover, when corn plasters are used by the public on its own initiative there is the added danger that a proper diagnosis has not been made. Although such occurrences are fortunately uncommon, a member of the Council knows of cases of melanocarcinoma starting on the foot. In these cases the patient on first noticing the growth had gone to the drug store and bought a corn plaster. Naturally in such instances the result would be most disastrous.

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[1] Reports on the examination of ethylene have appeared in THE JOURNAL, Jan. 29, 1927, p. 322; Aug. 6, 1927, p. 451; May 5, 1928, p. 1444.

[2] The following brands have been accepted for inclusion in New and Nonofficial Remedies:
Ethylene-Cheney—The Cheney Chemical Co., Cleveland, Ohio.
Ethylene-C. L. P.—Certified Laboratory Products, Glendale, Calif.
Ethylene for Anesthesia—Puritan Compressed Gas Corporation, Kansas City, Mo. (formerly Kansas City Oxygen Gas Co.).
Lennox Ethylene—Ohio Chemical and Manufacturing Co., Cleveland, Ohio.
Walco Ethylene for Anesthesia—Wall Chemicals, Inc., Detroit, Mich.

Plantar warts are a common condition seen on the feet. If they are not properly diagnosed and treated, there is a decided tendency for these lesions to multiply rapidly, and occasionally anywhere from 25 to 30, up to 100 plantar warts are seen distributed over the bottoms of the feet. Corn plasters have no effect on such lesions, except possibly to soften the top. They do not get rid of the cause and, if anything, tend to spread the disease.

Instances of mycotic infections of the feet accompanied by a proliferation of the epidermal layers, forming more or less keratotic lesions, are frequently seen where corn plasters have been employed—naturally without benefit to the patient.

All types of pathologic conditions on the feet should be seen by the physician and the treatment for these conditions directed by the physician. If this is done, the danger of more serious infections and untoward happenings will be minimized.

The Council considers medicated corn plasters to have the status of a drug the indiscriminate and ill advised use of which by the public should not be encouraged.

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# Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## PURITY FINE BREAD

*Manufacturer.*—Purity Baking Company, Pana, Ill.

*Description.*—A white bread made by the sponge dough method.

*Manufacture.*—The sponge dough ingredients, short patent flour of southwest wheat, water, yeast, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, lard, powdered skimmed milk and malt syrup to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper. The factory, equipment and storage rooms are kept in strictly sanitary condition.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 36.5 |
| Ash | 1.9 |
| Fat | 2.8 |
| Protein (N × 6.25) | 10.0 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 48.5 |

*Calories.*—2.6 per gram; 74 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## LONG'S CLIMAX BEST PATENT FLOUR (PHOSPHATE ADDED)

## LONG'S EXTRA FANCY CAKE FLOUR (PHOSPHATE ADDED)

*Manufacturer.*—Climax Roller Mills, Shelbyville, Ky.

*Description.*—A "short patent" soft winter wheat all-purpose family flour admixed with 0.5 per cent calcium acid phosphate; bleached and "matured."

*Manufacture.*—Local soft wheat is cleaned in "separators" to remove imperfect grains, dust and foreign material, is "scoured" in "scouring" machines by being rubbed against a metal screen to remove surface dust, which is drawn off by air suction, and is "tempered" by addition of a definite quantity of water to toughen the bran and prevent it from being pulverized in the milling processes and contaminating the flour. The tempered wheat is coarsely cut and broken only between spirally grooved "break rolls," to facilitate separation of bran from the flour portions. The broken wheat is sifted on screens, a small quantity of flour is taken off, and also some coarse particles "purified wheat middlings" not fine enough for flour but from which the better grades of flour are prepared further on in the milling process. The coarser stock of crushed wheat and bran passes through a second "break rolls," the stock from which is submitted to the same sifting process. Some flour is taken out and also some "purified middlings." The coarse stock again passes to "break rolls" and sifting machines. The reduction and sifting processes are continued until the desired flour separations have been effected. The flour taken off from the sifters goes to special flour bins. The "purified middlings" pass through "purifiers" over silk sieves, through which air currents are drawn to remove bran and chaff particles. The material is ground between smooth steel rolls; the resulting stock is sifted to remove the fine flour. The remaining coarse "middlings" is reground and resifted. The grinding and sifting are continued until all possible flour is obtained. Each time the "mill stock" is sifted, whether it comes from the "break" or "smooth" rolls, a stream of flour is produced. Some of these flour streams are dark in color and others are white and free from specks. The name "patent flour" is applied to that flour made up of those flour streams which are clean in appearance and free from discoloration and apparent specks.

Chosen flour streams are blended for these "short patent" brands of flours; the blend is treated with three-fourths ounce of Beta-chlora per barrel (99.5 per cent chlorine gas and 0.5 per cent nitrosyl chloride—a "maturing" agent to improve baking characteristics) and agitated in a batch mixer with one-fourth ounce of Novadelox per barrel (calcium phosphate and benzoyl peroxide, for bleaching) and 0.5 per cent calcium acid phosphate. The final flour is sacked in new cotton containers only.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 13.0 |
| Ash | 0.7 |
| Fat (ether extraction method) | 1.0 |
| Protein (N × 5.7) | 8.3 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 76.7 |

*Calories.*—3.5 per gram; 99 per ounce.

*Claims of Manufacturer.*—A phosphated "short patent" "all purpose" flour for use in home baking.

## SMACO (400) MALTOSE AND DEXTRINS (Spray Dried)

*Manufacturer.*—S. M. A. Corporation, Cleveland.

*Description.*—Essentially a mixture of approximately equal parts of maltose and dextrins.

*Manufacture.*—A definite quantity of fresh diastatic barley malt and water is admixed with cooked corn flour. The temperature of the mixture is carefully controlled so as to obtain the desired conversion of starch into dextrins and maltose. The conversion is followed analytically by determining the maltose content at regular intervals by means of the copper reduction method. When the conversion has proceeded to that point known to give the desired results, the enzymatic action is stopped by heat. The mixture is filtered to remove any insoluble protein, carbohydrate, etc. The clear filtered liquid is pasteurized and evaporated under reduced pressure to a desired concentration and then spray dried by spraying into a chamber containing hot air currents. The dried powder is packed in hermetically sealed tins.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 3.0 |
| Ash | 0.5 |
| Fat (ether extract) | 0.0 |
| Protein (N × 6.25) | 0.5 |
| Reducing sugars as maltose | 50.0 |
| Dextrins (by difference) | 46.0 |

*Calories.*—3.9 per gram; 111 per ounce.

*Micro-Organisms.*—The cooking of the corn flour, the heat treatment to stop enzymatic action and the pasteurization before spray drying assure the absence of pathogenic organisms.

*Claims of Manufacturer.*—This spray dried maltose and dextrins is especially prepared for use as a carbohydrate supplement for the modification of milk for infant feeding.

## TODDY

### Chocolate and Malt Flavored Food Drink

(Sugar, malt extract, skim milk, cocoa)

*Manufacturer.*—Toddy, Incorporated, Rochester, N. Y.

*Description.*—A powdered mixture of sucrose, malt extract, skim milk and cocoa; packed in carbon dioxide atmosphere in sealed tins.

*Manufacture.*—The ingredients, sucrose, dry malt extract and skim milk, and cocoa, in definite proportions, are bolted through fine screens, mixed in a batch mixer and automatically filled into cans, which are sealed in an atmosphere of carbon dioxide.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 1.0 |
| Ash | 2.9 |
| Fat (ether extract) | 3.3 |
| Protein (noncaffeine and nontheobromine N × 6.25) | 8.5 |
| Theobromine | 2.1 |
| Caffeine | 0.2 |
| Reducing sugars as invert before inversion | 12.5 |
| Reducing sugars as invert after inversion | 64.1 |
| Sucrose (copper reduction method) | 49.1 |
| Crude fiber | 1.5 |
| Total carbohydrates other than crude fiber (by difference) | 80.5 |

*Calories.*—3.9 per gram; 111 per ounce.

*Claims of Manufacturer.*—Especially intended for the preparation of table beverages with milk. Toddy enhances the food value and flavor of milk. Many who dislike plain milk, especially children, invalids, convalescents and the aged, enjoy Toddy-milk beverage. A hot beverage promotes relaxation; "a hot Toddy" before retiring is an aid to restful sleep.

## F. C. B. BRAND GOLDEN SYRUP

*Packer.*—D. B. Scully Syrup Company, Chicago.

*Distributor.*—F. C. Brown Company, Chicago.

*Description.*—A table syrup; a corn syrup flavored with refiners' syrup.

*Manufacture, Analysis, Calories, Claims of Manufacturer.*—See these sections for Banner Blue Corn Syrup with Cane Flavor (The Journal, March 5, 1932, p. 1817).

## BONELESS PEELED PORTOLA SARDINES (In Pure Olive Oil)

*Manufacturer.*—K. Hovden Company, Monterey, Calif.

*Description.*—Cooked, peeled and boneless Pilchard sardines (Clupea caeruleus, blue sardines) packed in olive oil in tins.

*Manufacture.*—Large Pilchard sardines are harvested as described for Portola Sardines (Pilchards) (The Journal, June 4, 1932, p. 1991). Immediately after being landed they are spread on tables, eviscerated and placed in a light brine for fifteen minutes to extract the blood, after which they go over a draper drier for sixty minutes for drying with hot air until the tails become brittle and the skin fairly dry. The skin is taken off; the belly portion is cut with scissors so as to permit the backbone to be pulled out with all the ribs. The fish at this stage are in two halves, which are trimmed down to the right size and placed in cans; olive oil is added. The cans are sealed and processed under the control of the California State Board of Health as to temperature and time.

*Analysis, Calories and Claims of Manufacturer.*—See these sections for Portola Sardines (Pilchards).

## STROEHMANN'S KEW BEE BREAD

*Manufacturer.*—Stroehmann Brothers Company, Williamsport, Pa.

*Description.*—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, page 817); prepared from patent flour, water, yeast, lard, a yeast food containing ammonium chloride, sodium chloride, potassium bromate and calcium sulphate, salt, sucrose, lard, sweetened condensed skim milk, dextrose, and skim milk.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 37.5 |
| Ash | 0.8 |
| Fat (ether extraction method) | 0.7 |
| Protein (N × 6.25) | 8.8 |
| Crude fiber | 0.2 |
| Carbohydrates other than crude fiber (by difference) | 52.0 |

*Calories.*—2.5 per gram; 71 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## REPORTS OF THE COMMITTEE

The Committee has authorized publication of the following report. Raymond Hertwig, Secretary.

## HOLSUM MILK BREAD SLICED AND UNSLICED NOT ACCEPTABLE

The Miller-Patton Baking Company, Rockford, Ill., submitted to the Committee on Foods a white bread called "Holsum Milk Bread." Prepared from flour, water, skim milk, sugar, salt, yeast, lard, butter, malt syrup, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 35.1 |
| Ash | 2.0 |
| Fat | 2.6 |
| Protein (N × 6.25) | 10.0 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 50.0 |

*Discussion of Name and Label.*—The name "Milk Bread" defines this bread as conforming to the United States Department of Agriculture definition and standard, which in part stipulates that "Milk bread is the product . . . obtained by baking a leavened and kneaded mixture of flour, salt, yeast and milk or its equivalent (milk solids and water in the proportions normal to milk) . . ." The label statement "Conforms to United States Department of Agriculture Standard" further emphasizes this fact. The name "Milk Bread" for this bread is false and misleading, and especially so in view of the statement of conformity to the government standard, for the reasons that the dry skim milk and butter ingredients of the baking formula are not in sufficient quantities to be equivalent to the milk solids necessary for making the bread a "milk bread" and that the dry skim milk and butter are proportioned so that the mixture is equivalent to skim milk only and not to whole milk. The bread therefore contains skim milk instead of whole milk and the skim milk solids content is much lower than the whole milk solids of a true "milk bread." The label guarantees the bread to contain "milk" and "malt," which is incorrect in that "skim milk" and "malt extract" are ingredients. The name and the two label statements are inappropriate for the bread, are misinformative and are misleading.

The manufacturer when informed of these opinions expressed himself as unwilling to change the name and incorrect label statements in accordance with the Committee's recommendations. This bread therefore cannot be listed among the Committee's accepted foods.

## "PLEZOL POTATO BREAD" NOT ACCEPTABLE

The Frank Baker Bread Company, Lima, Ohio, submitted to the Committee on Foods a white bread called "Plezol Potato Bread." Prepared by the sponge dough method from patent flour, water, yeast, yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, potato ferment containing potatoes, yeast and wheat flour, salt, sugar, lard, sweetened condensed skim milk and malt syrup.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 36.4 |
| Ash | 1.9 |
| Fat | 1.8 |
| Protein (N × 6.25) | 9.9 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 49.8 |

*Discussion of Name.*—The United States Department of Agriculture definition and standard for "white bread" allows for the replacement of not more than 3 per cent of the flour ingredient by some other farinaceous material. The formula submitted for this "Potato Bread" brings it within the terms of the definition for "white bread." The bread has no physical, flavor or nutritional characteristics differing essentially from the usual white bread or suggestive of a bread warranting the name "potato bread." The name is considered inappropriate for the bread, misinformative and misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name in accordance with the Committee's recommendations. This bread therefore cannot be listed among the Committee's "accepted" foods.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 18, 1932

## THE SIGNIFICANCE OF TUBERCULIN TESTS

Tuberculin tests have been used in man principally (1) for detecting tuberculous infection in early childhood and for investigating its spread among the children of tuberculous households, (2) as an aid to the physician in the diagnosis of tuberculosis in individual cases, (3) to estimate the prognosis in cases of tuberculosis, and (4) to estimate the distribution of tuberculous infection in communities in different parts of the world. The last mentioned purpose is of fundamental importance in considering the epidemiology of this disease.

The small use that is made of the tuberculin test may be due to misconception of its value in the diagnosis of clinical tuberculosis. Thus it is still commonly believed that the diagnostic applications of the test are confined to early life. This belief is no doubt correct with regard to the positive diagnosis of clinical tuberculosis. A negative reaction excludes this disease with almost equal accuracy at all ages, however, provided the proper method is used and suitable doses are employed. A positive reaction has its chief clinical value in infancy, when, from direct observation, tuberculous infection is more likely than at other ages to be associated with or to progress into active tuberculosis. The earlier the age, the worse the prognosis is. Unfavorable home conditions appear to affect the outlook adversely. The detection of tuberculin sensitivity in infants must, however, be taken only as contributory evidence of the presence of tuberculosis. The mortality among these infants under the present condition of living appears from recent work to be lower than it was formerly believed, indicating that control and arrest of infection are possible. An infant under the age of 2 years with a positive reaction but without symptoms should be kept under observation for some time on account of the possible development of clinical tuberculosis.

A positive reaction in a child, from 2 to 5 years old, with persistent symptoms, should suggest that they are tuberculous in origin. In patients over 5, a positive reaction to a qualitative test does not prove that clinical tuberculosis is present even in a suggestive case. In patients over 5, the positive reaction has its principal value when elicited by quantitative intracutaneous tests with weak solutions of tuberculin. Hence a positive reaction has a limited value in the diagnosis of clinical tuberculosis except in early life. The usefulness of the tuberculin test in diagnosis must therefore come mainly from a negative response, so far as concerns exclusion of the disease. At present the tuberculin test is little used for this purpose because of the erroneous beliefs that a negative test may be obtained in patients with positive evidence of infection, and that either a positive or a negative reaction is of value only in early life. That these beliefs are unwarranted is shown by a recent investigation of Hart,[1] in London. One of the subjects of this investigation was to find the error of a negative intracutaneous reaction in excluding clinical tuberculosis and to determine how this varies with the type and stage of the disease, the age of the patient and the dose of tuberculin employed. A study was made of 1,030 clinically tuberculous patients of all ages, presenting the common types of the disease and every stage from early activity to the moribund state. The reaction of each patient in the series to 0.1 cc. of a 1:1,000 dilution (0.1 mg.) of tuberculin given intracutaneously was ascertained; 766 of these patients were tested with 0.1 cc. of a 1:10,000 dilution (0.01 mg.) and as many as 93 (12 per cent) gave a negative reaction with this dose. Of the 1,030 patients, 38 (3.7 per cent) failed to react to the 1:1,000 dilution. These 38 patients were then tested with 0.1 cc. of a 1:100 dilution (1 mg.) of tuberculin; a positive reaction was obtained in 10 cases, leaving 28 (2.75 per cent) negative. Of these 28 patients, 5 could not be tested further; the remaining 23 were tested with 0.1 cc. of 1:10 tuberculin (10 mg.), 4 of whom were positive and 19 negative. These 19 negative cases were finally tested with undiluted tuberculin 1:1 (10 mg.), which is the maximum intracutaneous dose, with the result that only one more patient gave a positive response. The final and minimal error of the test adjusted for the series was 2.2 per cent. These observations seem to indicate that a negative intracutaneous reaction to a 1:10,000 dilution of tuberculin or to the standard 1:1,000 dilution does not exclude clinical tuberculosis with certainty. A negative test with a 1:10 dilution excludes the disease with greater accuracy, the error of 2.3 per cent being close to the minimal error, 2.2 per cent. For these reasons there is no advantage in using solutions of tuberculin stronger than 1:10 for excluding clinical tuberculosis. Moreover, nonspecific effects of tuberculin become more definite with highly concentrated solutions.

Analysis of the 38 cases out of the 1,030 tested that were negative to a 1:1,000 dilution of tuberculin shows that these fall into certain groups: (1) advanced pulmonary tuberculosis with toxemia; (2) bone or joint tuberculosis with activity; (3) a few nontoxic cases of active pulmonary tuberculosis with positive sputum and a few active cases of bone or joint tuberculosis with definite roentgen evidence of the disease for whose failure to react no reason could be advanced, and (4) a few cases either quiescent or approaching quiescence, all but one of which were also negative to undiluted tuberculin.

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[1] Hart, P. D.: The Value of Tuberculin Tests in Man, Medical Research Council Special Report Series 164, London, 1932.

As controls for the 1,030 cases of clinical tuberculosis, 751 persons who were clinically nontuberculous were employed. Seventy per cent of the controls aged from 11 to 20 gave positive reactions, and the figures were 95 per cent for the adults of the series. The percentage of the reactions thus rose evenly from birth to manhood. Atypical nonspecific reactions occurred in a few cases of the series investigated by Hart, but their rapid development to a maximum and their rapid subsidence helped to distinguish them from true tuberculin reactions. They usually reached their height during the first twenty-four hours and had completely disappeared by forty-eight hours, when tuberculin reactions are as a rule maximal. The only untoward effects of the intracutaneous tests observed in the series were a few instances of local vesiculation and slight systemic disturbance.

From his study of the epidemiologic applications of the tuberculin test, Hart attempted to show the relative importance of heredity and contagion in determining tuberculous infection. Children from tuberculous households, as shown by Hart's investigation of 118 children of this class, gave a much larger percentage of positive reactions to tuberculin than those whose homes were free of tuberculosis; moreover, the percentage was greater when the tuberculosis was active or open than when it was healed or closed. Children with tuberculous parents living in their homes were more frequently found to react positively than those whose tuberculous relatives visited them occasionally. All these observations seem to be satisfactorily explained by variation in frequency, intimacy and duration of contact without recourse to a belief in hereditary predisposition to infection. The percentage of tuberculin reactions among children exposed in tuberculous households to parents, brothers or sisters with nonpulmonary tuberculosis appears to be no higher than among children in nontuberculous households, nor does it exceed the frequency of tuberculin reactions found among those who have no tuberculous relatives at all. Though the number of cases is small, the results suggest that a positive family history is of importance in determining infection, since it yields a potential intimate source of contagion. Infants separated from their tuberculous parents and placed in healthy families before infection has occurred appear no more likely to acquire the infection in early life than are infants of nontuberculous parents.

## THE RÔLE OF ALCOHOL IN THE ETIOLOGY OF NEPHRITIS

Among the cherished traditions of propagandistic hygiene is the devastating effect of alcohol on the heart, blood vessels and kidneys, a view that still lingers in many medical treatises. Those pathologists who study the remains of an alcoholic clientele have generally failed to find in the wrecks of drunkards anatomic evidence that alcohol is a poison that selects the circulatory system for its attack, but rather the opposite. As for chronic nephritis, there seems to be more tradition than proof indicating that it results from chronic alcoholism. In the older literature, Senator maintained the relationship of alcohol to nephritis, quoting English authors who said that at least three fourths of all cases of chronic nephritis depend on alcoholism. More recently Herxheimer, Löhlein and Bertholet have supported the view of the etiologic importance of alcohol in nephritis. On the other hand, Cohnheim said that although the bodies of most inveterate drunkards exhibit chronic gastritis, meningeal opacity and hepatic lesions, they generally possess large, blood-rich kidneys of good appearance, an observation supported by Fahr, who affirms the lack of evidence of either vascular or renal changes from alcohol, and by Marchand, who noted that the arteries and arterioles of old alcoholic addicts often are splendidly free from sclerotic changes.

Wegelin[1] in Bern has recently made an interesting study of this subject, taking advantage of the fact that the population of this lovely Swiss city shows a remarkably high incidence of cirrhosis of the liver which reaches nearly 10 per cent of recent necropsies, as contrasted with German statistics indicating an incidence of from 1 to 3 per cent. In a series of 106 bodies exhibiting cirrhosis attributable to alcoholism, of which 91 were men and 15 women, he found 12 (11.3 per cent) showing more or less arteriosclerotic nephritis, in only one of which was the condition advanced. In only three bodies was the heart significantly hypertrophied. This amount of cardiorenal disease is certainly not more and apparently is less than would be found in a similar number of bodies of the same age range in which death had occurred from almost any condition. Most of the bodies showed, as described by Cohnheim, large, succulent, blood-rich kidneys, perhaps from functional hypertrophy. On the other hand, in forty-six cases of advanced interstitial nephritis, only five gave a history of excessive use of alcohol. Furthermore, whereas the cases of cirrhosis were chiefly in males (85 per cent), the cases of chronic nephritis in the same necropsy material were nearly equally divided between the sexes (52 per cent males), again indicating the lack of correlation between alcoholism and chronic nephritis.

Our hygiene in the past would seem to have been more a moral hygiene than a scientific one. In a previous generation, a health angle was sought for the promotion of various ascetic doctrines. Our present generation seeks health angles for the continuation of smoking, drinking, chewing gum, and similar pleasures. The pendulum of popular thought prefers the extremes of its travels.

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[1] Wegelin, C.: Schrumpfniere und Alkoholismus, Schweiz. med. Wchnschr. 61: 1181 (Dec. 5) 1931.

## *HUMAN PARASITOLOGY IN THE NORTHERN STATES*

In certain states that border on the Great Lakes, it is said that there are nine months of winter and three months of poor skiing. On first thought it would seem remarkable that some of the principal contributions to knowledge of human parasitology in the United States should have come from these states. Early progress in parasitic diseases has associated them with the tropics and the subtropics, not with regions where it would seem that microscopic life might find survival difficult. Nevertheless, nearly a quarter of a century ago The Journal began to point out that amebiasis was a disease of northern as well as of southern parts of this country. In a recent issue has appeared an article by Craig [1] in which he awards to Sistrunk an honor long overlooked by the medical profession as a whole; namely, that of reporting in 1911 that, of twenty-five patients seen at the Mayo Clinic who were infected with Endamoeba histolytica, twelve had never resided elsewhere than in northwestern states. Sistrunk had gone to Minnesota from Louisiana. He knew amebiasis, both as a pathologist and as an internist, and his contribution was the start of what might be called propaganda to make physicians conscious that amebiasis is a hazard to health throughout the United States. His studies were followed by those of other investigators in Minnesota, namely, Giffin and Sanford; and ten years later P. W. Brown was still carrying on the work. Now Craig estimates that "the evidence is certainly sufficient to warrant us in stating that 1 per cent of the population, or 1,200,000, are harboring Endamoeba histolytica in this country."

Another problem in parasitology, that of infestation with Diphyllobothrium latum, is predominantly a northern one and has been brought to the fore by residents of the northern part of the Mississippi Valley. Of these, Nickerson, Magath [2] and Essex of Minnesota, and Warthin, Levy, Pierson and Vergeer of Michigan, are prominent. Articles in The Journal have made the fact widely known that Diphyllobothrium latum is a serious matter to the population about fresh water lakes in the north central part of this country. Although the disease apparently was introduced by Finlanders, many cases have been reported among natives of the United States, and Magath has shown that the life cycle of the parasite is completed in this country. The most thorough study of Diphyllobothrium anemia ever made was recently completed by Birkeland, [3] who resided in Minnesota when he did his work. Moreover, studies now under way to determine the incidence of infestation of fish in the winter are being made by Bajkov of the Biological Survey of Canada, who is capturing his material from under the ice.

Thus, physicians and health officers who work north of Chicago have their problems in parasitology as well as those whose homes lie to the south. Although the picture of the white clad parasitologist in his tropical bungalow will persist, it must be supplemented by that of his fur-clad colleague, directing surveys from headquarters almost buried in snow.

# *Current Comment*

## ROENTGEN THERAPY IN POLIOMYELITIS

The use of the roentgen ray as an adjuvant in the treatment of poliomyelitis has been strongly recommended by a number of French clinicians. Other Europeans have doubted its value. In the absence of pertinent experimental evidence for or against such therapy, Lenz and Jungeblut [1] of Columbia University have recently tested the effects of x-rays on experimentally infected monkeys, with a parallel study of in vitro effects on the poliomyelitis virus. Briefly, they conclude that "monkeys suffering from the experimental infection and treated either during the incubation period or with manifest paralytic symptoms furnish no evidence suggesting any benefit from roentgen therapy. . . . Exposure to x-rays failed to destroy or markedly attenuate the virus in vitro." The Columbia University investigators, however, emphasize the obvious differences in virulence and mortality between human poliomyelitis and experimental poliomyelitis in monkeys, and refrain from drawing any final conclusion as to the bearing of their data on human therapy.

## IRON RETENTION DURING GROWTH

There are about 3 Gm. of iron in the body. Although all cells contain a small amount of iron in their nuclei, most of this element is found in the hemoglobin molecule and is therefore found in the blood, muscle, liver, spleen and bone marrow. The iron store in the newborn is not large but there is rapid accumulation of this element in the young under favorable dietary conditions. The ease with which nutritional anemia occurs in young experimental animals on rations poor in iron emphasizes the slender factor of safety provided early in development. It becomes of some importance, therefore, to determine the requirement for iron in the period of rapid accumulation. Leichsenring and Flor [1] have recently reported a study of four children varying in age from 35 to 56 months. On a daily iron intake of 3.25 mg. there was a small positive balance; with 6.5

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[1] Craig, C. F.: The Amebiasis Problem, J. A. M. A. **98**: 1615 (May 7) 1932.

[2] Magath, T. B.: Experimental Studies on Diphyllobothrium Latum, Am. J. Trop. Med. **9**: 17 (Jan.) 1929.

[3] Birkeland, I. W.: Bothriocephalus Anemia: Diphyllobothrium Latum and Pernicious Anemia, Medicine **11**: 1 (Feb.) 1932.

[1] Lenz, M., and Jungeblut, C. W.: Proc. Soc. Exper. Biol. & Med. **29**: 814 (April) 1932.

[1] Leichsenring, J. M., and Flor, I. H.: J. Nutrition **5**: 141, 1932.

mg. the retention was more than doubled. Calculated from the excretion on the lower intake, the maintenance requirement was 2.1 mg. daily for the average body weight of 17 Kg., a value almost the same as that currently accepted for adults. The added retention of iron when the intake was increased indicates that growth increases the requirement, and the calculated allowance for this was 3.4 mg. If 50 per cent additional is allowed as a margin of safety, the total daily requirement was 8.23 mg., or, calculated on the basis of food ingested, 0.62 mg. per hundred calories. These data substantiate similar determinations of Rose and her co-workers,[2] according to which a total of 8.5 mg., or 0.76 mg. per hundred calories, is required for a growing child. These studies point to the exaggerated retention of this important inorganic element by young children and emphasize the need for attention to this phase of the food requirement.

# Association News

## MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 1:30 to 1:35 p. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The program for the week is as follows:

June 20. Flies Are Dangerous.
June 22. Vacation Time is Here.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM.

The program for the week is as follows:

June 25. Diets.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## ARKANSAS

**Society News.**—At a meeting of the Lawrence County Medical Society, May 10, the speakers were Drs. Cleo C. Ball, Ravenden, on hydrocephalus; Wright W. Hatcher, Imboden, tularemia, and Horace R. McCarroll, Walnut Ridge, episiotomy.——Drs. John L. McGehee, Memphis, and Thomas F. Hudson, Luxora, addressed the Mississippi County Medical Society, May 3, on "Present-Day Mortality Rate of Appendicitis" and "Malaria," respectively.——The Saline County Medical Society was addressed, May 2, by Major James M. Troutt, Hot Springs, on army and navy hospital procedures in dehydration treatment of head injuries, hand infections and diagnosis of appendicitis; Dr. Rolland F. Darnall, Little Rock, discussed "Mental Sickness."——A recent meeting of the Yell-Pope County Medical Society was addressed by Drs. Clarence B. Billingsley, Fort Smith, on "Preventive Pediatric Problems," and John H. Colay, Cleveland, "What Is Wrong with Our Medical Society."

## GEORGIA

**Dr. Elkin Honored.**—Members of the Fulton County Medical Society gave a dinner, April 11, to Dr. William S. Elkin, Atlanta, in celebration of his completion of fifty years in the practice of medicine. The speakers included Drs. Frank K. Boland and William S. Goldsmith, both of Atlanta. Dr. Elkin is a charter member of the Fulton County Medical Society. He has been on the faculty of Emory University School of Medicine for forty-three years and was dean of the school from 1905 to 1925.

**Portrait of Dr. Westmoreland.**—An oil portrait of Dr. John G. Westmoreland, Atlanta, was recently presented to Emory University School of Medicine by Mrs. Julius L. DeGive, Atlanta, granddaughter of the physician. Dr. James L. Campbell, Atlanta, made the presentation address, and Dr. Russell H. Oppenheimer, Atlanta, gave the speech of acceptance on behalf of the university. According to an historical account of Atlanta Medical College, the institution was founded in 1854 "under the energetic leadership of Dr. John G. Westmoreland." This college is now known as Emory University School of Medicine. Dr. Westmoreland was professor of materia medica and therapeutics.

## ILLINOIS

**Poliomyelitis Serum.**—Anticipating an increase in the prevalence of poliomyelitis during the next few months, the state department of public health has collected and is prepared to distribute to physicians on request human convalescent poliomyelitis serum. This serum is available free and can be had at any hour of the day or night. Limited supplies make it impracticable to provide physicians with the serum for anticipated needs, however, so that requests should be confined to immediate requirements. Reported cases up to June 4 this year, the department states, exceed those for the corresponding period in 1931.

**Society News.**—Drs. James P. Simonds and James T. Case, Chicago, conducted a clinical pathologic conference on colon obstructions before the Livingston County Medical Society, May 25, in Pontiac.——The St. Clair County Medical Society was addressed, June 2, by Drs. A. A. Werner on "Ovarian Hormones and Theelin"; Alphonse McMahon, St. Louis, "Structural Changes in Endocrine Disorders," and Charles H. Neilson, St. Louis, "Some Observations of Hyperthyroid States."——Dr. Percy E. Hopkins, Chicago, among others, addressed the Rock Island County Medical Society, Moline, May 11, on "Common Postoperative Complications and Their Treatment."——The Mercer County Medical Society was addressed, May 3, in Aledo, by Drs. Charles P. Blair, Monmouth, on "Fractures of the Neck and Femur," and Elmer G. Senty, Davenport, Iowa, "The Thyroid Problem."——Dr. Ralph M. Carter, Green Bay, Wis., addressed the Macon County Medical Society, Decatur, May 6, on "Fractures of the Femur."

### Chicago

**License Suspended.**—The Illinois State Department of Registration and Education suspended for one year the license of Dr. Joseph Thomas Duffy, June 2. This physician, whose license was issued, Aug. 3, 1925, is now on trial as codefendant with Tilton, the "cancer specialist," for conspiracy to violate the medical practice act.

**Society News.**—The Chicago Society of Allergy was addressed at its May meeting by H. W. Cromwell, Sc.D., and Marjorie D. Moore, Ph.D., on "Rabbit Skin Tests with Pollen Extracts," and O. C. Durham, "Classification and Identification of Hay Fever Pollens."——At the meeting of the Chicago Gynecological Society, June 17, the speakers were Drs. Edward D. Allen on "Irregularity of the Menstrual Function"; Edward L. Cornell and Abraham F. Lash, "A Clinical Study of Abdominal Pregnancy," and William J. Dieckmann and Morris Edward Davis, preliminary report on "Volumetric Determination of Amniotic Fluid with Congo Red."——The Medical Research Club of the University of Illinois was addressed, June 2, by William C. Rose, Ph.D., Urbana, Ill., on "A Search for a New Protein Component Essential for Life."

**In Memory of Dr. Gilmer.**—Two bronze tablets commemorating the work of the late Dr. Thomas L. Gilmer were dedicated, June 7, in Gilmer Hall of the Montgomery Ward Memorial Building, Northwestern University. One tablet records the medical service of the Gilmer family through five generations from 1731 to 1931, the Chicago *Tribune* reports, and the other records the life of Dr. Gilmer. The exercises were conducted by the department of oral surgery, of which Dr. Herbert A. Potts is head. Dr. Gilmer was chairman of the group that founded the Northwestern University Dental School in 1891. He was professor of oral surgery in the dental school for forty years and was dean from 1916 to 1918. He was the author of a book on oral surgery and many papers on dental education, oral surgery and bacteriology, including a classic treatise on jaw fractures. Dr. Gilmer died, Dec. 28, 1931.

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[2] Rose, Mary S.; Vahlteich, Ella M.; Robb, Elda, and Bloomfield, Emily M., J. Nutrition **3:** 229 (Nov.) 1930.

**Capps Prize Made Annual Award.**—The Joseph A. Capps Prize of $500 will henceforth be awarded annually instead of on alternate years, as originally stipulated by the anonymous donor who established the prize in 1931. This decision was made at the request of the donor because of the general excellence of the papers presented by the twelve contestants for the first award of the prize this year. The original plan was to give the prize one year and to sponsor a lecture the second year. Manuscripts for the second Joseph A. Capps Prize must be submitted to the secretary of the Institute of Medicine of Chicago, 122 South Michigan Avenue, not later than December 31. Competition is open to graduates of Chicago medical schools who have received the degree of doctor of medicine during the year 1930 or thereafter. The prize is awarded for the most meritorious investigation in medicine or in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem. The winner of the prize will be expected to present the result of his investigation before the institute at some meeting in 1933, the time to be designated later. The first Joseph A. Capps Prize was awarded to Dr. Warren B. Matthews, assistant resident in surgery at the University of Chicago Clinics, for his paper on "Studies on the Etiology of Gastric and Duodenal Ulcer."

## INDIANA

**County Secretaries Meet.**—Veterans' hospitalization, county medical societies and township poor relief work were included among the topics discussed at the annual conference of secretaries of county medical societies of the Indiana State Medical Association, May 25. Among the speakers were Drs. Franklin S. Crockett, La Fayette, president, state medical society; Joseph H. Weinstein, Terre Haute, president-elect; John C. Burkle, La Fayette; James B. Maple, Sullivan, William H. Kennedy and Chester A. Stayton, both of Indianapolis. The state association gave a dinner to the secretaries in the evening; this session was addressed by Thomas O'Mara, Terre Haute, on "Economics in the Practice of Medicine." Dr. Albert M. Mitchell, Terre Haute, was reelected chairman of the county secretaries' group and Dr. Wilson T. Lawson, Danville, reelected secretary. Dr. Lawson is said to have held his office for fifty years.

**Society News.**—The Carroll County Medical Society was addressed at Flora, May 13, by Drs. Homer H. Wheeler and William F. King, Indianapolis, on "Gastro-Intestinal and Rectal Diseases."——Dr. Oscar E. Nadeau, Chicago, addressed the Wayne-Union Counties Medical Society, May 12, at Richmond, on hematuria.——Among others, Dr. Ralph G. Carothers, Cincinnati, addressed the Eleventh Councilor District Medical Association, May 18, at Marion, on "Fractures of the Lower Part of the Leg and Ankle."——Albert Stump, Indianapolis, addressed the Wabash County Medical Society in North Manchester, June 2, on "Legal Problems and the Care of the Poor."——The Marshall County Medical Society heard an address on "Diagnosis and Treatment of Peptic Ulcer," June 1, in Kokomo, given by Dr. Harry Knott, Plymouth.——At a meeting of the Twelfth District Medical Society and the Northeastern Indiana Academy of Medicine at Kendallville, May 26, Dr. Willis D. Gatch, Indianapolis, spoke on "Heredity as a Factor in Disease," and Dr. Franklin S. Crockett, La Fayette, "Medical Economics."

## IOWA

**Annual Meeting at Twin Lakes.**—The Twin Lakes District Medical Society conducted its tenth annual dry diagnostic clinics at Twin Lakes, Rockwell City, June 16. Dr. Owen H. Wangensteen, professor and head of the department of surgery, University of Minnesota School of Medicine, held a clinic in general surgery; Dr. Robert D. Mussey, professor of obstetrics and gynecology, University of Minnesota Graduate School of Medicine, Rochester, Minn., in obstetrics; Dr. Russell M. Wilder, professor of medicine, Mayo Clinic, Rochester, in medicine, and Dr. Ralph C. Hamill, associate professor of nervous and mental diseases, Northwestern University Medical School, Chicago, in neurology. Speakers on the program included Drs. Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, Chicago, "Current Trends in Medical Practice," and Ray M. Balyeat, assistant professor of medicine, University of Oklahoma School of Medicine, Oklahoma City, "Allergic Diseases: Diagnosis and Treatment." The Twin Lakes District Medical Society is composed of the county medical societies of Calhoun, Carroll, Greene, Hamilton, Humboldt, Ida, Sac, Kossuth, Pocahontas, Webster and Wright, which are affiliated for graduate clinical instruction.

## KENTUCKY

**Cancer Clinic Opened.**—A free clinic for the diagnosis of cancer, to be conducted for one hour each week, was opened, May 19, at St. Joseph's Infirmary, Louisville, under the direction of Dr. Irvin Abell. All patients will be referred back to their family physicians, who will arrange for their care. No charge will be made for the diagnostic service, regardless of the economic status of the patient. Twenty-four physicians will assist Dr. Abell. This is the second clinic of its kind in Louisville, the first having been opened in January at Norton Memorial Infirmary (The Journal, February 6, p. 486).

**Annual Graduate Course.**—The Kentucky State Medical Association Summer Post-Graduate Course was held at the City Hospital, Louisville, June 6-18. The following speakers, among others, addressed the visiting physicians, Monday, June 6: Drs. John P. Henry, Memphis, Tenn., "Allergy in Theory and Practice"; Victor V. Anderson, New York, "Recent Developments in Psychiatry"; Charles N. Kavanaugh, Lexington, "Tularemia, with Report of 120 Cases" and Marshall G. Seibel, St. Louis, "Tumors of the Islands of Langerhans and Hypoglycemia." Demonstrations in a wide variety of subjects were presented by Louisville physicians during the remainder of the two weeks. Dr. Charles W. Hibbitt was chairman of the committee that arranged the course.

**Public Health Courses.**—The University of Kentucky, Lexington, in cooperation with the state board of health, is offering a number of special courses in public health during the summer session, June 14-July 16. Two courses, one on epidemiology and communicable diseases and one on public health administration, are given only for health officers under the direction of Dr. Allen W. Freeman, professor of public health administration, Johns Hopkins University School of Hygiene and Public Health, Baltimore. Dr. John S. Chambers, professor of hygiene and public health at the university, is conducting a course in health education and health supervision of schools. Other courses offered include personal and community health, public health, maternal and child health, tuberculosis and tuberculosis control and public health nursing. Dr. Arthur T. McCormack, state health officer, Louisville, and other members of the staff of the state board of health will be special lecturers.

**Society News.**—Dr. William R. Davidson, Evansville, Ind., among others, addressed the Christian County Medical Society, Hopkinsville, May 24, on "Treatment of Fractures from the Standpoint of the General Practitioner."——Dr. Charles N. Kavanaugh, Lexington, addressed the Bourbon County Medical Society, Paris, May 19, on "Clinical Considerations of Secondary Anemia."——Drs. Sydney E. Johnson and Aura J. Miller, Louisville, addressed the Harlan County Medical Society, Harlan, May 21, on disorders of the thyroid gland.——Dr. Virgil L. Powell, Paducah, was elected president of the Southwestern Kentucky Medical Association at the recent annual meeting, and Dr. Thomas T. Marshall, Paducah, secretary.——Dr. Robert H. Cowley, Berea, was elected president of the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Society at its twelfth annual meeting in Louisville, May 17. Dr. William Thornwall Davis, Washington, D. C., was the guest of honor at the meeting, reading a paper on treatment of strabismus. The next annual session of the section, which holds meetings separate from those of the state society, will be in Paducah.——The Muldraugh Hill Medical Society was addressed at Elizabethtown, April 14, among others, by Dr. William Allen Pusey, Chicago, on "Our Changing Knowledge of Eczema."

## LOUISIANA

**Quarantine Station Formally Opened.**—The U. S. Quarantine Station at Algiers was formally opened during the recent annual session of the American Medical Association in New Orleans, although it has been in operation since last fall. The Algiers station is one of the largest and most modern quarantine stations in the world; it was constructed from a congressional appropriation of $600,000. It has already begun to function in place of quarantine facilities at three other points in the port, and eventually, it was stated, may replace the present boarding station near the mouth of the Mississippi River if a twenty-four hour boarding service is inaugurated at the new station. This unit comprises nineteen buildings of colonial design, including a hospital, detention house, homes for the officer in charge and other attendants, servants' quarters, and garages. It is said that the first quarantine station was established in Louisiana by Governor W. C. C. Claiborne in 1810 for the purpose of protecting the city against yellow fever. In 1825 this station, which was sixteen miles below New Orleans, was abolished by an act of the legislature, which also abolished the state board of health. A new law in 1855 provided for a station not less than seventy miles below the city. In 1888 it was moved down to the present location of the old station twenty-one miles farther down the river. In 1907, an act of Congress transferred the jurisdiction of this station from the state to the U. S. Health and Marine Hospital Service. Surg. Tully J. Liddell is the officer in charge of the new station.

## MARYLAND

**Portraits of Drs. Lewis and Young.**—Portraits of Dr. Dean DeWitt Lewis, professor of surgery, and Dr. Hugh Hampton Young, clinical professor of urology, Johns Hopkins University School of Medicine, Baltimore, were presented to the university, June 14, at the annual commencement exercises. Both are gifts of colleagues, friends and former students of the physicians. Drs. Lewellys F. Barker, professor emeritus of medicine, and John M. T. Finney, professor of clinical surgery at the school, presented the portraits. Dr. Lewis is President-Elect of the American Medical Association.

**Conference on Juvenile Delinquency.**—Gov. Albert C. Ritchie recently called a conference on juvenile delinquency, which was held under the auspices of the Maryland League of Women Voters in Baltimore, May 17. Dr. James S. Plant of the Essex County (New Jersey) Juvenile Court discussed "Juvenile Delinquency." Other speakers were Drs. John Collinson, Jr., bureau of vital statistics of the state department of health; George H. Preston, commissioner of mental hygiene of Maryland, and Jacob W. Bird, chairman, Montgomery County Juvenile Court Committee, Rockville. Dr. Collinson and Dr. Preston discussed physical and mental examinations of children in the counties, and Dr. Bird, the establishment of a juvenile court in Montgomery County.

## MICHIGAN

**Portrait of Dr. Huber.**—Dr. G. Carl Huber, professor of anatomy, director of the anatomic laboratories and dean of the Graduate School of the University of Michigan, Ann Arbor, was honored, May 16, by the students, friends and colleagues, when a portrait in oil of Dr. Huber was presented to the university. Dr. Frederick G. Novy, director of the Hygienic Laboratory at the university, made the presentation on behalf of the donors.

**Dr. Parker Honored.**—A dinner was given to Dr. Walter R. Parker by his friends and colleagues, May 24, on the occasion of his retirement as professor of ophthalmology in the University of Michigan Medical School, Ann Arbor. Dr. Parker, who has held the position for twenty-seven years, will be succeeded by Dr. George Slocum, his assistant for many years. In 1917 Dr. Parker received the Knapp Medal, which is awarded by the Section on Ophthalmology of the American Medical Association, for a paper on "The Relation of Choked Disk to the Tension of the Eyeball." Dr. Frederick G. Novy presided as toastmaster at the dinner, and Alexander G. Ruthven, Ph.D., president of the university, made the opening remarks. Dr. Parker's retirement is effective, July 1.

**Survey of Medical Facilities.**—A survey of medical service and health agencies will be carried on in Michigan under the direction of a committee of which Dr. W. H. Marshall is chairman, according to the *Journal of the Michigan State Medical Society* for May. It is hoped that through the facts presented the profession may be guided in the adoption of a definite policy concerning the social and economic aspects of medical care. Each county society will appoint a committee on public relations, which will supply certain information and expedite local reports. In the collection of data, detailed schedules will be sent to physicians, hospitals and laboratories. Special studies will cover the economic structure of population, health agencies, industrial service, welfare service, tuberculosis and mental diseases. Miscellaneous studies will be made on workmen's compensation, contract practice, medical society activities, patients discharged from hospitals, and other experiments in solving the economic problem. In the analysis of these data, an effort will be made to determine the distribution of physicians, their professional training, the extent of specialization and the gross cash incomes. Hospital data will be analyzed to indicate, among other things, the distribution and ownership, growth of facilities, type of bed capacities, occupancy and financial status. A somewhat similar analysis will be used for the laboratories. This study of medical facilities is being made in accordance with action taken at the 1931 annual meeting of the Michigan State Medical Society and at a subsequent meeting of the house of delegates. Nathan Sinai, Ph.D., acting director, School of Hygiene and Public Health, University of Michigan Medical School, Ann Arbor, will be the director of the study. Other members of the committee are Drs. Fred A. Baker, Pontiac; Leo G. Christian, Lansing; Bert U. Estabrook, Detroit; Clarence S. Gorsline, Battle Creek, and Frederick C. Warnshuis, Grand Rapids, secretary ex officio.

## MINNESOTA

**State Medical Election.**—Dr. Naboth O. Pearce, Minneapolis, was elected president of the Minnesota State Medical Association at the annual meeting, May 23, to take office, January 1. Dr. Edward A. Meyerding, St. Paul, was reelected secretary.

**Violator of Basic Science Law.**—John Hettwer, 64 years old, Minneapolis, pleaded guilty to a charge of practicing medicine without a license at Hastings, May 2, and was sentenced to nine months in the Dakota County Jail. Hettwer was arrested on the complaint that he had treated a woman for goiter. Hettwer was born in Germany, coming to this country in 1914. He admitted to the court that he practiced a little at Melrose and also at St. Cloud. This is the first prosecution instituted by the medical board in Dakota County since the passage of the Basic Science Law.

## MISSOURI

**Annual Spring Clinics.**—The St. Joseph Clinical Society, St. Joseph, conducted its annual spring clinics, April 20-21, with sessions at the Hotel Robidoux, Missouri Methodist Hospital and St. Joseph's Hospital. The guest speakers included Drs. Vilray P. Blair, St. Louis, on "Repair Surgery"; Edward J. Stieglitz, Chicago, "Nephritis in Pregnancy"; Virgil S. Counseller, Rochester, Minn., "Surgical Significance of the Fascia and Ligaments of the Pelvic Floor and Their Relationship to the Development of Cystocele and Pelvic Relaxation," and Arthur Steindler, Iowa City, Iowa, "Ischemic Contractures of the Forearm." The program consisted of addresses, clinics and round table discussions. Members of the Northwest District Dental Society of Missouri were guests of the clinical society at the banquet.

## NEW YORK

**Smallpox in Plattsburg.**—An outbreak of forty-seven cases of smallpox in Plattsburg and adjacent towns was recently reported in *Health News*. The source of the outbreak was traced to Burlington, Vt., where a Plattsburg family came in contact with a case while on a visit. Four members of the family became ill with smallpox after their return home and the disease spread in Plattsburg and to other villages by easily traced contacts. The health authorities immediately took measures to suppress the epidemic, and a total of 13,819 vaccinations were reported from Clinton County from October 1 to December 31. In Essex County, where some cases were also traced to Plattsburg sources, 5,681 vaccinations were performed. The date of onset of the last reported case was Nov. 24, 1931.

**Dust, Smoke and Gas Nuisances.**—The division of sanitation of the state department of health has recently reported to Governor Roosevelt, after an investigation of several months, the existence of a dust, smoke and gas nuisance from industrial plants on the New Jersey shore, menacing the health and safety of residents of Staten Island. Twenty-six plants in New Jersey and six on Staten Island were investigated. They were principally engaged in the refining and storage of petroleum products, manufacture of chemicals, dyes, paints and fertilizers and the smelting and refining of ores. Smoke, gases, fumes and vapors from many of these contain harmful dusts, acids and compounds of sulphur which when the wind blows toward Staten Island constitute a nuisance or menace to the health of residents of the island. Two plants were said to be principally responsible for the conditions, according to the report, others contributing only infrequently or to so limited an extent that the occurrence could not be considered a nuisance or menace to health. From the weather bureau it was ascertained that the wind blows from the direction of the offending plants about 67 per cent of the time. It was reported that one of these plants was making changes which, when completed, might result in the abatement of the objectionable conditions. Some plants were said not to be contributing to the nuisance at present because of reduced or curtailed operation. It is possible, the report said, that these may expand or resume operations to such an extent as to create a public nuisance on Staten Island.

### New York City

**Salmon Lecturer.**—Dr. William L. Russell, professor of psychiatry, Cornell University Medical College, has been selected to give the Thomas W. Salmon Memorial Lectures for 1933. Dr. Adolf Meyer, Baltimore, recently delivered the first series of these lectures, established in January, 1931, in memory of Dr. Salmon, professor of psychiatry at Columbia University College of Physicians and Surgeons.

**Personal.**—Drs. Lee M. Hurd, professor of laryngology, and John McCoy, clinical professor of laryngology, New York University and Bellevue Hospital, retire from active duty and become emeritus professors at the end of the current year. ——Dr. William Seaman Bainbridge has been appointed an official delegate to the second session of lectures of the International Bureau of Documentation on Military Medicine, to be held at Liége, Belgium, June 23-25.

**Mrs. Biggs' Bequests.**—The late Mrs. Frances R. Biggs, widow of the late Dr. Hermann M. Biggs, bequeathed $100,000 to New York University to increase the funds for the Hermann Michael Biggs professorship of preventive medicine, $35,000 to the Henry Street Settlement for the Hermann and Frances Biggs tuberculosis visiting nurse fund and $1,000 to the New York Tuberculosis and Health Association. A portrait of Dr. Biggs was presented to the Academy of Medicine.

**Social Agencies in New York.**—More than 1,000 social service, health and relief agencies are listed in a new directory issued June 1 by the Charity Organization Society in cooperation with the Welfare Council and twenty other organizations. More than 500 render service to families; 480 are engaged in child welfare; 300 provide health services or health education and 415 are in the field of education, recreation or neighborhood activities, many being engaged in several or all these major activities.

**The Graduate Fortnight at the Academy.**—Tumors, benign and malignant, will be the theme of the 1932 Graduate Fortnight of the New York Academy of Medicine, October 17-28, it is announced. Thirty afternoon clinical meetings and demonstrations have been arranged in eighteen hospitals and ten evening meetings will be held, during which tumor growths will be discussed. Among the speakers will be Drs. W. Gordon M. Byers, Montreal, Que.; Edwin Beer, Charles A. Elsberg and James Ewing, New York; Donald C. Balfour, Rochester, Minn.; Daniel F. Jones, Boston; Dean Lewis, Baltimore, and Francis Carter Wood, New York. Concurrent with the fortnight and for a week afterward there will be an exhibition of anatomic specimens, with lecture demonstrations at regular intervals. The medical profession of the country is invited to attend and participate. There is no charge for attendance, but registration is necessary for the hospital demonstration clinics. Programs and registration blanks may be obtained from the New York Academy of Medicine, 2 East One Hundred and Third Street.

## NORTH DAKOTA

**State Medical Meeting and Election.**—Dr. Jesse W. Bowen, Dickinson, was chosen president-elect of the North Dakota State Medical Association at the annual session in Grand Forks, June 1 and 2. Other officers elected were Drs. Clyde E. Stackhouse, Bismarck, and Archibald D. McCannel, Minot, vice presidents, and Albert W. Skelsey, Fargo, secretary, reelected. Dr. Paul H. Burton, Fargo, was inducted into the presidency. Valley City was selected for the 1933 meeting place. Guest speakers listed on the program included the following:

Dr. Roscoe C. Webb, Minneapolis, "Drainage in Appendicitis."

Dr. Harry F. Bayard, Minneapolis, "Etiology, Course and Treatment of Anal Pruritus."

Dr. Russell M. Wilder, Rochester, Minn., "Ten Years' Experience with Insulin."

Dr. Owen H. Wangensteen, Minneapolis, "Recognition and Treatment of Pulmonary Suppuration."

Dr. Henry W. Cook, Minneapolis, "Relationship of Clinical and Insurance Medicine."

Dr. Hugo O. Altnow, Minneapolis, "Diseases of the Blood."

Dr. Arthur W. Ide, St. Paul, "Internal Injuries Involving Internal Organs."

Dr. Charles B. Wright, Minneapolis, "Veterans' Legislation."

The North Dakota Academy of Ophthalmology and Otolaryngology met in conjunction with the association with Drs. Axel Oftedal, Fargo, and Henry E. Binger, St. Paul, as the speakers, on mastoiditis.

## OHIO

**Student Prizes at Western Reserve.**—Norman Reider, Canton, Ohio, student in the department of anatomy, Western Reserve University School of Medicine, Cleveland, has been awarded the Dr. Herbert S. Steuer Prize for Work in Anatomy for investigations on the evolution of the primate colon and the relation to the human colon. The senior prize in obstetrics, the gift of Dr. Edwin C. Garvin, was awarded to Miss Elizabeth S. Hutchinson, Cleveland, as the member of her class who showed the best theoretical and practical knowledge of the subject.

**Society News.**—Drs. Maurice I. Miller, Troy, and Herbert R. Pearson, West Milton, addressed the Miami County Medical Society, at West Milton, May 13, on toxemias of pregnancy and traumatic surgery, respectively.——Drs. Myron Metzenbaum and Raymond C. McKay, Cleveland, addressed the Stark County Medical Society at Alliance, May 25, on "Nasal Reconstruction and Reconstructive Surgery" and "Results of Compression Methods of Treatment of Pulmonary Tuberculosis," respectively.——The Summit County Medical Society, in association with the Summit County Dental Society and the Medical Bureau of Akron, is publishing a twenty-four-page bulletin called the *Medical Arts Journal*.——Drs. Charles Anderson Aldrich, Winnetka, Ill., and Henry J. Gerstenberger addressed the Academy of Medicine of Cleveland, May 20, on "Science and Art in Child Nourishment" and "Radiant Energy—Its Use in General Practice," respectively. ——Dr. Justin M. Waugh, Cleveland, gave an address before the Portage County Medical Society, Ravenna, May 5, on "Diseases of the Esophagus."——George R. Effler, attorney, addressed the Toledo Academy of Medicine, June 3, on "Doctors and Lawsuits."——The Academy of Medicine of Cincinnati and the Cincinnati Dental Society have established joint headquarters in the Union Central Life Building. In addition to an assembly hall which the societies have heretofore used for meetings, there will be offices, a lounge and library.—— Drs. Don C. Hughes and John M. Firmin addressed the Hancock County Medical Society, Findlay, June 2, on Addison's disease and treatment of hemorrhoids, respectively.—— Dr. George E. McKean, Detroit, addressed the Summit County Medical Society, Akron, June 7, on pneumonia.

## PENNSYLVANIA

**Society News.**—Dr. Charles C. Wolferth, Philadelphia, addressed the Delaware County Medical Society at the Springhaven Country Club, June 9, on "Angina Pectoris and Coronary Occlusion."——Dr. George Wagoner, Philadelphia, was the speaker before the Cambria County Medical Society, Johnstown, June 9, on "Evidence of Disease as Seen in the Skeletal Remains of Antiquity."——Drs. Otto C. Gaub and Ernest W. Willetts, Pittsburgh, addressed the Washington County Medical Society, June 8, on "The Abdomen as a Diagnostic Problem" and "Diagnosis and Treatment of Anemia," respectively.

### Philadelphia

**Hospital News.**—A five-story addition, to be known as the Benjamin Rush Building, was opened at the Philadelphia Children's Hospital, June 1. The building is named for a descendant of Dr. Benjamin Rush, Philadelphia physician and signer of the Declaration of Independence. It gives the hospital a capacity of 200 beds and adds to the dispensary and outpatient departments.——A research laboratory for pathology and bacteriology, equipped at a cost of $25,000, has been opened at St. Joseph's Hospital.

**New Building for Jewish Hospital.**—Mrs. Anna Esther Fridenberg has presented to the Jewish Hospital $400,000 in cash for the erection, equipment and partial upkeep of a surgical ward building. The gift was a legacy left to Mrs. Fridenberg by the will of her brother, M. S. Fridenberg, who requested that she use the money to build a memorial to members of the Fridenberg family. Plans for the Fridenberg Memorial Surgical Building will provide for fifty-six ward beds, four operating rooms and other necessary facilities. It is expected that construction will begin soon.

**University News.**—Dr. Madge Thurlow Macklin, of the University of Western Ontario Medical School, London, addressed the staff of the Cancer Research Laboratories, University of Pennsylvania Graduate School of Medicine, May 31, on "The Rôle of Inheritance in Human Neoplasms and Its Diagnostic Significance."——George Barton Cutten, Ph.D., president of Colgate University, Hamilton, N. Y., was the guest speaker at the commencement of Jefferson Medical College, June 3; his subject, "A Layman's Advice to Doctors." June 2 was Alumni Day, which was celebrated with clinics at the Jefferson Hospital, followed by the annual dinner.

## TEXAS

**After Thirty Years' Service.**—Dr. Alonzo Garwood, who has been health officer of New Braunfels more than thirty years, recently resigned on account of ill health. During Dr. Garwood's term of office he has served the city under seven administrations of mayors.

**Society News.**—Drs. Wayne T. Robinson and Sim Driver spoke at a meeting of the Dallas County Medical Society, June 9, on "The Aschheim-Zondek Test for Pregnancy" and "The Maggot Treatment of Osteomyelitis," respectively. A symposium on neurosyphilis will be presented at the meeting, June 23, with the following speakers: Drs. Truman C. Terrell, Fort Worth; Guy F. Witt and Arthur G. Schoch, Dallas. ——Dr. William Hodges McKnight addressed the Tarrant County Medical Society, Fort Worth, May 17, on "Symbiotic Infection of Abdominal Operative Wounds."

## WEST VIRGINIA

**Society News.**—Dr. Fred W. Rankin, Rochester, Minn., addressed the Ohio County Medical Society, Wheeling, May 20, on "Surgical Treatment of Cancer of the Large Bowel."——Dr. Chauncey B. Wright addressed the Cabell County Medical Society, Huntington, May 12, on the cause of pain and rigidity in appendicitis.——Dr. Harry E. Mock, Chicago, was the speaker at a joint meeting of the Monongalia, Harrison and Marion county medical societies at Morgantown, May 25, on "Back Injuries."——Drs. William W. Strange and Raymond M. Sloan, Huntington, addressed the Kanawha County Medical Society, Charleston, May 11, on "Surgery of the Sympathetics" and "Ketogenic Diet in the Treatment of Epilepsy," respectively. ——Dr. Alexander J. Burkholder, Layland, among others, addressed the Fayette County Medical Society, Oak Hill, May 11, on undulant fever.

**State Medical Meeting at Parkersburg.**—The sixty-fifth annual meeting of the West Virginia State Medical Association will be held in Parkersburg, June 20-23, under the presidency of Dr. Albert H. Hoge, Bluefield. Guest speakers will be:

Dr. Mont R. Reid, Cincinnati, "Treatment of Thyroid Intoxication."
Dr. Bernard H. Nichols, Cleveland, "Excretion Urography."
Dr. Hugh S Cumming, Washington, D. C., "Public Health Service, with Special Reference to Milk Sanitation."
Dr. Elmer B. Freeman, Baltimore, "Practical Value of Special Diagnosis Methods in Study of Digestive Diseases."
Dr. Albert Graeme Mitchell, Cincinnati, "Practice of Preventive Pediatrics."
Dr. Samuel Goodwin Gant, New York, "Plea for Perineal Versus Other Procedures in Rectal Cancer Extirpation."
Dr. Waitman F. Zinn, Baltimore, "Cancer of the Larynx."
Dr. Victor W. Fischbach, Cincinnati, "Study of Sinus Disease in Children."
Dr. Jacob A. Bargen, Rochester, Minn., "Differential Diagnosis of Types of Colitis and Their Treatment."
Dr. Henry H. Kessler, Newark, N. J., "Estimation of Permanent Disabilities in Industrial Accidents."
Dr. Dean Lewis, Baltimore, "Differential Diagnosis of Bone Lesions."

Dr. Hoge will deliver his presidential address Tuesday evening, June 21, entitled "A Medical Retrospect." The annual banquet will be held Wednesday evening, with Dr. Gant as the speaker, and the annual golf tournament will be run off Monday, June 20.

## WISCONSIN

**Dinner in Honor of Dr. Bardeen.**—The medical faculty of the University of Wisconsin will give a dinner at the Memorial Union, Madison, June 20, in honor of Dr. Charles Russell Bardeen, marking his twenty-fifth anniversary as dean of the medical school. Dr. Bardeen, a native of Michigan, was graduated in medicine from Johns Hopkins University School of Medicine in 1897 after having taken an academic degree at Harvard. He remained at Johns Hopkins as a member of the teaching staff until 1904, when he came to Wisconsin as professor of anatomy.

## GENERAL

**Yellow Fever Volunteer in Hospital.**—John H. Andrus, one of the army enlisted men who allowed themselves to be bitten by mosquitoes infected with yellow fever in the famous experiments by the Yellow Fever Commission in 1900, has recently entered Walter Reed General Hospital, Washington, D. C., to undergo treatment for paralysis. Mr. Andrus, who is advertising manager for a manufacturing firm in Camden, N. J., is said to have suffered from arthritis for eighteen years. With other members of the group, he was awarded a Congressional Medal and a pension of $125 a month in 1929 in recognition of his service.

**Dr. Long Awarded Trudeau Medal.**—Dr. Esmond R. Long, Chicago, was awarded the Trudeau Medal by the National Tuberculosis Association, June 6, at its annual meeting in Colorado Springs, Colo. The medal is awarded each year "for outstanding service to the tuberculosis movement," the Chicago *Tribune* reports. Dr. Long, professor of pathology, Graduate School of Medicine of the Division of Biological Sciences, University of Chicago, recently resigned his professorship, which he had held since 1928, to go to Phipps Institute of the University of Pennsylvania, Philadelphia, as director of laboratories. He received his bachelor's degree, doctor of philosophy and medical degree, all from the University of Chicago.

**Association for Study of Feebleminded.**—The fifty-sixth annual session of the American Association for the Study of the Feebleminded was held, May 26-29, in Philadelphia, under the presidency of Dr. Harvey M. Watkins, Polk, Pa. Among the speakers were Edgar A. Doll, Ph.D., Vineland, N. J., on "Psychological Aspects of the Birth-Injured Mentally Deficient"; Dr. Leon Pierce Clark, New York, "Psychoanalytic Interpretation of Mental Arrest," and Dr. Charles S. Woodall, Belmont, Mass., "Offspring of Feebleminded and Mentally Subnormal Mothers." Dr. Howard W. Potter, New York, was installed as president, and Dr. Ransom A. Greene, Waverley, Mass., was chosen president-elect. Dr. Groves B. Smith, Godfrey, Ill., is secretary.

**Credentials Stolen.**—Dr. John H. Hrabik, Murphysboro, Ill., writes that about May 1 his office was entered by a morphine addict, who took, among other things, his army discharge papers, army compensation certificate and a pass book on the First National Bank of Murphysboro. Since that time numerous forged checks have arrived at the bank from points in Indiana, Kankakee and East St. Louis, as well as letters from physicians who received forged checks. In all cases, the person has been posing as a World War veteran who had purchased a farm in the vicinity, and using Dr. Hrabik's credentials as identification. The checks, which have ranged from $2 to $90, amount to about $400. Should this man be apprehended, please notify the sheriff of Jackson County, Murphysboro.

**Milwaukee Wins Health Conservation Contest.**—Milwaukee won first place among cities of more than 500,000 population in the annual health conservation contest sponsored by the United States Chamber of Commerce in cooperation with the American Public Health Association. Winners in other population groups were: Rochester, N. Y., 250,000 to 500,000; New Haven, Conn., 100,000-250,000; Evanston, Ill., 50,000-100,000; Brookline, Mass., 20,000-50,000, and La Salle, Ill., 20,000. There was an increase in enrolment of more than 27 per cent, the chamber of commerce reported. Although the requirements were higher in the 1931 contest than in 1930, more than 70 per cent of the cities that competed in both years made higher scores in 1931, it was said. Each city was awarded a bronze plaque at a ceremony at the annual meeting of the United States Chamber of Commerce in San Francisco, May 17.

**Display of Public Health Equipment.**—The first display of equipment, materials, methods and services for the furtherance of public health ever to be held on the Pacific Coast has just been announced. This will be the Los Angeles County Public Health Exposition, which will be conducted in the buildings of the International Industrial Expositions, Limited, August 12-18, under the auspices of the Los Angeles County Tuberculosis and Health Association. Many other associations interested in public health have arranged to participate in this enterprise. There will be exhibits by schools, health departments, recreation departments, chambers of commerce, and other similar organizations. Products and equipment of recognized standard used in disease prevention and health building will be shown and all types of appliances and equipment, products and materials, and methods and services pertaining to health and sanitation will be displayed. A board of directors and an advisory committee have been appointed. The technical committee appointed by the board of directors will pass on applications for exhibiting space.

**Medical Bills in Congress.**—*Changes in Status:* Government competition with private enterprise has been the subject of investigation during the week by a committee of the House, appointed pursuant to H. Res. 235. Representative Shannon, Missouri, is chairman of the committee. H. R. 10238 has been reported to the Senate, without amendment, creating a reimbursable fund to be used for special medical and surgical work among the Indians of the Fort Peck Indian Reservation, Montana. H. R. 11267, the economy bill, has passed the Senate, with amendments. As reported to the Senate, the bill contained several provisions dealing with compensation and hospitalization of veterans, among which was one proposing, in effect, to deny free hospitalization for nonservice disabilities to those veterans financially able to pay for treatment. The Senate, however, eliminated from the bill all provisions relating to veterans except one section creating a joint congressional committee to conduct a thorough investigation of the operation of the laws and regulations relating to the relief of veterans and to report to Congress not later than Jan. 1, 1933. H. R. 12448 has passed the House, amending the Disabled Emergency Officers' Retirement Act. Under this bill, an emergency officer whose disability is only *presumptively* of service origin will not be entitled to retirement under the act. The bill is now pending before the Senate Committee on Military Affairs. H. R. 11897, the War Department appropriation bill, has passed the Senate, with amendments. As passed by the House, this bill proposed to reduce the number of officers in the army from 12,000 to 10,000, substantially reducing the number of officers in the medical corps. It proposed, too, the discontinuance of the training of physicians and dentists for military service through the Reserve Officers Training Corps. The Senate struck out these provisions, but whether this action is effective will depend on the result of conferences between conferees on the part of the Senate and of the House.

**Society News.**—The American Physiotherapy Association, an organization of technicians, will hold its annual meeting in Milwaukee, June 27-30.——Dr. William deB. MacNider, Chapel Hill, N. C., was elected president of the American Society for Pharmacology and Experimental Therapeutics at its annual session, April 30; Alfred N. Richards, Ph.D., Philadelphia, vice president, and Dr. Velyien E. Henderson, Toronto, Canada, secretary, reelected. The next annual meeting of the association will be held at Cincinnati, April 10, 1933.——At the annual session of the American Pediatric Society, May 28, Dr. Oscar M. Schloss, New York, was made president, and Dr. Hugh McCulloch, St. Louis, reelected secretary. The society will meet, May 1-3, 1933, in Washington, D. C.——The officers of the American Otological Society for the ensuing year are Drs. George L. Tobey, Jr., Boston, president; John R. Page, New York, vice president, and Thomas J. Harris, New York, reelected secretary. The next annual session of the society will be held at Washington, D. C., May 2-3, 1933.——Dr. Joseph C. Beck, Chicago, was named president of the American Laryngological, Rhinological and Otological Society, May 25, and Dr. Robert L. Loughran, New York, reelected secretary. The society will meet in Chicago in 1933.——At the annual meeting of the American Laryngological Association, Dr. George Fetterolf, Philadelphia, was elected president, and Dr. George M. Coates, Philadelphia, secretary. The next session of the society will be held in Washington, D. C., May 2-4, 1933.——The thirteenth annual conference of the American Federation of Organizations for the Hard of Hearing will be held in San Francisco, June 20-23, under the presidency of Dr. Austin A. Hayden, Chicago. Speakers at the scientific session and their subjects will be Drs. Hayden, "Willing Ears"; Isaac H. Jones, Los Angeles, "Hearing Aids"; Moritz Weber, San Francisco, "Research in Deafness," and Mrs. Annette Abbott Adams, San Francisco, legal aspects of this handicap.——Dr. George P. Muller, Philadelphia, was elected president of the American Association for Thoracic Surgery at the recent annual meeting in Ann Arbor, Mich. The 1933 session will be held in Washington, D. C.——Dr. Richmond McKinney, Memphis, was elected president of the American Bronchoscopic Society at the annual meeting in Atlantic City, May 21.

## HAWAII

**Territorial Election.**—Dr. Grover A. Batten, Honolulu, was elected president of the Hawaii Territorial Medical Association at its annual meeting in Honolulu, April 23-25. Other officers of the association are Drs. Wah K. Chang, Honolulu; Archie Orenstein, Hilo; Lawrence L. Patterson, Kapaa, and William T. Dunn, Lahaina, vice presidents; and Dr. Lyle G. Phillips, Honolulu, secretary, reelected. The program of the association included as speakers Dr. Frank C. Spencer, Honolulu, on "Trichomonas Vaginalis Vaginitis"; Dr. Newton E. Wayson, Honolulu, and Theodore Rhea, "Leprosy: Some Observations on Its Epidemiology in Hawaii"; Drs. Guy C. Milnor and Eric A. Fennel, Honolulu, "Placental Diseases"; Douglas B. Bell, "Primary Pneumococcus Peritonitis"; Adolph G. C. Schnack, Honolulu, "Flatulence"; Randolph L. McCalla, Lanai City, "Effect of Hydration on the Action of Insulin"; Stewart E. Doolittle, Honolulu, "Tuberculosis as a Family Disease"; Grover A. Batten, Honolulu, "Gastric and Duodenal Ulcer: Some Observations Concerning Surgical Mortality"; Joseph W. Lam, Honolulu, "Methods of Contraception"; Clarence W. Trexler, Honolulu, "Modern Treatment of Ozena"; Nils P. Larsen, Honolulu, "Response of the Arterial Tree to Exercise"; Edward S. Goodhue, Hoolehua, "The Marching Years"; Arthur W. Duryea, Honolulu, "Lobar Pneumonia Survey"; Major Albert Bowen, Honolulu, "Use and Value of Postmortem Radiographs," and Dr. Ralph E. Cloward, Honolulu, presented a case report. Dr. Joseph E. Strode, Honolulu, delivered the presidential address on "The Progress of Medicine in Hawaii."

## CANADA

**Dr. Penfield to Head Neurologic Institute.**—With the announcement of a grant of $1,232,652 from the Rockefeller Foundation to McGill University, Montreal, for the establishment of a neurologic institute, plans for the development of a neurologic center at the school were disclosed. The grant will provide for the construction of a new building, specially equipped for research in neurology, neurosurgery and the physiology and pathology of the nervous system. More than $150,000 has been pledged by friends of the university and members of the governing board. Dr. Wilder G. Penfield, professor and head of the department of neurology at McGill, has been selected to direct the institute. Dr. Penfield was born in Spokane, Wash.; he is a Rhodes scholar and a graduate of Johns Hopkins University School of Medicine. His associates will include Drs. Colin K. Russel and Frederick H. MacKay, clinical professors of neurology, and William V. Cone, assistant professor of neurologic surgery, also a native of the United States. The new building will be erected on a site opposite the present neurologic laboratories in the Royal Victoria Hospital building. The institute will be connected with the hospital and the pathologic building by an underground tunnel. Tentative arrangements provide for the erection of a seven story building to contain wards for public, semiprivate and private rooms, operating rooms, research laboratories, offices, and a few rooms for resident graduate students.

## FOREIGN

**Personal.**—Sir Aldo Castellani of the London School of Tropical Medicine and Hygiene is one of four recipients of the Mussolini Prize of 50,000 lire (about $2,500) for special distinction during the past year, according to *Science*.

**Cholera in Shanghai.**—One hundred and ninety cases cholera have been reported in Shanghai, according to the Cl cago *Tribune*, June 7. In an effort to check the epidemic, t report said, the authorities have inoculated 135,000 persons.

**Victor Horsley Memorial Lecture.**—Dr. Edgar Dougla Adrian, Foulerton research professor of the Royal Society a Cambridge University, will give the triennial Victor Horsley Memorial Lecture, July 20, on "Visceral Sense Organs." This lectureship was established in 1920 to commemorate the services of Sir Victor Horsley to science and the British Empire. Its trustees are the presidents of the Royal Society, the Royal College of Surgeons of England and the British Medical Association, the senior physician to the National Hospital, Queen Square, the senior surgeon to University College Hospital and Mr. Stanley G. Robinson, son-in-law of Sir Victor Horsley. Dr. Adrian recently lectured in Philadelphia (The Journal, Nov. 21, 1931, p. 1547) and other cities in the United States.

**Society News.**—The Société de Neurologie held its annual international reunion, May 31-June 1, in Paris. Epilepsy was the subject selected for study, with Drs. Foerster, Breslau; Pagniez, Paris; Abadie, Bordeaux, and Crouzon, Paris, as the speakers. Research carried on under the auspices of the Déjérine Foundation was announced at this meeting: Dr. Baudouin spoke on "Experimental Hyperpnea"; Drs. Mr. and Mrs. Sorrel-Dejerine, "Pott's Paraplegia," and Dr. Cornil, Marseille, "Anatomic Classification of the Marrow and It- Covering." The Charcot Prize winner, Dr. Alajouanine, spok on "Anterior Subacute Poliomyelitis."——The twelfth session of the "Medical Days of Brussels" will be held, June 25-28, under the presidency of Prof. Fernard Heger. Practical demonstrations will be given in the hospitals, and the theoretical lectures will be presented by medical authorities from various countries of Europe. Dr. René Beckers, 141, rue Belliard, Bruxelles, is secretary-general.——American physicians who expect to attend the second International Congress of Oto-Rhino-Laryngology in Madrid, Spain, September 27-30, are requested to send their notification blanks without delay to Dr. Alberto Fumagallo, secretary-general of the congress, at Madrid. The official ship for American delegates will leave New York, September 17, and proceed direct to Vigo, Spain. Information may be obtained from Marcel Colin, 8 Investment Building, Washington, D. C.

# Foreign Letters

## LONDON

(*From Our Regular Correspondent*)
May 21, 1932.

### A Criticism of Diet

A committee of authorities on diet, consisting of Sir F. Gowland Hopkins, Prof. E. P. Cathcart, Prof. Edward Mellanby and Prof. V. H. Mottram, appointed to advise the minister of health on the practical application of modern advances in the knowledge of nutrition, has submitted a memorandum on the criticism and improvement of diets. The committee considers that the needs of the adult man are 3,000 calories a day and of the adult woman, 2,500. For children under the age of 1 year the daily need is 600 calories; from 1 to 2 years, 900; 2 to 3 years, 1,200; 3 to 6 years, 1,500; 6 to 8 years, 1,800; 8 to 10 years, 2,100; 10 to 12 years, 2,400; girls 14 years or over, 2,500; boys 14 years or over, 3,000. In temperate climates the range for protein is from 10 to 15 per cent of the total calories, for fat 20 to 35, and for carbohydrate 50 to 70. If the amounts of protein and fat fall much below 80 and 50 Gm., respectively, a day, or the percentage of calories derived from carbohydrate rises much above 66, the diet is in need of improvement.

A second criterion is the supply of first class protein. Some proteins replace a greater amount of protein lost in the body by wear and tear than others and are also more adequate for purposes of growth. These are termed first class proteins and (for practical dietetics) are found only in animal products, such as cheese, eggs, fish, meat and milk. The amount of first class protein necessary per man daily is 37 Gm. Most middle class diets contain about 55 Gm. but working class diets frequently fall below the standard.

The third and fourth criteria are mineral matter and vitamins. Unfortunately there are as yet no quantitative data of the amount of the different vitamins essential. However, the foods that are useful in supplying mineral matter are useful in supplying vitamins. For example, liver and egg yolk, which are good sources of iron, supply also vitamin A, and egg yolk also supplies vitamin D; fish liver and roe, which supply iodine, also supply vitamins A and D; milk and cheese, which supply calcium, supply vitamin A. The chief essential mineral elements are calcium, phosphorus, iodine and iron. There is evidence that too little calcium, iodine and iron are frequently contained in the diet. Calcium is found in cheese, egg yolk, milk, bran and green vegetables; phosphorus, in cheese, egg yolk, milk, bran and oatmeal; iodine, in sea foods (fish, shellfish and dulse) and a few leafy vegetables (watercress, beet leaves, onions); iron, in egg yolk, meat, liver, oatmeal and green vegetables.

The essential vitamins are found as follows: Vitamin A occurs in liver, carrots, butter, milk, cheese, most animal fats (not lard), yellow fruits and vegetables and green vegetables. Vitamin B consists of many fractions, but there is little evidence that it or its essential components are absent to any important degree from any but the worst balanced diets. Moreover, if the diet is satisfactory as regards vitamins A, C and D, it is probably complete as regards vitamin B. Vitamin C is found in fresh foods and is the only vitamin which suffers much in domestic cooking, so that cooked vegetables and fruit should not be relied on. Vitamin D is found in fat fish (especially in fish liver oils), fish roe, egg yolk, summer milk butter and green vegetables.

Of the mineral matter, calcium is most likely to be deficient in this country and possibly iodine in certain hilly and mountainous districts. Of the vitamins, the most likely to be missing is D, followed by A and then C. It will be seen that if a diet contains milk and dairy products generally, fish, eggs and fresh salad vegetables there is little need to criticize it as regards its mineral and vitamin content. There are no quantitative data as regards the need for vitamins, but probably if the diet contains one pint of milk daily, plenty of cheese, one orange or one tomato or a helping of raw salad, and if an ounce of butter (or vitaminized margarine) is given, and if some sort of fat fish, such as herring, appears in the winter menu once a week (or, in default, half a teaspoonful of cod liver oil is taken), the mineral and vitamin content of the diet is satisfactory.

### Prescriptions in Cipher

Attention has been called in the press to the practice of giving patients a prescription in cipher, to which a certain pharmacist holds the key. The practice is new and probably confined to a few physicians. In a press interview Dr. Cox, medical secretary of the British Medical Association, has described it as "an abominable practice. . . . The use of codes of this kind may give rise to a suspicion that some kind of financial arrangement has been arrived at between the pharmacist and the consultant. There is also the implication that some secret remedy is being used, which is grossly unprofessional. A patient should be able to produce prescriptions to any other doctor he consults later, so that the treatment he is having is known." On the other hand, the system has been defended on the ground that it preserves the utmost secrecy. The patient does not know what drug he is taking and the danger of his becoming an addict is eliminated. If he should in any way detect the drug he cannot present the prescription to another pharmacist and obtain it. For medical reasons it is sometimes desirable that a patient should not know what drug he is taking.

### British Health Resorts

The financial depression has given rise to a movement "to keep the money in the country" by using British health resorts instead of the popular continental ones. The British Health Resorts Association has been formed with the support of many leading physicians. The last of three conferences held by it has been held at Bournemouth, on the south coast. Sir Thomas Oliver, who presided, said that few islands had such an imposing coast line and such attractive scenery as our own, the number and variety of the coast resorts being unsurpassed. Dr. William Byam, lecturer on tropical diseases at St. George's Hospital Medical School, said that he had endeavored to keep patients in this country but had met too many failures. He gave the following record of reasons for not staying in England, in the order of frequency: (1) climate, (2) English standard of cooking, (3) unfashionableness of our resorts, (4) need for more complete change of scene and occupation, (5) lack of amusements, (6) the ban on gambling, (7) greater cost of a holiday here, and (8) absence of facilities for treatment. Dr. R. Fortescue Fox declared that in the matter of organization we were behind other nations. On the continent, health resorts enjoyed state support, and admirable handbooks on them were distributed in England. Dr. Manson-Bahr said that diet in British health resorts was the thing that bothered him. There seemed to be no one to supervise the diet in a case of, say, sprue, in which treatment was almost entirely dietetic.

### The Unhygienic Condition of Merchant Ships

At the Congress of the Royal Institution of Public Health, which has been held in Belfast, Sir Thomas Oliver, emeritus professor of medicine in the University of Belfast, strongly criticized the sanitary condition of merchant ships. He pointed out that in 1910 the death rate of seamen from pulmonary tuberculosis was almost double that of most other occupations; that valvular disease of the heart was double, pneumonia 80 per cent above the average, and accident four times the basic figure. In 1921-1923 the general mortality of seamen was 76.8 per cent above the average and for pulmonary tuberculosis 35.5 per cent in excess. The high death rate from pulmonary disease showed, among other things, the inadequacy of the sleeping accommodations on board ship. He considered that the condition on British ships was worse than on those of other nations. Of the ships inspected in the port of Manchester in 1926, 30.5 per cent of the British ships were found to be insanitary, 18.9 per cent of the Norwegian, and 17.2 per cent of the American.

### Bats as Carriers of Rabies

The legislature of Trinidad has voted $1,000 as an honorarium to Dr. Pawan, who proved that bats were the carriers in the recent outbreak of rabies in the colony. Mr. Grier, speaking for the government, declared that the amount hardly covered Dr. Pawan's expenses, but it was an acknowledgment of his great work. Dr. Pawan is the Trinidad government bacteriologist. The disease that he has traced to bats baffled investigators for a time, who ascribed the deaths caused by it to "a virus of rabies of a hitherto unknown type." In a report to the government last November, the suggestion was made that bats were the carriers. This was confirmed by Dr. Pawan, who found lesions typical of rabies in the brain of a bat.

## PARIS

*(From Our Regular Correspondent)*

May 11, 1932.

### Research on Microbic Polymorphism

The question of microbic polymorphism continues to have great interest for biologists, and particularly the study of filtrable types of micro-organisms. The optical laboratory of Professor Fabry has succeeded, it seems, in manufacturing such powerful apparatus that the investigator is enabled to observe the presence of frankly visible granulations, by means of a special form of illumination, in cultures filtered through the most dense candles under heavy pressure. These researches will soon be published. Mr. Hauduroy has described an evolutional cycle of Bacterium typhosum. Under the action of the d'Herelle bacteriophage, the bacilli of typhoid and paratyphoid are capable of assuming invisible filtrable forms. These are found in some typhoid patients, either in the blood at the beginning of the infection or in the stools at the termination of the disease. They provoke certain septicemias, in which it appears that the normal form of the bacillus is not found. Mr. Hauduroy thinks also that contaminated water contains usually only filtrable forms and that the bacillus itself is not found. These discoveries justify therefore the following hypothesis: The healthy individual becomes infected through the ingestion of invisible filtrable forms of Bacterium typhosum. These develop gradually in the organism, taking on eventually the bacterial forms; then, when the disease terminates, these bacterial forms are again broken up by the bacteriophage, or in some other manner, and scattered about through nature under their first invisible filtrable form. This theory leads to a conclusion that has a great significance for public health; namely, that drinking water in which the usual microbiologic researches have been unable to show the presence of a typhoid or paratyphoid bacillus may nevertheless be capable, under certain conditions, of producing a typhoid infection. Research of the same nature has been undertaken by Dr. Vaudremer, who for years has been patiently studying the polymorphism of the tubercle bacillus and its filtrable forms. He even succeeded in securing an attenuated form that gives excellent results in the treatment of latent tuberculosis of the joints, the glands and the bones, as has been mentioned in previous letters. At present, he is engaged in studies on the bacillus of leprosy and he has secured some interesting results. In collaboration with Mr. Sézary and Mlle. Brun, by cultivating successively fragments of cutaneous leprosy and of leprous spleen in a filtered extract of Aspergillus fumigatus, in Martin's bouillon, ordinary potato bouillon and glycerinated potato bouillon, Mr. Vaudremer secured pseudomeningococcal gram-positive forms, short and granular cyanophil bacilli; long, flexuose and granular cyanophil bacilli, and finally acid-resistant forms. This evolution covered a period of about two years. Fragments of lepromas were ground up in aspergillar fluid. This fluid filtered through candle $L^3$ did not produce cultures during the first nine months; but, from that time on, pseudomeningococcal forms appeared in the potato bouillon and developed into acid-resistant forms. Vaudremer and Sézary think that the organisms that develop from these cultures are forms of the Hansen bacillus and that this bacillus, similar to many others, may present itself in the form of elements that pass through an $L^3$ candle.

### Radium in the Treatment of Uterine Cancer

In response to the communication of Professor Jean-Louis Faure, addressed to the Academy of Medicine, pertaining to the encouraging results that he had secured from total abdominal hysterectomy in the treatment of uterine cancer, Mr. Regaud, director of the Institut du radium, presented a paper, at the following meeting of the academy, in which he submitted the statistics of his institute on the subject. He took account only of the cases treated at least five years previously. From 1922 to 1926, 429 cases of all degrees of extension were treated, in which 142 recoveries (33 per cent) were secured, which are judged now after the lapse of at least five years. The authors counted among the failures eleven women who died from intercurrent disease and seven women (1.6 per cent) whose whereabouts is unknown, but who were in good health at last accounts, but before the lapse of the five-year period. Of all the patients judged cured at the end of the fifth year, in only four has a recurrence since been noted. Of the cases of the first degree in which the neoplasm appeared confined to the cervix, twenty-nine were treated by radium alone, twenty-three of whom (79 per cent) recovered. There were no deaths. The surgical statistics recently published by Jean-Louis Faure appear more brilliant because they included only a selection of the best cases of the first degree. But if one adopts a common definition of the lesions, one finds only 70 per cent of recoveries. The cases of the second degree—that is to say, at the limit of operability—treated at the Institut du radium numbered 121 and furnished 50 recoveries (41 per cent, as compared with 23 per cent at the gynecologic clinic). The cases of the third degree, with extensive invasion of the parametrium, which are not amenable to surgical treatment, furnished 27 per cent of recoveries of five years duration at the Institut du radium. It is apparent from these facts, according to Mr. Regaud, that, even in the better cases, the radiotherapeutic methods give results superior to those secured with the Wertheim operation. Although equal from the standpoint of technical perfection, this operation has therefore only rare indications.

### Refusal of Surgical Aid Following an Occupational Accident

The Société de médecine légale recently devoted two sessions to the discussion of the question whether the refusal, by a person suffering an occupational accident, to submit to an operation, decided on by the physician—a refusal that would increase his degree of invalidity—was legally of such a nature as to justify a reduction in the compensation to be paid by his employer. The question was brought up first by a communication of Dr. Leclercq of Lille with reference to the radical treatment of hernia. Mr. Leclercq emphasized that French law was not very clear on this point and that the various courts of the country had rendered quite contradictory decisions in the matter. He therefore asked the Société du médecine légale to render an opinion that would serve to guide the courts in the future. His personal opinion is that a radical intervention in hernia, even in a healthy person and although performed under local anesthesia, cannot be considered devoid of risk to life. That was also the opinion of Dr. Duvoir, court medicolegalist. He recalled the opinion formulated by the Academy of Medicine during the war, when the question of the right of a wounded person to refuse an operation was put before it by the minister. He cited also the opinion of Professor Boudin, who has treated this subject in a recent work, in which he points out that the question of consent to operations has created a conflict with the new social laws. It is unquestionably true that "the patient is master of his own body." But the social laws pertaining to aid and civil responsibility in common law bring in a third party, namely, the general public, which is responsible for the cost of treatment and for the degree and length of invalidity. The obligation imposed by the law on the employer to indemnify the victim of an occupational accident entails an obligation on the workman to submit to the treatment prescribed by medical science; but the workman retains nevertheless the right to refuse to undergo an operation. It is the duty of the courts to determine the motives for his refusal. If the refusal is not justified by the gravity of the operation or the uncertainty of the results, the judge is entitled to reduce, or even to suppress, the daily indemnity, and the court may reduce the percentage of disability to that which would still be present if the operation had been performed. After the consolidation, the condition of the victim is regarded as final and no operation can be imposed by the employer, nor, on the other hand, can an operation then be demanded by the workman. Mr. Mouchet, in the case of hernia, holds that one can only strongly advise the patient to submit to the operation, calling his attention to the fact that it is to his interest in order to avoid possible strangulation later, but an operation cannot be forced on him if he refuses, for it cannot be denied that there are risks involved. The question was then raised as to the right of the surgeon to impose on a wounded person an operation that may save his life, when the patient is unconscious and cannot be consulted in the matter. The same question arises with reference to wounded mental patients. If the case is not urgent, it is better to seek authorization from the family of the mental patient, the latter being regarded as a child before the law. The conclusion of the discussion was that, in spite of the grave risk of herniary strangulation to which the patient is exposed who refuses an intervention, one cannot impose an operation for the radical treatment of hernia (1) because the operation cannot be declared absolutely without danger, and (2) because one cannot affirm that the operation will assure a definitive recovery.

### Celebration of Centenary of Alfred Fournier

The centenary of the French syphilologist Alfred Fournier (1832-1914) was celebrated by ceremonies that lasted a week. They began, May 9, with a meeting of the Conférence internationale contre la syphilis. Among the foreigners attending were Jadassohn of Breslau, Ehlers of Copenhagen, and a number of Belgian, Italian and Spanish syphilologists. The celebration of the centenary was to have been held, May 12, at the Sorbonne, with the attendance of the president of the republic. In the interval, the president was assassinated and his funeral was held on the day set for the holding of the ceremony. The celebration was therefore transferred to the more modest quarters of the museum of the Hôpital St. Louis. A number of speakers described the work of Fournier, which began with the discovery of syphilitic chancre and soft chancre and ended with the announcement of the syphilitic origin of tabes and of dementia paralytica, and by his works on heredosyphilis. On this occasion, the enlarged Hôpital St. Louis and the new institute termed the Alfred Fournier Institute were dedicated. This institute contains laboratories for serologic and experimental researches, the control of medicaments and an antivenereal dispensary. This institute will be the headquarters of the Ligue française contre le péril vénérien and of the Société de prophylaxie sanitaire et morale. On account of the national mourning for the president, all the planned festivities were abandoned.

## BERLIN

*(From Our Regular Correspondent)*

May 9, 1932.

### Congress of the German Roentgen Society

Under the chairmanship of Professor Grebe, director of the Röntgenforschungs-Institut of the University of Bonn, the Deutsche Röntgengesellschaft held its congress in Dresden, April 3-5. More than seventy addresses and communications were presented. In spite of the economic depression, and the large number of congresses that have followed one another in quick succession, about 600 German and foreign participants appeared, and the congress offered a good survey of the present status of roentgenology. The first day was devoted to technical, the second to therapeutic, and the third to diagnostic addresses.

Behnken and Brasch, both of Berlin, dealt with roentgen rays of the highest penetrative power. The production of high tensions is easy for technicians, but more difficult is the production of correspondingly resistant tubes. With a special type of generator, roentgen rays can be produced that will penetrate 20 cm. of lead. The speaker mentioned a tube that, supplied with 2,400,000 volts, furnishes alpha particles and cathode rays of great penetrative power. The roentgen rays produced by it correspond approximately to the gamma rays of radium. With a system capable of supplying 7,000,000 volts, which will soon be available, roentgen rays of much greater penetrative power can be produced. It is hoped that with their aid the breaking up of atoms can be successfully carried out.

H. Franke of Hamburg and Mühlmann of Stettin discussed the use of roentgen paper for photographs, which was followed by a spirited general discussion of the subject. The quality of these papers, which have been on the market since 1923, has been improved. The relatively low price has been retained and the noninflammability has been preserved. Nevertheless, the sharpness of outline of the pictures is considerably less than in the film. They are, therefore, usable only when fine details need not be brought out.

On the day devoted to therapy, G. A. Rost, dermatologist of Freiburg, discussed the biologic bases of roentgen therapy in dermatology. He considered the action on the blood capillaries, the differences in sensitiveness, formation of pigment, physicochemical changes, remote injuries, and action in inflammations (no direct antibacterial action). The basis of indications has remained about the same in recent years, with the exception that indirect irradiation is more accentuated.

Schreus of Düsseldorf spoke on dosimetry, and methods of surface therapy. The Sabouraud tablet is useful with careful measurement of hardness and the observation of certain rules. The Sabouraud dosage should be expressed in r units on the basis of graduated curves. As the maximal doses for irradiation up to a 3 mm. aluminum half-value shield, one can figure 600 r, or with a 20 per cent safety factor, 500 r; for softer rays than with a 0.5 mm. half-value shield, only 400 r. The speaker discussed also the measurement of hardness, the distribution of doses in high voltage therapy and protective devices. Hintze of Berlin reported on 800 skin cancers irradiated in the Bier clinic. The grenz rays, which were severely criticized by many, found several defenders. Schubert of Berlin reported on experiences gained thus far with the treatment of carcinoma by means of extremely hard roentgen rays. By distributing the total dosage over fourteen days, the effect was increased so that a fairly good skin reaction developed. Haupt of Bonn gave statistics on cancer of the neck of the uterus, for the years 1915-1926, treated by operation and irradiation combined. Cures extending over five years in all operative cases were 42 per cent; absolute five-year recovery, 29.7 per cent. Dietel of Heidelberg described the present method of irradiating cancer of the neck of the uterus, at the Universitäts-Frauenklinik, Heidelberg. The best results were secured in one-stage high radium dosage with a definite technic. Large primary tumors are extirpated. For the parametrium a supplementary roentgen dose is necessary. Philipp of Berlin called attention to peculiar bone disorders in patients with uterine carcinoma subjected to roentgen irradiation.

A discussion took place on injury to the offspring by roentgen irradiation. As the Deutsche Gesellschaft für Vererbungswissenschaft had issued a warning, which, in the opinion of leading physicians, went too far, a corresponding counterdeclaration was given at the joint meeting of the Bayerische Gesellschaft für Geburtshilfe und Gynäkologie and the Bayerische Gesellschaft fur Röntgenologie und Radiologie, and was published in the special medical journals. Further information based on more comprehensive hereditobiologic researches and on joint researches and investigations of students of hereditary transmission and of physicians is expected shortly. Several speakers reported on the ultra short wave therapy, its physical and biologic bases and its technic. Good results were observed at the Universitäts-Frauenklinik in Berlin.

In the field of roentgen diagnosis, Albert Fraenkel of Heidelberg gave a paper on the limitations of roentgenology for the diagnosis of beginning pulmonary tuberculosis from the clinical and roentgenologic points of view. In judging some roentgenograms, one must be reserved in one's statements. Examinations at certain intervals are necessary. Unfortunately there have not been a sufficient number of necropsies covering the primary stage in early childhood and the "early case," in the adult. The roentgenogram furnishes the only diagnostic control of a possible reinfection, in the form of a number of round foci. The tuberculous focus disappears slowly and never entirely. The roentgen observation is superior to the physical but must not be exaggerated. In open tuberculosis the roentgen manifestations may be negative; that is, there are concealed cavities back of the dome of the diaphragm and back of the heart shadow, which come into view only on deep inspiration or with diagonal exposure. In a lung that appears sound and intact roentgenologically, there may be an arrested tuberculous process. Pleural adhesions and indurations may remain concealed in the roentgenogram. The roentgenologist must be thoroughly informed in regard to the patient. Wurm of Heidelberg discussed the limitations of roentgenology for the diagnosis of beginning pulmonary tuberculosis. He considered the anatomicopathologic points of view in judging the genesis and extension of specific lung foci and brought them into harmony with the roentgen manifestations. Only in 7 per cent of the cases does pulmonary tuberculosis begin with tuberculosis of the apex, which is readily diagnosed by clinical and roentgenologic means. The speaker does not consider that a "retrograde lymphogenous propagation" has been proved. The roentgenologic distinction of specific and nonspecific indurations is scarcely possible.

Kaestle of Munich presented a paper on pneumonoconioses. Extensive researches in industrial plants, chiefly with reference to sandstone, porcelain, cement, shell-lime, granite, cotton, hemp and polishings of grinding mills showed that a high percentage of silicon oxide is essential for the development of lung changes. In mines the external conditions that give rise to injuries are much more even and uniform than in factories; the individual predisposition also is important. With the same roentgen and clinical manifestations, the subjective complaints are widely different. Silicosis with degeneration and cavity formation may be free from tuberculosis. In involvements of the apex a sharp distinction between pneumonoconiosis and tuberculosis may be impossible. As a rule, however, one can recognize or suspect a silicosis preceding the tuberculosis or following the tuberculosis. Kaestle never saw a carcinoma resulting from dust irritation. Böhme of Bochum described the pneumonoconioses in miners of the Ruhr district. He had seen also carcinoma.

A lively discussion arose on the subject of hernia hiatus oesophagi. Adam of Berlin observed in forty healthy subjects that on deep inspiration a stenosis appears at the lower end of the esophagus, which leads to the formation of a sac-like diverticulum just a little higher up. As against these functional pseudohernias, Knothe of Berlin, Schatzki of Leipzig and Berg of Dortmund described the pathologic picture of true hernia of the hiatus oesophageus. H. U. Albrecht of Frankfort showed by comparison of roentgen manifestations and corresponding pathologic preparations of parts of the digestive tract to how great an extent the roentgenogram constitutes a necropsy in vivo. Gutzeit of Breslau spoke on the anatomic and functional diagnosis of gastro-enteritis with the aid of the roentgenogram. The appearance of the mucosa does not usually avail much. But one finds the sinus ventriculi dilated, the bulbus duodeni usually flaccid, the passage through the small intestine accelerated, and an increase of fluid in the small intestine and the colon. G. Velde of Greifswald in six out of forty-two cases of pernicious anemia found gastric polyps with the aid of the roentgenogram.

Kienböck of Vienna was chosen chairman of the society for 1933, and Bremen will be the place of meeting.

### Medical Motion Pictures

The origins of cinematography go back to the laboratory of the physiologist, for the first experiments with instantaneous photography were undertaken to study the various kinds of movements occurring in man and animals. Since that time the film has become of great importance for medical science. It should be used for medical instruction much more than it has been. That is the demand of the surgeon Prof. A. W. Fischer and the psychiatrist Dr. E. Herz, who, writing in the *Deutsche medizinische Wochenschrift*, discuss the status of medical cinematography. Fischer demands more particularly the practical development of films for the imparting of instruction in surgery, while Herz demands a systematic collection of films dealing with the subject of research on movements in general in man. Only a central institute could accomplish these tasks. The Kaiserin-Friedrich-Haus in Berlin, which promotes postgraduate medical education, has already begun to prepare a catalogue of all existing medical films, but that is only a beginning. How the film should be used for diagnostic purposes in nervous and mental diseases is shown by Herz in his application of the method to the study of motion; for it will be recalled that it has become possible by means of films to distinguish pathologic from normal movements. Numerous other problems have been elaborated in the same manner. The restless movements of certain mental patients were studied in their peculiar form by means of a careful analysis of the film. The film may be used also as an aid in establishing the degree of disability, since the manifestations of attacks are given a fixed form in the film and serve then later as undeniable fact-finding material in rendering a decision in a given case. Thus the film takes on the character of evidence in various procedures. But the film has possibly its greatest value in the presentation of manifestations of mental patients in classroom instruction. A knowledge of disturbances of motion cannot be properly imparted without a "film textbook."

### Decline in the Sales of Beverage Brandy

The Reichsmonopolverwaltung (administration of federal monopoly), which controls the sale of brandy in Germany, has published a report of sales for the period from January 1 to March 31, 1932, according to which the sales of beverage brandy for that period amounted to only 46,726 hectoliters, as compared with 87,764 hectoliters for the corresponding period of last year. It is evident, therefore, that the consumption of beverage brandy has almost been brought to a complete standstill. The extent of this reduced consumption and the resulting decline in the revenues of the *reich* from the brandy monopoly will stand out more clearly if the recent sales' figures are compared with those of the corresponding quarter of the fiscal year 1928-1929 (before the last tax increase), during which, as compared with 46,726 hectoliters, 223,873 hectoliters was sold.

## ITALY

*(From Our Regular Correspondent)*

April 15, 1932.

### Meeting of the Medicosurgical Society

The first meeting of the Società medico-chirurgiche delle Tre Venezie was held recently at Cornegliano on the Piave, under the chairmanship of Professor Cagnetto. The chief topic on the program was the treatment of gastric and duodenal ulcers, the medical side being presented by Professor Tramontini and the surgical side by Professor Oliani.

Professor Tramontini discussed theories as to the etiology of gastroduodenal ulcer: that of Virchow and Hagem; that of Lembe and Riegel, and the views of von Bergmann. He concluded that the problem is still unsolved.

With regard to the treatment of chronic ulcer, the speaker emphasized the importance of medicodietetic treatment as recommended by different authors and stressed the need of cooperation between physicians and surgeons.

Professor Oliani discussed the problems with regard to the surgical treatment of gastric and duodenal ulcers based on his experience in 1,200 cases. He advocates radical treatment; namely, gastroduodenal resection. If done with precise technic, resection does not present greater risks than conservative surgical methods.

In the general discussion, Fasiani brought out that, in the surgical treatment of gastroduodenal ulcer, one must distinguish between gastric ulcer and duodenal ulcer, in which latter he had observed good results from a simple gastro-enterostomy.

Pieri reported good results obtained in some cases of juxtacardiac ulcer with bilateral subdiaphragmatic vagotomy. Such treatment was applied with good results also in cases of postoperative peptic ulcer and recurring gastric ulcer following resection.

Popotoschnig, on the basis of experience in 294 cases of gastroduodenal resection for ulcer, considered this the most rational intervention in these types and emphasized the need that all cases of acute conditions of the abdomen be turned over to the surgeon as early as possible, since only in that manner, without loss of time over diagnostic discussion, could the operative results, in perforated ulcers as well, be improved. Arlotta, on the basis of experience in seventy-five cases, in which various operations were performed, declared himself in favor of resection.

Manu stated that he was an advocate of the Leube diet. Excluding ulcer complications that require a surgical intervention, the speaker recommended conservative medicodietetic treatment except in cases in which medical measures are not tolerated or in which, for social reasons, the patient requires an operation. The next session will be held at Venice, the chief topic on the program being "Pathology and Clinical Aspects of Extrahepatic Biliary Tracts."

### Lenses Applied to the Cornea

Professor Gualdi presented recently to the Accademia medico-fisica of Florence a special type of lens in the form of very thin capsules of glass, which are applied directly to the eyeball and in immediate contact with it, and are practically invisible. The speaker explained the technic of the application and announced the excellent results that he had secured from their first systematic use in Italy, at the Clinica oculistica in Florence, for the correction of myopia, hypermetropia and astigmatism, with many advantages over the use of spectacles; among others, an increase in visual acuity. The speaker recommended the use of this type of lens in many professions and social activities in which spectacles cannot well be worn.

### Acute Anterior Poliomyelitis

At a meeting of the Accademia medico-chirurgica del Piceno, presided over by Prof. L. Cappelli, acute anterior poliomyelitis was discussed. Dr. Monti Guarnieri discussed the etiology and concluded that the causative agent is a filtrable virus and that the most common port of entry is the nasopharynx. The virus may be carried with impunity in the nasopharyngeal cavity for six or seven months and then be transferred from one individual to another.

He referred to some of the notable epidemics (that of 1916 in the United States and that of 1924 in Italy), and stated that children under 5 years of age are most subject to the disease, although an occasional case is found among adults. He described the symptoms and spoke of the forms of treatment, which, if applied early, may be helpful: convalescents' serum and Pettit's serum.

Professor Montanari explained the therapeutic action of various forms of physical therapy. He said that importance attaches at present to electrotherapy, local hot hydrotherapy, diathermy, massage, and active and passive gymnastics. He expressed himself, however, in a somewhat reserved manner as to the utility of radiotherapy. He emphasized the need of hospitalization for patients with acute anterior poliomyelitis in pediatric departments connected with the hospitals of the chief towns in the provinces.

Dr. Bartoli spoke on sequels of poliomyelitis. He emphasized that paramount attention should be given the possible beginning of deformations of the trunk and of the lower limbs. Greater cooperation between medical specialists is needed in order to be able to treat in the most complete manner and with the most satisfactory results infantile paralysis in all its manifestations, so as to prevent deformities.

Professor Montanari presented a resolution in which the academy recommended that hospitals of the chief provincial towns be provided with a pediatric department in which all persons might have an opportunity of securing physicotherapeutic and orthopedic care, in order that the consequences of this disease may be warded off.

The next session of the Academy will be held in Jesi, the chief topic on the program being "The Treatment of Diabetes."

### The Treatment of Cerebral Tumors

Prof. G. Ayala presented to the Accademia dei fisiocritici di Siena a communication on the treatment of cerebral tumors. He explained a method that he had followed in many cases in which blindness was threatened and in which any sort of radical operative intervention would have been hazardous. Under such circumstances the physician must endeavor to combat the symptoms of intracranial hypertension. To that end the speaker proceeded to puncture the cerebral ventricles. He extracted ventricular fluid in varying amounts depending on the presence or otherwise of an obstructive hydrocephalus. He employed an intraventricular insufflation of sterile air, in small quantities when he did not wish to use ventriculography. He followed up the ventricular puncture with subtemporal or suboccipital decompressive craniotomy and, finally, subjected the patient to deep irradiation in three periods: one immediately after the craniotomy, one after from forty to fifty days, and one after the lapse of a year (two erythema doses for each cycle of irradiation, divided into from eight to sixteen sittings). The speaker presented one patient with a tumor of the posterior cranial fossa, who entered his clinic in a grave condition. The patient stood excellently the ventricular puncture, the craniotomy and the first series of deep irradiations. At present the patient is so much improved that only careful examination reveals a slight cerebellar syndrome, whereas the symptoms of cranial hypertension are reduced to a papillary edema, but considerably diminished as compared with what it was at first. The course of events alone will tell whether it will be necessary to intervene locally for the surgical removal of the tumor.

### The Inaugural Lecture of Professor Castellani

Prof. Sir Aldo Castellani, senator, delivered an inaugural address in connection with the opening of the new Clinica delle malattie tropicali, of the University of Rome, and dealt with the subject "Tropical Medicine from Ancient Times Down to the Present." Tropical medicine, Professor Castellani stated, is possibly the most ancient branch of scientific medicine, since the most ancient civilizations began in tropical or subtropical countries. In Egypt, evidence of specialization in the fifth century is found. Following the Roman and the Arabian periods of medicine, the school of Salerno remained all through the Middle Ages the most famous center of medical instruction. Against leprosy and the plague, tropical diseases *par excellence,* the Middle Ages were obliged to adopt defensive measures. In the modern era, Portuguese and Spanish physicians began researches on tropical medicine. Fracastoro and Atanasio Kircher prepared the way for the discoveries in bacteriology and parasitology, confirmed later by the use of the microscope. The speaker declared that if there is any field of medicine in which therapy can score brilliant successes, tropical medicine is that field.

## MADRID

*(From Our Regular Correspondent)*

April 16, 1932.

### International Congress of Surgery

The Sociedad Internacional de Cirugía recently held at Madrid its ninth congress, which delegates from several foreign countries attended. This is the first international scientific reunion held since Spain was made a republic. The inaugural session in the Palacio del Sando was attended by Mr. Alcalá Zamora, president of the republic, who made an eloquent speech. Mr. Zamora gave a reception and banquet at the royal palace to the congressmen and their families. The civic authorities also fêted the visitors in typical Spanish fashion. During the congress the topics discussed dealt with problems on the progress of surgical anesthesia, intraspinal tumors, suppuration of nontuberculous lung, and surgery of the esophagus. When the scientific sessions were over, the visitors made a trip through the most artistic cities of Spain. They were impressed by the good will existing everywhere and by the cooperation that all classes showed the government and scientific authorities.

#### TREATMENT OF SUPPURATION OF NONTUBERCULOUS LUNG

The first subject discussed during the congress was the treatment of suppuration of the nontuberculous lung. The following are the articles discussed: Dr. Howard Lilienthal of New York distinguished the following forms of suppuration of nontuberculous lung: (1) more or less gangrenous bronchiogenic abscesses of the lung; (2) metastatic pulmonary abscesses (secondary to infection caused by an infarct); (3) suppurative bronchopneumonia; (4) gangrenous bronchopneumonia (a variety of suppurative bronchopneumonia); (5) interstitial pneumonitis; (6) suppurative lymphangitis (a variety of interstitial pneumonitis); (7) suppurative bronchiectasis. Dr. Lilienthal emphasized the importance of the presence of anaerobic bacteria in the mouth or in the pharynx for the development of pulmonary suppuration and the etiologic significance of operations in the mouth, which sometimes cause the unexpected appearance of gangrenous pulmonary suppurations. With regard to treatment, one may distinguish pulmonary abscesses and suppurative bronchiectasis.

#### PULMONARY ABSCESSES

The presence of pulmonary abscess is determined by: (1) the history of the patient, which is of great importance; (2) fever; (3) cough, which may not appear until the interstitial abscess has reached a large bronchus; (4) fetor; (5) the physical signs, which may not appear until an advanced period; (6) the roentgen examination, which should be made in all cases and to which the speaker devoted a large part of his article; (7) bronchoscopy, which has a diagnostic value, especially to determine the seat of the suppurative focus; (8) the puncture, which should not be made until everything is ready for the performance of a radical intervention if it is indicated. The puncture has been followed in many cases by serious and fatal accidents. Not all types of abscesses should be treated by drainage. Abscesses of the lung should be distinguished as progressive, stationary or regressive, and not as putrid or nonputrid, chronic or acute. The rapidity of the development of the abscess and the degree of virulence of the infection determine the advisability to perform the operation. Not all acute abscesses of the lung should be operated on, although their evolution should be watched closely so that the operation, if indicated, is made at the proper time. As a rule, operations demanded by acute abscess of the lung are not so urgent as those demanded by such other conditions as strangulated hernia or acute appendicitis. However, it is preferable to evacuate interstitial suppurative collections rather than to take the risk of their rupture into a bronchus as the result of delay. As to local treatment, bronchoscopic aspirations cannot be made continuously, and the continuation of artificial pneumothorax is indicated only when marked improvement occurs during the first week following its institution. The technic for evacuation by thoracotomy is determined by the site of the abscess. However, the principles of the operation are the same in all cases and may be summarized as follows: 1. The patient's head should be at a lower level than that of his hip bones in order to prevent cerebral air embolism. 2. Local anesthesia is preferable; the anesthesia should not suppress the cough reflex, as then there is danger of aspirating infected matter in the other lung. 3. The evacuation should be made through the most direct route without entering the pleural cavity. 4. The abscess should be opened first at its inferior border. 5. Skill should prevent the appearance of any hemorrhage, which may endanger the operation. 6. The packing should not be so tight that it displaces the mediastinum. 7. The thorax should not be enclosed in a dressing. 8. The formation of flaps should be avoided, because they make further examinations of the operative field more difficult. The rib, which covers the abscess, is resected; the parietal pleura is opened, and then the operative field is isolated from the rest of the pleural cavity, by surrounding the abscess with gauze and a covering of rubber, both of which have the aim to promote the formation of pleural adhesions. Some days later, when adhesions have formed and the abscess is isolated, it is entered with a cannula attached to an aspiratory syringe. If pus comes through the cannula into the syringe, a pair of closed scissors is introduced into the cavity of the abscess, then opened and withdrawn. The surgeon's finger may now explore the abscess cavity and a gauze drain, previously moistened with antigangrenous serum, may be inserted. The drainage tube may be removed in about one month. Sometimes, after the drain has been removed, the wound heals and then reopens; this has no importance, because the wound will later heal definitely.

#### SUPPURATIVE BRONCHIECTASIS

The information gathered from bronchoscopy and that from the roentgen examination are complementary. The patient is in good general condition, and no characteristic symptoms may be discovered, with the exception that he has clubbed fingers, fetid breath and expectoration of foul smelling mucopurulent matter, the amount of which does not bear any relation to the lesion in the bronchi. The remission of symptoms is frequent. The treatment frequently used is daily postural evacuation of the bronchus. Phrenicotomy, artificial pneumothorax and the bronchoscopic treatment are useless. There are palliative operations. Thoracic drainage through a bronchial stoma, although not followed by recovery, causes a diminution of the pus expectorated and makes the fetor disappear. The technic of the operation is similar to that for the evacuation of abscess of the lung, previously described. The speaker, after reviewing other methods to obliterate the bronchiectatic area, described his own method as follows: A space is formed between the parietal pleura and the ribs, by introducing a gauze packing, which is increased in size during the first few days, and then a caoutchouc ball, until the apex of the lung has been forced back and a space formed the size of a large orange. Thoracoplasty, according to Sauerbruch's method, may be resorted to when one of the lungs is normal. A marked improvement may thus be obtained, and even the clubbed fingers may disappear. Among the radical operations one may resort to is lobectomy, preceded a few days by thoracotomy. The pathologic lobe of the lung should be isolated. Its pedicle is compressed and ligated in several places. The ligatures should be long enough to come out of the posterior angle of the operative wound. Hemostasis should be carefully made. To avoid the formation of putrid empyema and bronchial fistulas, Lilienthal touches, first with gauze and then with iodine tincture, the visceral and parietal pleuras of the normal lobes which limit the one on which lobectomy is going to be performed. Then the thorax is closed. A few days later the exudate which forms after thoracotomy is evacuated and lobectomy may be performed two weeks later. The speaker's statistics include forty resections with twenty-five fatal results (62.5 per cent). In twenty-seven cases the entire lobe or its pathologic portion was resected; death occurred in seventeen cases (63 per cent). In thirteen cases an adjacent lobe was also resected; death occurred in eight cases (60 per cent). Even with the high mortality following lobectomy, it is at present the only operation to which one can resort with reasonable hope.

Dr. Baumgartner of Paris is an advocate of bronchoscopic aspirations, both as a preparation for operation on the suppurative focus and to improve the general conditions of inoperable bronchiectatic patients. The only reliable treatment is that by which the focus is drained and the pathologic tissues are resected. In order to cause the complete disappearance of the focus the speaker advised "progressive pneumectomy," performing the fragmentary excision of pathologic lung tissues in several operations. Typical lobectomy should be reserved for bronchiectasis complicated with suppuration of the lung and also for either suppurative or nonsuppurative bronchiectasis when located in a lobe. The speaker described the technic of pneumectomy. In the first operation, by which he establishes the route of parietal approach to the pathologic area of the lung, he places around the pleura a small bundle of metallic threads which are going to serve as points of reference, to indicate in the following days, by means of the roentgen examination, whether or not the operative opening corresponds to the nearer point to the focus. These threads, after the operation, are held in place by the packing.

Dr. Ascoli of Rome stated that the older the chronic abscesses of the lung are, the more dangerous to operate. The mortality rate is 19 per cent among patients operated on before the sixth month of the evolution of the abscess, while it is 75 per cent among patients who have had the abscess for a long time. In unilobular and in multilobular abscesses, pneumotomy followed by drainage is indicated. In cases of chronic complicated suppurative conditions of the lung, only resection of the lung may be followed by recovery. Typical lobectomy is difficult and has so high a mortality rate that it should be done only in exceptional cases.

Dr. Coquelet of Brussels, in his paper, said that one should not intervene in suppuration of the lung before the fourth or sixth week of its evolution. The second month is the best time to operate. Pneumotomy is advisable when the suppurative focus is superficially located. Resection of the lung should be resorted to in diffused suppurations. The speaker advised the use of the so-called progressive fragmental pneumectomy.

Dr. M. Lagos of Barcelona advised bronchoscopic aspiration followed by intrapulmonary medication by means of intratracheal injections of liquid medicaments through a catheter placed in the main bronchus, according to García Vicente's method; also the extrapleural use of paraffin, which by promoting pleural adhesions makes more accessible the suppurative focus. In bronchiectasis without cavitation, collapse therapy gives good results; when cavitation is already present, one should resort to pneumectomy. One should resort to lobectomy only when dealing with patients in good general health and whose bronchiectatic lesions are restricted to one lobe.

Dr. Sauerbruch of Berlin said that his statistics show that of late operations on abscesses of the lung and on bronchiectasis have shown better results than those performed formerly. The better results are due to the preparation for the operation. He favors the formation of pleural adhesions in cases in which they are not already formed by means of the filling with paraffin. The operation should be performed not later than the fifth week. The speaker obtained recovery after thoracotomy in twelve patients with large central abscesses of the lung, and also in six patients with gangrene of the lung. The author stated that bronchiectasis is congenital in 80 per cent of the cases. His statistics include 623 cases of abscesses of the lung and 300 cases of bronchiectasis.

### New Surgical Society

The Sociedad Española de Cirugía has recently been organized, thanks to the activities of Dr. Goyanes, former director of the Instituto del Cancer. The membership fees are rather high, the money going to publish a journal, the organ of the society. Members must have certain qualifications and attend a minimum number of meetings. This regulation aims to prevent the lack of attendance which has been observed in several medical societies of Madrid, whose members attend the meetings only when they are on the program. Even the presidents of medical societies rarely attend the meetings, thus making it necessary to name a substitute.

### The Blind in Madrid

The civic authorities of Madrid recently gave to blind persons in Madrid 200 white canes, all alike, by means of which blind persons may be distinguished from normal pedestrians and walk with more safety in the streets.

Mr. I. Prieto, the minister of the treasury, obtained the passage of a bill by which blind employees of the treasury, when retiring, are to be pensioned with their entire salary instead of half of it, which is allowed others when retiring from duty.

### Change of Physicians at Public Health Resorts

For more than a century, there has been a body of physicians nominated by the government to supervise the sanitation of the health resorts in the provinces of Spain. Every health resort has had a physician director in charge of the sanitation and of the patients. Those physicians charged a small amount to every patient besides the salary paid to them by the government. Many of the patients who go to the health resorts have not had confidence in the physicians in charge. Perhaps that is one reason why the balnearies have not been attended by the public in the last few years. The minister of the interior has changed these physicians. The physicians in the locality to which the balneary belongs are going to take charge of the patients and of the sanitary problems of the health resorts.

# Deaths

**William Williams Keen** ⊕ President of the American Medical Association, 1900-1901, died, June 7, at his home in Philadelphia at the age of 95. He was the dean of American surgery and his repute was world-wide. Dr. Keen was born in Philadelphia, Jan. 19, 1837. He was graduated by Brown University in 1859 and received his M.D. degree from Jefferson Medical College, Philadelphia, in 1862. Honorary degrees were conferred on him by his Alma Mater, by Northwestern University, University of Toronto, Edinburgh University, Yale, St. Andrews, University of Pennsylvania, Upsala, Harvard and the University of Paris.

Dr. Keen was distinguished as a medical officer, a physician, a citizen and a socially minded man. He served his country in three wars, acting as assistant surgeon of the Fifth Massachusetts Regiment in 1861 and assistant surgeon in the United States Army from 1862 to 1864. In the Spanish-American War he was enrolled as a lieutenant in the medical corps. In the World War he was created major on April 16, 1917, and served until March 18, 1918. He was also during the World War a member of the National Research Council.

William Williams Keen, M.D., 1837-1932

After his service during the Civil War, he took up practice in Philadelphia, conducting the Philadelphia School of Anatomy from 1875 to 1876, at the same time acting as lecturer of pathologic anatomy at Jefferson Medical College. From 1876 to 1889 he was professor of artistic anatomy in the Pennsylvania Academy of Fine Arts, and from 1884 to 1889 professor of surgery in the Women's Medical College. Then he became professor of surgery in Jefferson Medical College, maintaining this position until 1907, when he became professor emeritus.

Dr. Keen was honored by numerous organizations in his specialty throughout the world. He was president of the American Surgical Association in 1899, Vice President of the American Medical Association in the same year, and the next year President. He presided at the International Congress of Surgery in Paris in 1920 and at the Congress of American Physicians and Surgeons in 1903. He had been elected a corresponding member of the Surgical Societies of France, Belgium and Italy, and he was an honorary fellow of the Royal College of Surgeons of England, Edinburgh and Ireland. His contributions to scientific research had gained for him numerous medals and awards, including the Bigelow medal of the Boston Surgical Society, the Colver-Rosenberger medal from Brown University, and the gold medal of the Pennsylvania Society of New York. Moreover, he had been awarded the Order of the Crown of Belgium in 1920 and of the Legion of Honor of France in 1923. From 1873 to the time of his death he was a fellow and trustee of Brown University.

Dr. Keen was a great surgeon and an exceptional surgical teacher. His contributions to the surgery of the brain, the spine and the nerves were recognized as of especial merit. As a surgeon he was physiologically minded. His earliest book was a work on "Reflex Paralysis and Gun-Shot Wounds" by himself and Dr. Morehouse, published in 1864. His other published works follow rapidly, including his "Clinical Charts," published in 1870; "A History of the Philadelphia School of Anatomy," in 1874; "A History of Practical Anatomy," in 1870; "A History of the First Baptist Church of Philadelphia," in 1898; "Surgical Complications and Sequels of Typhoid Fever," in 1898; a collection of "Addresses and Other Papers," in 1905; then came the publication of Keen's "System of Surgery" in eight volumes, which was repeatedly revised and which is still an established reference work i this field.

At this time Dr. Keen became especially interested in the necessity of combating the vicious attacks made by the antivivisectionists on scientific animal experimentation. He waged the battle of scientific medicine in this field almost to the hour of his death. His first series of papers on animal experimentation and medical progress was published in 1914. The Colver lectures at Brown University on human welfare were published in 1917 and his collected papers and addresses in 1922. In the meantime he continued his historical researches, printing a book on Brown University in 1914; "Selected Papers and Addresses," in 1916; "The Surgical Operations on President Cleveland," in 1917, and the book on the "Treatment War Wounds," in 1917. Among his other accomplishmen was the editing of Gray's "Anatomy" in 1887 and of t "American Text-Book of Surgery" in 1892 and 1903.

Dr. Keen was animated always by the highest ideals; h was a man of deep religious feeling. His two contributions to this field were a small book entitled "I Believe in God and Evolution," in 1922, and another entitled "Everlasting Life," published in 1924.

This brief record of the accomplishments of this extraordinary man is but an indication of the breadth of his interests and activities. Although fragile in frame and almost diminutive in stature, his intellect coupled with an extraordinary capacity for hard work brought him well merited leadership. He retired from active practice at the age of 70, saying "No man over 70 has the right to hold human lives in his hands." His gif for epigram and a simple spiritual philosophy of life gave rise to numerous statements, which were quoted both in medical and in lay literature throughout the world. His ambition to reach 100 years of age was thwarted by a failing heart, which incapacitated him and made him practically an invalid during the last three years of his life. Nevertheless he bore his retirement with fortitude and maintained practically to the moment of his death the dryly humorous attitude that made him thousands of friends during his many years. Many a man who achieves fame and who retires from active life the age of 70 is forgotten unt the time when obituaries ar transcribed. Invalid that h was, the world continued to talk of Dr. Keen until the moment of his death, and his contributions to science and to life are likely to maintain his memory for many years to come.

**Gordon Fay Willey** ⊕ Captain, U. S. Army, retired, Bedford Hills, N. Y.; University of Michigan Medical School, Ann Arbor, 1911; member of the Medical Society of the State of Pennsylvania and the American Psychiatric Association; served during the World War; entered the medical corps of the U. S. Army as a first lieutenant in 1917 and was retired for disability in line of duty in 1922; superintendent of the Bedford State Reformatory for Women; formerly superintendent of the Institution for Mentally Defective Women, Albion; aged 47; died, May 23, of self-inflicted gunshot wounds.

**Arthur Hutchins Cilley** ⊕ New York; College of Physicians and Surgeons in the City of New York, 1896; assistant professor of clinical surgery, department of orthopedic surgery, and chief of clinic, Cornell University Medical College; member of the New Hampshire Medical Society and the American Orthopedic Society; fellow of the American College of Surgeons; consulting orthopedic surgeon to the Riverside and Reconstruction hospitals, New York, and the Nassau Hospital, Mineola, N. Y.; aged 61; died, May 31, in the New York Hospital, of pneumonia.

**Charles Albert Fairbanks**, Dover, N. H.; Harvard University Medical School, Boston, 1877; member of the New Hampshire Medical Society; past president and secretary of the Strafford County Medical Society; formerly member and chairman of the school committee; formerly mayor of Dover and member of the state legislature; aged 83; died, April 30, in the Wentworth Hospital.

**George Raymond Narrley**, Keokuk, Iowa; St. Louis College of Physicians and Surgeons, 1909; member of the Iowa State Medical Society and the Associated Anesthetists of the United States and Canada; served during the World War; formerly on the staff of St. Joseph's Hospital; aged 53; died, May 8, at Rochester, Minn.

**Sidney Storrs Hall**, Minneapolis; Harvard University Medical School, Boston, 1867; an affiliate fellow of the American Medical Association; member and for many years treasurer of the State Medical Society of Wisconsin; aged 88; died, May 7, in the Eitel Hospital, of coronary arteriosclerosis and cholecystitis.

**Anthony Huffaker** ⊕ Carson City, Nev.; Cooper Medical College, San Francisco, 1890; past president of the Nevada State Medical Society; for many years on the staff of the Stanford University Hospital, San Francisco; aged 68; died, May 15, of heart disease.

**Edgar A. P. Briney**, Bloomfield, Mo.; Louisville (Ky.) Medical College, 1890; Kentucky School of Medicine, Louisville, 1890; Bellevue Hospital Medical College, New York, 1897; deputy state health commissioner; aged 71; died, April 27, of cerebral hemorrhage.

**Thomas Lenwood Bennett**, Palm Beach, Fla.; Northwestern Ohio Medical College, Toledo, 1889; member of the Associated Anesthetists of the United States and Canada; aged 63; died, May 9, in the Doctors Hospital, New York, of pulmonary embolism.

**James Giles Robinson Stone**, Windsor, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1910; member of the Radiological Society of North America; served during the World War; aged 55; died, April 2, of heart disease.

**James Nelson Harrison**, Salt Lake City; Jefferson Medical College of Philadelphia, 1883; member of the Utah State Medical Association; aged 72; died, March 23, in the Holy Cross Hospital, of carcinoma of the liver and glands of the neck.

**Andrew Jackson Faulk** ⊕ Mitchell, Neb.; Sioux City (Iowa) College of Medicine, 1901; aged 74; died, April 16, in the West Nebraska Methodist Episcopal Hospital, Scottsbluff, of hypertrophy of the prostate and uremia.

**Myron P. Robinson**, Windsor Locks, Conn.; Yale University School of Medicine, New Haven, Conn., 1895; member of the Connecticut State Medical Society; aged 61; died suddenly, May 4, of cerebral hemorrhage.

**John Robert Bruce Glasgow**, Auburn, N. Y.; University of Buffalo (N. Y.) School of Medicine, 1898; member of the Medical Society of the State of New York; aged 58; was found dead in bed, May 4, of heart disease.

**William H. Frazer**, Taylorville, Ill.; St. Louis College of Physicians and Surgeons, 1894; member of the Illinois State Medical Society; aged 72; died, May 6, in St. Vincent's Hospital, of cerebral hemorrhage.

**James Slaughter Steele**, San Antonio, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; member of the State Medical Association of Texas; aged 61; died, April 17, of pyelonephritis.

**Charles Lyman Nichols**, Chicago; Eclectic Medical Institute, Cincinnati, 1895; Rush Medical College, Chicago, 1898; member of the Illinois State Medical Society; aged 59; died, May 22, of angina pectoris.

**James Edward Dolan**, Buffalo; University of Buffalo School of Medicine, 1924; member of the Medical Society of the State of New York; aged 30; died, May 29, of chronic nephritis and hypertension.

**B. Walne Watson**, Pine Apple, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1886; aged 65; was accidentally drowned, May 9, when he fell into a creek.

**George S. Patterson**, Pattersonville, Ohio; Western Reserve University Medical Department, Cleveland, 1893; aged 64; died, May 10, in Lakewood, of carcinoma of the lungs.

**William Francis Dugan**, Campbell, Neb.; Illinois Medical College, Chicago, 1903; Lincoln Medical College of Cotner University, 1904; aged 51; died April 19, of heart disease.

**Michael Uriah Robbins**, New York; Harvard University Medical School, Boston, 1902; on the staff of the Mount Sinai Hospital; aged 56; died, May 5, of morphine poisoning.

**Eduardo M. Castro**, Mexicali, Baja California, Mexico; National University Faculty of Medicine, Mexico City, 1924; aged 34; died, April 8, of a self-inflicted bullet wound.

**Worthington H. Osborne**, Partridge, Kan.; College of Physicians and Surgeons of Kansas City, Mo., 1876; aged 83; died, March 16, at Hutchinson, of arteriosclerosis.

**William Walter French**, Fort Branch, Ind.; University of Virginia Department of Medicine, Charlottesville, 1879; aged 78; died, April 22, of paraplegia and cystitis.

**Raymond Wale Meador**, Irvington, Ky.; Hospital College of Medicine, Louisville, 1903; served during the World War; aged 52; died, April 18, of cerebral hemorrhage.

**Harry B. Garrigues**, Massillon, Ohio; Cleveland University of Medicine and Surgery, 1883; aged 79; died, May 7, as the result of an injury received in a fall.

**Chalmers P. Woodruff**, St. Louis; College of Physicians and Surgeons, Keokuk, Iowa, 1884; Civil War veteran; aged 89; died, May 5, of cerebral hemorrhage.

**John Niess, Jr.**, Carmi, Ill.; St. Louis University School of Medicine, 1907; aged 52; died, May 14, in Belleville, of an overdose of lysol, self-administered.

**William M. Ellis** [illegible] Texas; Vanderbilt University School of [illegible] Tenn., 1890; aged 67; died, May 8, of heart disease.

**Edwin K. Statler**, Jackson, Mo.; Barnes Medical College, St. Louis, 1904; aged 52; died, March 29, in Douglas, Ariz., of tuberculosis of the lungs.

**James Nelson Rose**, Hutchinson, Kan.; Memphis (Tenn.) Hospital Medical College, 1886; aged 75; died, May 18, at the Grace Hospital, of uremia.

**Edward Frederick Menger**, Marietta, Ohio; Medico-Chirurgical College of Philadelphia, 1909; aged 50; died, April 23.

**John William Smoot**, Fulton, Kan.; Rush Medical College, Chicago, 1891; aged 66; died, March 15, of chronic interstitial nephritis.

**Frank J. Dawson**, Piqua, Ohio; Columbus Medical College, 1881; aged 81; died, April 23, of aortic embolism and acute nephritis.

**John Charles Fremont Hutton**, Clermont, Fla.; Medical College of Ohio, Cincinnati, 1888; aged 71; died, April 25, of angina pectoris.

**Joshua P. Beasley**, Waldo, Ark.; Memphis (Tenn.) Hospital Medical College, 1895; aged 70; died, April 28, of cerebral hemorrhage.

**William G. Dietz**, Hazleton, Pa.; Hahnemann Medical College of Philadelphia, 1875; aged 83; died, in April, of pneumonia.

**Walter Post**, Bloomfield, N. J.; New York Homeopathic Medical College, 1899; aged 55; died, April 1, of coronary occlusion.

**Isaac C. Edwards**, Columbus, Ohio; Starling Medical College, Columbus, 1882; aged 78; died, May 17, of bronchial asthma.

**Willis R. Littell** ⊕ Cambridge City, Ind.; Medical College of Ohio, Cincinnati, 1894; aged 71; died, May 23, of heart disease.

**Monroe Porter**, Flint, Mich. (licensed, Michigan, 1900); aged 82; died, March 4, of bronchopneumonia.

## Marriages

Delbert T. Saffer, Aldie, Va., to Miss Martha Garnett Gresham of Newport News, at Leesburg, May 15.

George Russell Maloney to Miss Emilie Littlepage Simmons, both of Richmond, Va., May 16.

Lindley V. Sprague, Madison, Wis., to Miss Virginia Clement of Glen Ellyn, Ill., May 8.

Herbert G. Pfeiffer to Miss Alma Ressmann, both of Fredericksburg, Texas, May 14.

Vincent Farmer to Miss Augustine Lynch, both of Hackensack, N. J., May 21.

## *Bureau of Investigation*

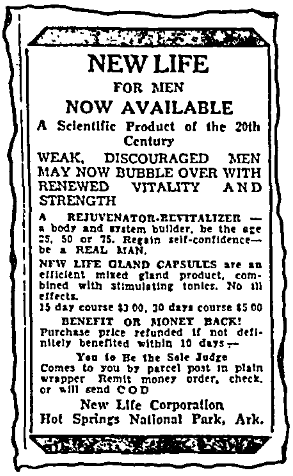
### NEW LIFE CORPORATION FRAUD

### T. J. Collier of Hot Springs, Ark., Debarred from the Mails

The New Life Corporation of Hot Springs, Ark., sometimes called New Life, Inc., sold an alleged sexual rejuvenating nostrum known as "New Life Gland Capsules." After investigation by the postal authorities, the business was declared fraudulent and denied the use of the mails.

According to a memorandum submitted to the Postmaster General by the Hon. Horace J. Donnelly, Solicitor for the Post Office Department, the New Life Corporation had for its president one Thomas J. Collier, for its vice-president Thomas J. Collier, Jr., and for its secretary and treasurer Mrs. Gossett Greer, the latter two persons being the son and daughter, respectively, of Thomas J. Collier. All of the stock was owned by Collier, Sr., except two shares held by his son and daughter.

The business consisted in the sale through the mails of New Life Gland Capsules, which were advertised under representations that, when used as directed and regardless of the age of the user or the cause of his condition, would quickly and permanently cure impotency and waning sexual power. It was also represented as being absolutely harmless and especially beneficial to sufferers from prostate gland trouble.



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Purchase price refunded if not definitely benefited within 10 days—

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*To the Editor:*—What is the relative danger of using strophanthus and digitalis? Is it as dangerous as textbooks would lead one to think? Most textbooks say it should not be repeated more than once in twenty-four hours and should be used with extreme caution if digitalis has been recently given. Solis-Cohen's Pharmacology recommends that, when digitalis is used for an extended period, it be tapered off and on with strophanthus. If a patient was seen with an acute heart failure and strophanthus was given once and still more medication should be needed, can you give me some idea as to the amount of digitalis that might be used with safety, provided, for example, it would take 20 cc. of digitalis to digitalize the patient? Kindly cite any literature.

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## SUBACUTE BACTERIAL ENDOCARDITIS

*To the Editor:*—A woman, aged 20, who had had articular rheumatism, chronic heart disease with valvular lesions and enlargement of the myocardium, contracted influenza about two months ago. The acute conditions subsided in three weeks, followed, after a short period, by a remittent fever, from 99 to 104 F. While the patient was rapidly losing weight, her skin assumed a café au lait hue, with rare punctiform petechiae on the skin and mucous membranes. In an institution, a diagnosis was made of subacute bacteremia; three consecutive blood cultures were found positive for Streptococcus viridans. The patient has been treated with parenteral blood injections, sodium salicylate, 4 Gm., in starchy enemas, digitalis, and codeine, with slight advantage. No use has been made of transfusion, bacteriophage vaccine or streptococcus serum because they have not been deemed of advantage. Is there any other treatment which could make the prognosis less fatal in this case? Is there any percentage of recovery? Kindly omit name.

M.D., New York.

ANSWER.—From the description of the case, of a woman of 20 with a history of rheumatic heart disease with a remittent fever for a month or more, associated with pallor, petechiae, and blood cultures positive for Streptococcus viridans, it would appear extremely likely, if not certain, that the patient is suffering from a subacute bacterial endocarditis. There are a few additional points that one would look for to amplify the diagnosis, such as hematuria, other embolic phenomena, enlargement of the spleen, and Osler nodes, but even without these, the diagnosis seems definitely established. Assuming that this is so this disease is well nigh uniformly fatal in spite of any and all treatment, although countless procedures have been recommended and tried. There have been a few cases observed by competent trained clinicians in which recovery has occurred, or at least remissions for a considerable period, going into years, but even in such instances these remissions or recovery are usually spontaneous in character and not, so far as current knowledge goes, due to any specific type of treatment.

# *Bureau of Investigation*

## NEW LIFE CORPORATION FRAUD

### T. J. Collier of Hot Springs, Ark., Debarred from the Mails

The New Life Corporation of Hot Springs, Ark., sometimes called New Life, Inc., sold an alleged sexual rejuvenating nostrum known as "New Life Gland Capsules." After investigation by the postal authorities, the business was declared fraudulent and denied the use of the mails.

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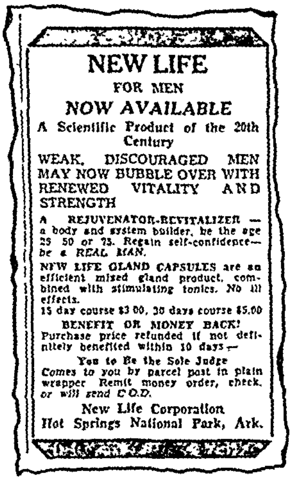

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A study of the intravenous injection of ouabain in man is reported in a paper by Wyckoff and Goldring (*Arch. Int. Med.* **39:**448 [April] 1927). They give references to the literature.

## SUBACUTE BACTERIAL ENDOCARDITIS

*To the Editor:*—A woman, aged 20, who had had articular rheumatism, chronic heart disease with valvular lesions and enlargement of the myocardium, contracted influenza about two months ago. The acute conditions subsided in three weeks, followed, after a short period, by a remittent fever, from 99 to 104 F. While the patient was rapidly losing weight, her skin assumed a café au lait hue, with rare punctiform petechiae on the skin and mucous membranes. In an institution, a diagnosis was made of subacute bacteremia; three consecutive blood cultures were found positive for Streptococcus viridans. The patient has been treated with parenteral blood injections, sodium salicylate, 4 Gm., in starchy enemas, digitalis, and codeine, with slight advantage. No use has been made of transfusion, bacteriophage vaccine or streptococcus serum because they have not been deemed of advantage. Is there any other treatment which could make the prognosis less fatal in this case? Is there any percentage of recovery? Kindly omit name.

M.D., New York.

ANSWER.—From the description of the case, of a woman of 20 with a history of rheumatic heart disease with a remittent fever for a month or more, associated with pallor, petechiae, and blood cultures positive for Streptococcus viridans, it would appear extremely likely, if not certain, that the patient is suffering from a subacute bacterial endocarditis. There are a few additional points that one would look for to amplify the diagnosis, such as hematuria, other embolic phenomena, enlargement of the spleen, and Osler nodes, but even without these, the diagnosis seems definitely established. Assuming that this is so this disease is well nigh uniformly fatal in spite of any and all treatment, although countless procedures have been recommended and tried. There have been a few cases observed by competent trained clinicians in which recovery has occurred, or at least remissions for a considerable period, going into years, but even in such instances these remissions or recovery are usually spontaneous in character and not, so far as current knowledge goes, due to any specific type of treatment.

## PERSISTENT SINUS FOLLOWING DRAINAGE OF EMPYEMA

*To the Editor:*—One year ago I did first a closed and then later an open operation for empyema, which was caused, our hospital pathologist said, from gangrene of the lung. He based his diagnosis on the character of the aspirated fluid. The patient had a stormy convalescence but finally made a good recovery and has taken on considerable weight. He still has a sinus in the left posterior axillary region extending upward from about the tenth rib for 5 inches. Repeated roentgen examinations have failed to disclose any bronchial fistula, and injection of the sinus with iodized oil before roentgenography does not reveal any communicating sinuses, and there is no infection of the ends of the excised rib. This sinus is about the size of a number 22 French catheter and has so far resisted all efforts looking toward its closure. Lately it has been dressed every four days and each time a clean drainage tube about 3½ inches long inserted. It has been irrigated with iodine solution, permanganate solution, saline solution and surgical solution of chlorinated soda, and lately following the irrigation I have been injecting the sinus through the drainage tube with bismuth paste. I have also used at different times 1 per cent and stronger silver nitrate solution. The man is now in excellent health and for the past six months has been doing his full quota of work in an admistrative position. What have you to suggest looking toward the closure of this sinus other than the radical operation? Please omit name.

M.D., Wisconsin.

Answer.—The common causes of a persistent sinus following drainage in empyema are bronchial fistula, osteomyelitis of resected rib stumps, and a foreign body, such as a sequestrum from a rib stump. The failure to demonstrate a fistula by the roentgenogram following injection of contrast mediums does not exclude the possibility of a small sinus capable of keeping up enough infection to prevent healing. The history of a severe pulmonary infection at the onset of the illness is consistent with the development of a bronchial fistula.

Since the fistula has failed to heal following the use of conservative measures, a radical operation involving the unroofing of the sinus from its source to the outlet is indicated.

## TOXIC EFFECTS OF ARSPHENAMINES

*To the Editor:*—I have read with the greatest interest an excellent paper on the toxic effects of the arsphenamines and wish to congratulate the author on the efficient manner in which he has dealt with this difficult problem. I would like to ask, however, whether any of the six deaths of hemorrhagic encephalitis recorded among 78,350 injections have occurred immediately after or not later than half an hour after the injection. A case, which I have heard about recently, occurred one and one-half hours later, but no autopsy could be performed by the physician. It would be rather difficult to explain it by a nitritoid crisis and vascular shock. As far as I know, no pathologic changes had been found before the injection (urine, temperature) and the dose of 0.3 Gm. had been well tolerated before.

C. M. Hasselmann, M.D., Manila, P. I.

Answer.—It is difficult to answer this question, because of insufficient data concerning the stage of the disease, the type of syphilitic involvement, and the number of doses of arsenicals already given. The history of a sudden death sounds rather suggestive of a hemorrhagic encephalitis, however. Ordinarily these cases come early in the course of the treatment of syphilis. The usual picture is that of a fresh syphilis in which the patient has been given two or three or more injections of the arsenicals. Following the last dose, within a period of twenty-four to thirty-six hours, the patient is taken with symptoms of headache, dizziness and vomiting. The picture quickly goes on to that of unconsciousness, stiffness of the neck, and even opisthotonos. If a lumbar puncture is done, the fluid is found to be under high pressure and there may be an increased cell count. As a rule, death ensues within forty-eight to seventy-two hours.

## PHOSPHATURIA IN DIABETIC PATIENT

*To the Editor:*—1. Is "phosphatic diabetes" generally admitted to be a type of diabetes? If so, what treatment is recommended for the phosphaturia? 2. In arranging a diet for a diabetic patient is there a decided advantage in distributing the carbohydrate allowance beyond three or four meals daily?

H. S. Smythe, M.D., Bristol, Tenn.

Answer.—1. Phosphaturia is a common enough condition and is usually of no particular significance. It is thought that there is a relation between phosphaturia and the activity of the nervous system. The term "phosphatic diabetes" is used for a comparatively rare illness the symptoms of which are polyuria, thirst, emaciation, and a great increase in the excretion of phosphates, which rise to as much as from 7 to 9 Gm. a day. Not much is known about the latter condition. The treatment for phosphaturia is a combination of measures directed toward stabilization of the nervous system and correction of dietary errors. A plentiful supply of water should be used.

2. In arranging a diet for a diabetic patient the distribution of the carbohydrate allowance is best determined by a fractional analysis of the urine. It is well known that diabetic patients do not all behave in the same manner regarding the sugar output. In one patient the main excretion of sugar will be early in the morning and in another patient it will be late in the day. Activity and exercise apparently help some diabetic patients to utilize sugar. On the other hand, rest has the same effect on others. It is obvious that the distribution of the carbohydrate is a matter for individual determination.

## HIGH DIASTOLIC-LOW PULSE PRESSURE

*To the Editor:*—Will you kindly give me the latest information on treatment and the interpretation of a high diastolic and a low pulse pressure. I am greatly concerned over my own pressure, which registers constantly systolic from 135 to 150 and diastolic from 110 to 122. The pulse pressure ranges from 25 to 28 and the pulse rate from 80 to 95. Please omit name.

M.D., Texas.

Answer.—The interpretation of the high diastolic-low puls pressure requires further study. More data are needed, particularly along the lines of kidney function, age of patient and habits. A persistent diastolic pressure between 110 and 122 is likely to indicate some disturbance of renal function. Usually this disturbance indicates a disease of the renal-vascular system. Information on treatment is not advisable until the additional data are determined.

## ORTHODONTIA

*To the Editor:*—I have under my observation a girl, now 14 years of age, who has worn orthodontia appliances for a period of two years under the rigid supervision of an expert in that field, and the result obtained, so far as the alinement of the teeth is concerned, is excellent and all that one might expect. Is it possible for this treatment to cause an arrested growth of the mandible, causing the facial appearance of a retreating chin? This condition is now present; it was not in earlier life, nor is it a family characteristic. Kindly omit name.

M.D., Utah.

Answer.—In the development of malocclusions it often pens that between the ages of 8 and 14 the mandible fails develop in proportion to the maxilla, probably because improper function and improper distribution of mechani forces through occlusion. In many of these cases the alinem of the teeth in the separate arches is quite perfect. The co ditions described are not uncommon in the development of t malocclusion, but probably they could not be produced as t result of treatment. If the treatment is related to the condi tion, it is because the developing malocclusion has not bee corrected. In general, orthodontic treatment stimulates growth and in most orthodontic cases the condition to be overcome is one of underdevelopment. It sometimes happens that overdevelopment of the maxilla as a result of treatment gives the appearance of underdevelopment to a normal mandible. The first important consideration to be noted in such a case is the occlusal relation of the teeth, including the relation of their long axes.

## IMMUNIZATION TO DIPHTHERIA

*To the Editor:*—A graduate nurse, aged 22, had one course of toxin-antitoxin in 1922, a second course in 1930, and one course (four doses of toxoid) in 1931-1932 (completed, Jan. 6, 1932). Schick tests after each of these courses were markedly positive. The last Schick test was made, April 1, 1932. Can you suggest any method of immunization in this case?

H. O. Pope, M.D., Latham, Ill.

Answer.—If a retest remains positive, further immunizat with diphtheria toxoid should be carried out, beginning w 0.1 cc. of toxoid and increasing the doses at weekly interv as follows: second dose, 0.25 cc.; third dose, 0.5 cc.; four dose, 1 cc.; fifth dose, 1.5 cc. The retest might then be ma two weeks after the fifth dose.

## CHONDRODYSTROPHIA FETALIS, OR ACHONDROPLASIA

*To the Editor:*—For the satisfaction of a mother who is heart broken over a child of which I delivered her with the condition known as chondrodystrophy or achondroplasia, I should like you to let me know whether or not any means of therapy has been successful.

M.D., Toronto.

Answer.—There is a definite glandular type of chondrodystrophy or achondroplasia, but no one has proved whether the relationship is one of cause and effect or coincidence. There is no harm in well regulated glandular therapy in this condition. The subject is fully discussed in an article by Philip Lewin and Edward L. Jenkinson in the *American Journal of Roentgenology and Radium Therapy* **11**:155 (Feb.) 1924. That article also provides a bibliography.

### RAYNAUD'S DISEASE

*To the Editor:*—On exposure to cold the fingers of a woman, aged 23, single, and otherwise in good physical condition, become white and numb; the area of discoloration involves the two distal phalanges of the fingers of each hand. This trouble began about two years ago in the right hand but now has involved both hands, and of late posture, that is, holding the hand aloft, as when reading a paper, produces the same phenomena. Blood examination, the Kahn test and urinalyses are all negative. The blood pressure is 100 systolic and 60 diastolic; the pulse is 70; the basal metabolic rate is 0 per cent. Chemical examination of the blood revealed creatinine, 1.8 mg.; urea nitrogen, 15.4 mg.; urea, 32.7 mg. A roentgenogram of the chest did not reveal any pathologic changes. I would appreciate any suggestions that you might have for the treatment or advice in regard to further investigation as to the diagnosis. I have thought of a possibility of an early stage of Raynaud's disease.

Richard K. Collins, M.D., Aurora, Ill.

Answer.—The clinical picture in this case is that of early Raynaud's disease. There is no satisfactory medical treatment although many patients are benefited by a change of climate especially if they can be transferred from a section of the country in which the weather is cold and damp to a section where the air is warm and dry. The more advanced cases of Raynaud's disease are being successfully treated by the surgical removal of sympathetic ganglions. In the early cases in which there is a great deal of discomfort and partial disability the operation should be considered.

### EXCESSIVE DRYNESS OF SKIN

*To the Editor:*—A white man, aged 29, a decided blond, weighing 165 pounds (75 Kg.) and 5 feet 11½ inches (180 cm.) in height, apparently in good health, complains of excessive dryness of the skin. He states that this condition has existed for several years. Once or twice during a year the outer layers of the skin of the hands and feet "peel off" in small areas. His hair is exceedingly dry. During the summer months he has profuse perspiration of the feet, hands and face and practically no perspiration of the rest of his body. Physical examination reveals no abnormalities other than confirmation of the symptoms described. A high fat content diet apparently has no beneficial effects. I would appreciate any information as to etiology and treatment. Please omit name.

M.D., Kentucky.

Answer.—Excessive dryness of the skin may be hereditary or acquired. If hereditary, it may represent a first degree ichthyosis or xeroderma. Treatment for this condition is purely palliative. Inunctions with oil of theobroma (cacao butter) or any bland fat may be prescribed. An acquired dryness of the skin and hair may be of hypothyroid origin. A basal metabolism test would give valuable information on this point. If the reading is low, small doses of thyroid would be indicated.

### OPTIC ATROPHY AFTER TRYPARSAMIDE

*To the Editor:*—A man, aged 54, who has had syphilis since he was 17 years old, came to me complaining about total blindness. Six months previously he had a siege of severe shooting pains in his legs; a local physician administered tryparsamide intravenously, 2 Gm. once a week for six weeks. The patient complained after the second injection that his eyes grew dim. He claimed that his vision was good with the use of glasses. After the sixth injection he discovered that he could not see with his right eye, so he discontinued the treatment. The pain gradually disappeared, and at the same time the left eye became dimmer and dimmer, until he became totally blind. There has been no history of pain in the eyes. Ophthalmoscopic examination shows pallor of the disk, with an apparently normal fundus in the left eye. The right eye shows a moderate degree of atrophy of the optic nerve, with a normal fundus. The left eye is able to recognize light. Is there any antidote for tryparsamide? Any treatment you can recommend for this patient will be gratefully received. Please omit name.

M.D., California.

Answer.—Unfortunately, there is nothing known to ophthalmologic science that can restore vision in optic atrophy. The destructive effects of the tryparsamide persist long after the drug has been completely eliminated from the body, and consequently eliminative treatment would be useless.

### BRUSHLESS SHAVING CREAMS

*To the Editor:*—Please advise through The Journal as to the safety of the brushless shaving creams now on the market. I refer particularly to Barbasol, Barmami and similar types of soaps. Will the continuous use of these have any serious effect on the nervous system or skin? Please omit name.

M.D., Utah.

Answer.—Brushless shaving creams as a type are essentially mixtures of potassium stearate soap, unsaponified stearic acid, glycerin and water. From 25 to 50 per cent of the stearic acid is saponified, the other 75 to 50 per cent being free. In the formation of the soap there is a certain amount of glycerin liberated. The stearic acid is slightly irritating and occasionally it is found that these soaps irritate the skin, but as a rule they do no harm.

# Council on Medical Education and Hospitals

## COMING EXAMINATIONS

Alabama: Montgomery, July 11. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

Arizona: Phoenix, July 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave., Phoenix.

California: San Francisco, July 11-14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

Colorado: Denver, July 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

Connecticut: *Regular.* Hartford, July 12-13. *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

District of Columbia: *Basic Science.* Washington, June 29-30. *Regular.* Washington, July 11-12. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

Hawaii: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Room 48 Young Bldg., Honolulu.

Illinois: Chicago, June 28-July 1. Supt., Mr. Paul B. Johnson, Springfield.

Maine: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

Massachusetts: Boston, July 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

Mississippi: Jackson, June 28-29. Asst. Sec., Dr. R. N. Whitfield, Jackson.

National Board of Medical Examiners: Examinations in Parts I and II will be held at all centers where there are five or more candidates, but not at Durham, Minneapolis, nor New Haven, June 27-29. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

New York: Albany, Buffalo, New York, Syracuse, June 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 State Education Bldg., Albany.

North Dakota: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

Oregon: Portland, July 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

Pennsylvania: Philadelphia and Pittsburgh, July 5-9. Sec., Mr. Charles D. Koch, Dept. of Public Instruction, Harrisburg.

Rhode Island: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

South Carolina: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

South Dakota: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

Utah: Salt Lake City, July 6-8. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

Washington: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

West Virginia: Harpers Ferry, July 12. Sec., Dr. W. T. Henshaw, State Health Dept., Charleston.

Wisconsin: Milwaukee, June 28-30. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

## Arizona April Report

Dr. B. M. Berger, secretary, Arizona Board of Medical Examiners, reports the written examination held at Phoenix, April 5-6, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, all of whom passed. Five physicians were licensed by reciprocity with other states. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Arkansas School of Medicine | | (1928) | 83.1 |
| Rush Medical College | | (1931)* | 82.6 |
| University of Louisville School of Medicine | | (1928) | 81.4 |
| Tulane University of Louisiana School of Medicine | | (1928) | 91.7 |
| Osteopaths | | | 75, 79.5 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| [illegible] | | (1898) | Arkansas |
| [illegible] | | (1907) | Ohio |
| hiladelphia | | (1908) | Utah |
| ool of Medicine | | (1920) | Penna. |
| Department | | (1905) | Tennessee |

* This applicant has completed his medical course and will receive his M.D. degree and license on completion of an internship.

## New Mexico April Report

Dr. P. G. Cornish, Jr., secretary, New Mexico Board of Medical Examiners, reports the written examination held at Santa Fe, April 11-12, 1932. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of to be capable of satisfactorily replacing the galenic preparation of ergot for clinical use, because with them the range between effective and harmful doses is too small. On the other hand, ergotamine promises to be clinically useful as a depressant of the sympathetic nervous system, in conditions such as hyperthyroidism. The book closes with a chapter on the galenic preparations of ergot, with their preservation, pharmaceutic assaying and forensic detection, and a bibliography of forty-three pages.

**Le soufre en biologie et en thérapeutique.** Par M. Loeper, professeur à la Faculté de médecine de Paris, et L. Bory. Paper. Price, 65 francs. Pp. 341, with 41 illustrations. Paris: G. Doin & Cie, 1932.

This is an admirable presentation of the rôle of sulphur in medicine, including veterinary practice and homeopathy. The subject matter is divided into four parts, with an appendix on technic. The first part, on the biology of sulphur, is subdivided into chapters on the elementary physicochemistry, the metabolism of sulphur, its rôle in the composition of the lipoids, albumins and pigments, and the excretion of sulphur through the biliary, urinary, pulmonary and other channels. Following these is an interesting chapter on the assimilation of the element, with especial reference to the principal organs acting as depots. The final chapter in the biologic section gives a short but clear outline of the rôle of sulphur in disease, discussing pneumonia, typhoid, tuberculosis, cancer and diabetes. The second part is concerned with therapy. Under various subdivisions, the forms of the drug, its toxicity, the pharmacology, both organic and inorganic, modes of application, methods of preparation, and diseases amenable to sulphur therapy are discussed in a conservative and practical way. A special section is devoted to the location of the most famous sulphur springs and the methods used at each of them. The importance of sulphur in vegetable biology, its occurrence in soil and water and its uses in fertilizing mixtures are also given consideration. The closing sections on therapy present the indications for the use of sulphur. Its application in articular and respiratory disease, dermatology and syphilis, general infections, nutritional disturbances, gynecology, urology, and homeopathic and veterinary medicine, are discussed in turn. The formulary includes most of the best known combinations, with specific directions for compounding. Under technic, the most recent and practical methods for the demonstration of sulphur in the urine and blood are described. The book presents a thorough and yet conservative evaluation of the place of sulphur in modern therapy. It may be recommended to the general practitioner, the research worker and particularly the dermatologist.

**A Diabetic's Own Cook Book.** By Stella H. Lyons. With a foreword by Logan Clendening. Cloth. Price, $2. Pp. 94. New York: Alfred A. Knopf, 1932.

As book after book is added to the already comprehensive library of literature on diabetes, the evaluation of additional volumes becomes steadily more difficult and necessitates discriminating criticism. Additional volumes should at least justify their publication either by a unique presentation of old material or by the introduction of new material of clinical or pathologic value. The author of the present volume has purposely limited her audience to fellow diabetics and has succeeded in producing a workable guide to assist them in cooking and planning balanced meals of limited carbohydrate content. She has increased the value of her cook book by the introduction of three autobiographic chapters written in semiserious, optimistic style, free from technical phrases. By this personal history she is able to warn against the inevitable consequences of "cheating" in the diet and to suggest some practical daily precautions that have benefited her. These confessions are apt to carry more weight than the warnings of physicians. The remaining chapters carry out the real mission of the book as stated by the author, "to remove that bugaboo, scales, for the layman who has not the time to study and transcribe measurements" and "to give a few rules and recipes," which are the product of years of experimentation in her own kitchen. Some of the most useful features of the book include directions for home canning of fruits and vegetables, transcription of gram and ounce measurements into the more familiar but equally accurate teaspoons, tablespoons and cups, and of course many appetizing recipes with food values computed. The general format of the book is inviting and avoids all semblance to a medical textbook. This volume will prove helpful to diabetic patients as a practical guide to daily dietary planning and as a supplement to any of the standard manuals of diabetes.

**L'ostéose parathyroïdienne et les ostéopathies chroniques.** Par J.-A. Lièvre, médecin assistant à l'Hôpital Trousseau. Paper. Price, 60 francs. Pp. 389, with 30 illustrations. Paris: Masson & Cie, 1932.

Lièvre summarize eighteen reported cases of parathyroid adenomectomy. Two of these were personal observations; in addition, a necropsy of one of his cases in which operation was refused is described in detail. These cases are used to describe definitively the syndrome due to parathyroid adenomas or overactivity. Necropsies of various bone diseases are reviewed with respect especially to the bones and parathyroids. From this critical review he brings out clearly what is the rôle of the parathyroid in bone diseases and what bone disorders are probably not related to parathyroid disease. Details of the pathologic anatomy and roentgenologic pictures of the bones are given. The chemical make-up of the blood is discussed as well as the balance studies on calcium metabolism. A valuable bibliography is appended. The book will prove especially useful to those interested in bone diseases, parathyroid diseases or disturbances in calcium metabolism.

**Research Work on the Pneumococci and Their Enzymes and Its Significance in Lobar Pneumonia.** By A. Cowan Guthrie, M.B. Cloth. Price, 7/6. Pp. 60, with 13 illustrations. London: Baillière, Tindall & Cox, 1932.

A careful reading of this volume indicates that it is hardly worthy of extended consideration in a scientific publication.

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# Medicolegal

## Pedicle of Ovarian Tumor Twisted by Accident

*(Winthrop v. State Industrial Commission (Calif.), 2 P. (2d) 142)*

The claimant, an employee in a shoe store, stood on a stool to reach merchandise on a shelf. The stool tipped and she fell backward to the floor. The date of the accident she fixed as Jan. 13 or 14, 1930, although she was not certain. The date apparently made no clear impression on her mind because she did not at first attribute her disability to the accident and made no immediate demand on her employer for compensation or for medical treatment. Her employer claimed that the accident occurred between January 2 and 5, but the employee was certain that it could not have occurred as early as January 2. At the time of her fall she was dazed, but she continued to work until January 18. Then she had to stop. It was not until January 25, however, that she summoned her personal physician. On January 27 she was taken to a hospital, suffering from intense abdominal pain, fever and delirium. On January 31 she was operated on, and a large ovarian tumor and her left ovary were removed. The tumor was attached by a pedicle, which had become twisted in two places, cutting off the blood supply to the tumor and causing a gangrenous condition. The employee later claimed compensation under the workmen's compensation act, which the industrial accident commission refused to grant. The claimant thereupon took the case by certiorari to the Supreme Court of California.

The uncontradicted evidence, said the Supreme Court, shows that symptoms of which the claimant was free at the time of her accident began to develop almost immediately thereafter and became increasingly acute until an operation was performed. Those experts who observed the claimant's symptoms within a short time after the fall were of the opinion that the fall caused them. The experts who held to a contrary view did not see her until after the operation and they based their opinions largely on the premise that the preoperative symptoms did not appear sufficiently soon after the accident to indicate that they had any connection with it. The medical experts all recognized, expressly or impliedly, that a fall may cause the twisting of the pedicle of a tumor. While neither the cause of the twisting of the pedicle nor the time when it occurred was susceptible of exact demonstration, the physicians who attended the claimant and personally observed the position and condition of the tumor and contiguous organs and tissues were in a better position to judge the length of time the condition had been in developing than were those whose calculations were based only on related facts. The claimant's failure to attribute her severe pain to the accident does not prevent her recovering compensation, if the accident was the origin or the accelerating cause of her disability. She had suffered previous attacks of abdominal pain, but she was unaware that she had a tumor. A recurrence of her abdominal pain may have indicated to her a return of her previous complaint rather than a changed pathologic condition resulting from her accident. An employee is not to be deprived of compensation because she fails to make a correct medical diagnosis.

The order of the industrial accident commission denying compensation to the claimant was reversed, four of the justices concurring. The chief justice and two associate justices dissented, holding that under the circumstances of the case the finding of the industrial accident commission was a finding of fact, supported by adequate evidence, which could not properly be disturbed by the court.

### Liability for Not Completing Operation

*(Britton v. Hartshorn (Conn.), 156 Atl. 48)*

The plaintiff, on advice of her physician, entered a hospital at Derby, to be operated on by the defendant, for the removal of a uterine tumor. The tumor filled the entire abdomen. The preoperative examination indicated that it was probably cystic or fibrocystic. The defendant, according to his evidence in the suit that followed, told the plaintiff that if he found the growth too involved to permit its removal without danger to life, no extensive operation would be performed, to which the plaintiff assented. On making the preliminary incision, the defendant found an entirely fibrous tumor, fed by numerous large blood vessels, firmly adherent to various organs and to the body wall, and securely lodged in the pelvis. After conferring with his associates who were assisting him, he concluded that to undertake to remove the tumor with the resources then at hand would endanger the plaintiff's life; that it was better that it should be removed later at the New Haven General Hospital, where he usually operated, where he had trained assistants who were accustomed to his technic, where donors were immediately available if transfusion of blood became necessary, and where numerous surgeons were available as assistants in the operating room in case of an emergency. He therefore closed the incision, and the plaintiff, according to the evidence of the defendant, made a rapid and uneventful recovery. When she had recovered from the anesthetic she was advised by the defendant to enter the New Haven Hospital to have the operation performed. This, however, she did not do, but after eighteen months' medical treatment by other physicians she was successfully operated on elsewhere, by another physician.

The plaintiff was dissatisfied because of the failure of the defendant to remove the tumor at the operation in the hospital at Derby. She alleged that because of that operation she had suffered from phlebitis and shock and had incurred expense in obtaining a cure. She contended that at no time was anything said to her about the operation being an exploratory operation for the purpose of ascertaining the kind of tumor or its size or extent, or about any operation other than an operation to remove it, and that it was to an operation for the removal of the tumor that she consented. She therefore sued to recover damages. The case was tried by a jury. The defendant offered expert opinion evidence that he had used due care and skill in his operation and in his treatment and care of the plaintiff and had used excellent judgment in refusing to continue the operation under the circumstances under which it was being performed. Verdict and judgment were given for the defendant. The plaintiff thereupon appealed to the Supreme Court of Errors of Connecticut.

The trial court instructed the jury that:

> Negligence and unskilfulness are not presumed; they must be proved. In the absence of evidence to the contrary, the law will presume from the physician's right to exercise his profession that he has not violated his duty to exercise it with the requisite care and skill.

The court had previously told the jury that the plaintiff had to prove the essential controverted facts alleged in her complaint and later it charged the jury that she had to prove by the preponderance of evidence the occurrence of the acts or omissions necessary to show that ordinary skill had not in fact been exercised. To the instruction quoted, the plaintiff took exception. In an action by a physician for compensation for his service, said the Supreme Court, the burden of proof so far as relates to his carefulness and skilfulness is satisfied by the theory of law, which from evidence of the right of a physician to practice his profession presumes that he has not violated his duty to practice it with the requisite care and skill, and a defendant in such a case, who contends that his physician did not exercise such care and skill, must prove by a preponderance of evidence the acts or omissions constituting the alleged violation of the physician's duty. The same principle, in essence, is applicable in a malpractice case and requires the plaintiff to introduce evidence to support his allegations of want of care or skill, before the defendant is called on to produce evidence on that issue. The burden is on the plaintiff ultimately to establish want of care or skill, by a preponderance of evidence. The instruction given by the trial court could not well have been understood otherwise than as stating the rule, supported by overwhelming authority, that if the plaintiff introduces no evidence of lack of proper care and skill, the defendant is entitled to prevail on that issue without producing evidence to support it, because of the implications that arise from his right to practice his profession.

It was proper, said the Supreme Court, for the trial court to instruct the jury that the fact that the result of an operation was not as favorable as hoped for by the patient or by the physician raises no presumption of want of proper care and skill. Likewise was proper the supplementary comment by the court that medical and surgical science has not been so perfected "that a complete cure can be assured."

In undertaking to clarify to the jury the terms of the contract between the plaintiff and the defendant, the trial court stated what the defendant claimed: "that the contract was to treat the plaintiff's ailment with proper care and skill, and in no event would he endanger her life, and that when, during the course of the operation, it became apparent to him that to complete it under the then existing circumstances might endanger her life, he complied with his agreement by taking no further steps to remove the tumor." And the trial court then charged the jury:

> If you find this to have been the agreement of the parties, and that the defendant did not remove the tumor for the reason that to have done so would have endangered the plaintiff's life, and that his conduct was in accord with the standard of due care and skill previously given you, then the contract would not have been breached.

The plaintiff, however, took exception to this instruction, apparently because it did not take into account her claim that with proper care and skill the defendant could have determined before commencing the operation whether the tumor could safely be removed at that time and place, and her claim that, having undertaken the operation, it was his duty to proceed with it to completion, by removing the tumor. Here, said the Supreme Court, the trial court was considering the defendant's claim as to the terms of his agreement with the plaintiff. The plaintiff's claims as to those terms were adequately covered in other parts of the court's charge.

To a hypothetical question propounded to an expert witness, to obtain his opinion as to whether there was lack of skill or care on the part of the defendant, the plaintiff objected that the hypothetical question related to the ultimate issue of negligence or unskilfulness, which was a matter to be determined by the jury. This objection, however, said the Supreme Court, was invalid as applied to a case of this kind. In such a case, opinion evidence on the main issue of professional care and skill, "being a topic requiring special experience of an expert," is not only permitted, but required, to be produced by the plaintiff. To controvert such opinion evidence, the defendant may introduce similar evidence. It remains the province of the jury to consider and weigh conflicting opinions and to determine from them whether proper professional skill and care were exercised.

The Supreme Court of Errors found no error in the case and the verdict and judgment in favor of the defendant therefore stood.

# *Society Proceedings*

## COMING MEETINGS

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.
Medical Library Association, San Francisco, June 20-22. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.
Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.
Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.
South Dakota State Medical Association, Watertown, June 20-22. Dr. John F. D. Cook, Langford, Secretary.
Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.
West Virginia State Medical Association, Parkersburg, June 21-23. Mr. J. W. Savage, Professional Building, Charleston, Executive Secretary.
Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

## MEDICAL ASSOCIATION OF GEORGIA

*Eighty-Third Annual Session, held at Savannah, Ga., May 17-20, 1932*

The President, Dr. Arthur G. Fort, Atlanta, Ga., in the Chair

### Tuberculosis of the Kidney

Dr. Wallace L. Bazemore, Macon, Ga.: Eleven urologists in Georgia report to me that they have made a definite diagnosis in sixty-eight cases of renal tuberculosis in the past five to ten years. The diagnosis of urinary tuberculosis depends on finding the organism in the urine. When better laboratory facilities become available, more cases will be diagnosed. With the continued efforts of the profession to eradicate pulmonary tuberculosis, fewer and fewer renal infections will be seen. The removal of a tuberculous kidney or a tuberculous epididymis, with neglect of a distant focus, only invites further urinary involvement.

### Biopsy

Dr. Everett L. Bishop, Atlanta, Ga.: No hard and fast rule can be made to apply to biopsy in general, for in certain cases it does no apparent harm, and frequently it is necessary for diagnosis. It must be admitted that in some cases the procedure is fraught with considerable danger to the patient and in these cases other means at hand will give almost or just as much information as will the microscopic examination of an extremely small piece of tissue. There are a few general rules that should be considered when performing biopsy for diagnosis. In certain conditions it is always advisable to remove the entire tumor rather than to excise only a small piece. The removal of the entire tumor is more desirable in tumors of the skin if they are small, or single lymph nodes or indefinite tumors of the breast. No encapsulated tumor should be incised; rather, the entire tumor should be removed intact. It should always be remembered that the biopsy gives a picture of one portion of the tumor only, which may be entirely misleading and for this reason it is an extremely dangerous method of diagnosis in bone tumors. In tumors of bone so situated that amputation cannot be done or in multiple tumors of bone, it is doubtful whether biopsy is ever justified. Biopsy is of great value in establishing a diagnosis in suspected tumors of the larynx, when early diagnosis is essential for any hope of cure. Suggestive lesions of the lip are probably best treated with radiation without biopsy on account of the liability of early metastases. Rectal tumors usually are so situated that biopsy can be easily done, but one should be careful to obtain a piece of the tumor and not simple hyperplastic mucosa. Methods of biopsy are varied. The cautery coagulates the tissue and, unless a relatively large piece is removed by this method, the entire specimen will be coagulated and useless for diagnostic examination. Biopsy by needle puncture, with an 18 gage needle and ordinary syringe, has lately been employed, its advantage being that there is almost no appreciable trauma and it can be used for deep tumors when one would hesitate to cut down on them. Recently I have used the Hoffman punch, a trocar instrument with a larger bore than the ordinary needle used in the foregoing method. With this instrument it is frequently possible to remove a fragment of the tumor large enough for embedding and sectioning. In using this instrument, it is necessary to incise the skin under procaine before introduction. The advantage of this instrument lies in the fact that a small but frequently diagnostic biopsy can be done on deep seated tumors with little trauma and little discomfort to the patient.

### Cosmetic Dermatology

Drs. Jack W. Jones and Herbert S. Alden, Atlanta, Ga.: Deviations from the normal skin which do not seriously injure the health of the individual but are disagreeable to the patient may be spoken of as "cosmetic skin complaints." Such skin lesions as benign nevi (moles and angiomas), superfluous hair, pigmentations, scars, freckles, tattoo marks, acne, warts, leukoderma and telangiectases all come under this heading. More and more people are seeking relief of their real or supposed cosmetic defects, and the medical profession should lead in the dissemination of correct knowledge and application of the valuable aids at hand for the removal of these defects. Let us have a more careful consideration of the patient seeking cosmetic advice. Many of these individuals may cause themselves much damage by turning to the unintelligent beauty operator for advice.

### Treatment of Sinusitis

Dr. Calhoun McDougall, Atlanta, Ga.: The wave of radicalism in sinus surgery is on the wane. It is being realized that more conservative treatment, such as immunization with vaccines or nonspecific therapy, climate and diet, are more efficacious than surgery in many cases. Conservative surgical procedures in sinus disease, in cooperation with natural defense and healing processes, frequently prove of tremendous value. In critical conditions they may turn the tide, averting a fatal outcome, by timely drainage of pus. The objectives are to establish aeration and drainage.

### Vitamin Therapy

Dr. D. H. Garrison, Tate, Ga.: Study of vitamins from a physiologic and therapeutic standpoint has led to the conclusion that the human system cannot survive without the proper intake of vitamins and that it is as important to have a balanced intake of vitamins as it is to have a balanced intake of food supply. No one vitamin, prescribed alone, can give the proper results, but vitamins must be prescribed in a group, or at least the mater vitamin A should be prescribed with any other vitamin in order to obtain the proper results.

### Observations of Some Common Breast Lesions

Dr. William Perrin Nicolson, Jr., Atlanta, Ga.: Let me urge a careful examination and consideration for every patient with a breast lesion. One should determine first of all whether it is inflammatory or a new growth and, if the latter, whether benign or malignant and, if malignant, the degree of malignancy. Such conditions as benign hypertrophy should be recognized early when the breast can be saved, and Brodie's disease when an apparently hopeless condition can be cured with simple amputation. Irradiation with x-rays or radium or both should be given in hopeless cases, and in suitable cases a palliative operation performed. Lastly, the doctrine of periodic health examinations should be spread, and one should remember that every solitary lump in a breast should be removed and examined by a competent pathologist. If a pathologist is not available it is safer to remove the breast instead of the lump, and then a delay of a week or ten days before the radical operation can be performed is not so hazardous.

### The Relation of Diseases of the Nasal Accessory Sinuses to Systemic Derangements

Dr. William Mithoefer, Cincinnati: The nasal accessory sinuses play an important rôle in the causation of systemic derangements. The infection in the nasal sinuses is often of a latent type, with frequent acute exacerbations, and consequently is often overlooked by the practitioner who does not use the instruments of precision necessary for the detection of disease within the cavities. It is a sad commentary to see patients who have had a bronchitis treated for several months without consideration of the nasal accessory sinuses as a cause of the infection of the lower respiratory tract. It is a great sin of omission on the part of the rhinologist to look on disease of the nose and its ramifying cavities as a local disturbance only, and to ignore entirely the fact that many times there is present a constitutional derangement. They term us specialists of the ear, nose and throat; it would be more to the point if we were just plain doctors who are making a special study of the ear, nose and throat.

### Effect of Previous Ligation of the Common Duct on Restoration of the Liver Following Partial Hepatectomy

Dr. J. Gaston Gay, Atlanta, Ga.: Experiments were performed on dogs to determine whether the liver would be restored after partial removal, if jaundice was produced by previous obstruction to the outflow of bile. The routine procedures were as follows: The common bile duct was ligated and the gallbladder removed. At various intervals after the production of biliary obstruction, two or more lobes of the liver were removed. It was found that partial removal of the liver was not followed by the remarkable restoration that occurs in the normal liver.

### Origin and Development of the Psychoneuroses

Dr. Lewis M. Gaines, Atlanta, Ga.: The psychoneuroses for their development require a favorable soil. This is furnished in a large percentage of cases by unfavorable heredity; in a smaller percentage, by various types of physiologic deficiencies, such as dietary or endocrine, or by preexisting disease, infectious or noninfectious. Reynolds found impairment of normal physiologic function of the body an etiologic factor in 42.5 per cent of 200 cases. Physical injuries leading to traumatic neuroses should be considered in this category and are of particular interest to railroad and industrial surgeons. In individuals thus conditioned, emotion, particularly fear, in some guise, or interference with the fundamental instincts of self-preservation and sex life, are the important effective causes. These causes extend back almost invariably to an early period of life—to infancy or early childhood. Symptoms develop gradually, reaching their zenith as a rule during puberty or early maturity. A case of pure psychoneuroses appearing for the first time after the age of 25 is rare and suggestive of other disease. The feeling of inferiority as described by Adler in response to unfavorable environment is doubtless responsible for the development of many cases. The mechanism so elaborately worked out by Freud may be operative in a certain number but certainly not in the majority. Because of the frequency of psychoneuroses, the degree of misery they bring and the all too common mistakes in diagnosis, it is of the greatest importance for all physicians to obtain as clear an insight as possible into the mechanisms responsible.

### Gastro-Intestinal Manifestations of the Psychoneurotic State

Dr. Russell H. Oppenheimer, Atlanta, Ga.: As practitioners of medicine grow away from the type of the old time family doctor, they lose their position as confidant and counselor. This changed position tends to make them unaware of the experiences and thoughts of the patient. They know little of his joys and sorrows, his apprehensions and fears, his anxieties. Lacking this information and the inclination or time to acquire it, they have but one course left: to ascribe the patient's complaint to some organic (structural) disturbance, which they treat sometimes symptomatically, sometimes specifically (they think) and sometimes surgically. Often the benefit, if any, derived under these circumstances is due largely to chance or to the hopes of the patient and is generally but transient in character. The interrelation of the autonomic and the central nervous system permits psychic influences to alter the functional activity of the gastro-intestinal tract. Because of the wide variation of demands made on it, the gastro-intestinal tract is especially suscepticle to such psychic influences. The functional difficulties thereby established give rise to symptoms similar to the symptoms induced by organic diseases, as these symptoms also arise largely from functional disturbance. The symptoms of this psychic alteration of gastro-intestinal function are the gastro-intestinal manifestations of the psychoneurotic state.

### Cardiac Manifestations of the Psychoneurotic State

Dr. Ernest F. Wahl, Thomasville, Ga.: Functional disorders of the heart may result from a number of direct causes. A casual remark by an insurance examiner that a murmur is present, that the heart skips a beat, or advice given by the family physician that the heart should be watched may initiate a life of chronic invalidism. On the other hand, the patient may assume the presence of a serious lesion because he is examined by more than one physician. A thorough diagnostic study, including all indicated laboratory procedures, must be made before treatment is to be considered. Special attention should be given to the patient's environment as possible causes of psychic stimuli. Drugs should play an insignificant rôle in the treatment of functional disorders of the heart. Cardiac stimulants should be avoided. Some simple sedative is sometimes necessary at the beginning but should be discontinued as soon as possible. A few cases of premature contraction will respond only to quinidine.

### The Treatment of the Psychoneurotic State

Dr. W. R. Houston, Augusta, Ga.: My advice to those undertaking psychotherapeutic treatment for the cure of functional disorders is not to be diverted into the bypaths of surgery or pharmacology. The solution will ultimately be found by one who is determined to do so. One should go at the problem, not bound by any system or by any set of rules; but all the skill, all the knowledge of man that one has been able to accumulate will be called into play.

### Effects of Injections of Ovarian Follicular and Anterior Pituitary Hormones on Conception and Pregnancy in Laboratory Animals

Dr. G. Lombard Kelly, Augusta, Ga.: Small doses of female sex hormone (as low as 10 rat units), given in broken doses, will prevent conception in the guinea-pig. When the dosage is increased to 75 units and more, abortions and miscarriages result, though in the later stages of pregnancy the young perish in utero and the mothers often die also. Injections of freshly expressed juice of anterior pituitary or of the extract of pituitary-like hormone from the urine of pregnant women into sexually mature female guinea-pigs just after copulation does not prevent conception. Injections of the same two products into pregnant animals almost invariably cause abortion or miscarriage. Whether the results obtained in this investigation are due to the hormones or to other substances contained in the injected material remains to be determined.

### A Method of Traction for Fractures of the Femur

Dr. Charles H. Watt, Thomasville, Ga.: In the method herein described, counteraction is obtained by the use of a "running trunk" plaster-of-paris spica cast fastened to the head of the bed by means of ropes attached to metal strips incorporated in the cast. During the past six months I have used this procedure in ten cases. One of the patients suffered fractures of both femurs, making a total of eleven fractures. The youngest patient was a boy of 14, and the oldest was a man aged 72. Eight were males and two females. The longest stay in the hospital was fourteen days and the shortest five days, with an average of nine and one-half days. The feeling is that better anatomic and functional results are being obtained than formerly.

### The Physician's Part in the Public Health Program

Dr. J. A. Redfearn, Albany, Ga.: It is the duty of physicians to urge employment of county or district health officers and to support the several departments of public health. Private practitioners are backward in developing preventive medicine. Correcting physical defects that one may find or have pointed out by health officers is not enough. Mental hygiene should be stressed by physicians. Public health will be greatly benefited through advice by physicians on dietetics. Physicians are prone to fail to explain the importance of a balanced diet. Mothers will permit their children to eat unbalanced diets in the midst of plenty until malnutrition, pellagra, tuberculosis or rickets develops, while physicians retain unspoken messages, fearful that motives might be misconstrued.

### How Much Curative Medicine Should a Health Department Do?

Dr. C. L. Ridley, Macon, Ga.: Had the medical profession done the things advocated by health departments and accepted by the profession as worthy and worth-while measures in the prevention of disease there could never have been any excuse for the existence of health departments as now operated. When the medical profession assumes its place in preventive medicine with every man, everywhere, doing the things he should to prevent avoidable disease and premature death, the activities of health departments can be restricted to a more limited field. It is imperative at present that health departments go into the field of preventive medicine absolutely unhampered and with the hearty support of the medical profession till such a time as the medical profession is ready to assume the responsibility of disease prevention as well as the care of those who are ill.

### Rickets

Dr. Mercer Blanchard, Columbus, Ga.: Rickets often begins to develop in the first few weeks of life; treatment must be begun early. Three important agents are available: cod liver oil, viosterol (irradiated ergosterol) and sunlight (natural or artificial). It is my custom to start cod liver oil at about a week or 10 days of age in a dosage of 15 minims (1 cc.). In about ten days, this is given twice a day. The dosage is gradually increased until three teaspoonfuls a day is given at 3 months of age. I frequently add a drop or two of viosterol to each dose of cod liver oil. When the weather permits, sun baths are started, beginning with a few minutes a day and gradually increasing to half an hour. There is so much opposition on the part of the mothers to undressing the babies in cool weather, for fear of cold, that I begin just exposing the legs and face to the sun rays. I have about twenty babies that were handled along this line, this winter and spring, at the same time getting cod liver oil or viosterol. The results have been fine. The curative treatment of rickets is the same as the prophylactic, only more active. Larger doses of cod liver oil or viosterol are given, and this is combined with treatment with the mercury vapor lamp. The various foods that have been activated act as adjuncts in the treatment.

### The Common Cold

Dr. A. J. Waring, Savannah, Ga.: I venture to make the following suggestions for the prevention of colds in childhood: One should see that the child's nose, throat and accessory cavities are not pathologic, diagnosing early and remedying allergic manifestations if possible. Exposure to infections of the mucous membranes should always be avoided; if exposure has occurred, silver salts should be used intranasally for three days. One should see that his food, clothing and rest are suitable, that he has abundant fresh air, that he is never anemic, and that his skin reacts quickly to heat and cold. Let him avoid marked chilling and fatigue. In other words, if he is not a normal child physically and psychically, he should be worked over sympathetically until he becomes one. It seems to me that the best a pediatrician can strive for is to see that at the age of puberty the boy or girl leaving his office for the last time leaves it with a courageous mind and a vigorous body. Toward the attainment of that object, the avoidance or the prompt cure of the common cold is a strategic move of inestimable value.

### Intracranial Birth Hemorrhages

Dr. C. M. Burpee, Augusta, Ga.: Intracranial hemorrhages are responsible for many of the deaths that occur during the first few days of life and most of the paralyses seen in childhood. They are frequently not recognized at birth. They occur most frequently in the premature infant or the infant subjected to a long, difficult labor, particularly when instrumentation, podalic version with breech extraction or solution of pituitary is used to terminate this type of labor. They are always due to intracranial trauma. The hemorrhage may occur anywhere inside the skull, but subdural hemorrhages are the most important. The symptoms depend on the size and location of the hemorrhage. The prognosis depends not only on the size and location of the hemorrhage but on the type of treatment instituted. The treatment consists in prevention as far as possible by appropriate prenatal care. All prolonged or difficult labors should be considered as potential cases of intracranial hemorrhage and treated as such. Respiration should be stimulated by a mixture of carbon dioxide and oxygen rather than by violent resuscitative measures. All infants with intracranial hemorrhage or suspected intracranial hemorrhage should be put at absolute rest and external heat applied when necessary. The increased intracranial pressure should be relieved and the respiration maintained. The body fluid should be maintained and, above all, the infant should be watched closely. *In large supratentorial hemorrhages the blood clot may be removed if adequate surgical facilities are available.*

### Carcinoma of the Colon

Dr. M. J. Egan, Savannah, Ga.: As much progress has been made in the past ten years in surgery of the carcinoma of the colon, as regards both operative mortality and end-results, as in any other field of surgery. The greatest aid to early diagnosis of growths in the colon proper is the x-rays, with which diagnosis and localization can be made with fair accuracy in more than 95 per cent of the cases. I cannot emphasize too strongly in this regard that the barium should be used as an enema after cleaning out the colon and not as a meal which completely closes a small opening through the growth, causing an acute obstruction to be superimposed on an already chronic obstruction. Carcinoma of the colon calls for surgical treatment, with resection of the growths if recognized at a favorable time before extension by metastasis and adhesion to surrounding viscera takes place; otherwise by colostomy proximal to the growth. The large majority are best treated by graded operations and only in early carcinoma of the right half of the colon is primary resection and ileocolostomy justifiable, and even then an ileostomy should be done proximal to the site of the anastomosis or the closed end of the colon brought up against the wound with long sutures, which come out through the upper end of the wound, so that if gas does accumulate and cannot be expelled this end of the colon can be opened to prevent breaking down of the suture line. When normal function of the bowel becomes established, this opening closes spontaneously. In practically all other cases a colostomy well proximal to the growth or an ileostomy, if the growth is in the cecum, should be done as a preliminary procedure, with a wait of from ten days to two weeks or longer if necessary to build up the patient's resistance and get the growth and bowel in favorable condition for resection. In carcinoma of the colon without metastasis and under local conditions in which removal is possible, the prognosis is as satisfactory as for carcinoma in other parts of the body and better than for carcinoma in any other part of the gastrointestinal tract.

### Amebiasis: Prevalence and Protean Manifestations

Drs. S. F. Rosen and David R. Thomas, Jr., Augusta, Ga.: The treatment of our patients consisted of 1 grain (0.065 Gm.) of emetine hydrochloride intravenously for ten days. Most writers recommend subcutaneous and intramuscular injection, but these are quite painful and we have never had any untoward reaction from its intravenous use. We give 1 grain diluted to 10 cc. with physiologic solution of sodium chloride. This is followed by a course of chiniofon. The usual treatment consists of 16 grains (1 Gm.) three times a day by mouth over a period of ten days and in refractory cases a 250 cc. enema of 2 per cent chiniofon, especially when the ulcers are in the lower portion of the colon, since the drug is supposed to act by direct contact with the amebas. Emetine is not without danger, but when cautiously administered is quite useful. Cases of peripheral neuritis have been reported and it too may set up a diarrhea. Emetine is a depressant to the heart, and sudden death has been reported following its use; but if one gives only 1 grain daily in well diluted solutions, gives it slowly and does not exceed 10 grains in as many days, there will be no untoward results. Treatment, however, should not be repeated within six to eight weeks because emetine is eliminated very slowly.

# Current Medical Literature

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## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

**183:** 445-592 (April) 1932

*Nature of Physical Signs of Bundle-Branch Block. J. T. King and D. McEachern, Baltimore.—p. 445.

Unusual Atropine Effect on Ventricular Tachycardia. S. M. Salley, Boston.—p. 456.

Congenital Heart Disease with Multiple Cardiac Anomalies: Report of Case Showing Aortic Atresia, Fibrous Scar in Myocardium and Embryonal Sinusoidal Remains. S. Bellet and B. A. Gouley, Philadelphia.—p. 458.

Incidence of Thrombo-Angiitis Obliterans in Brothers. S. S. Samuels, New York.—p. 465.

*Erythromelalgia and Other Disturbances of Extremities Accompanied by Vasodilatation and Burning. G. E. Brown, Rochester, Minn.—p. 468.

Blood Pressure in Arteries of Extremities in Normal Subjects and in Patients with Peripheral Vascular Disease. H. E. Pearse, Jr., and J. J. Morton, Rochester, N. Y.—p. 485.

*Coronary Disease in One Hundred Diabetics. M. H. Nathanson, Minneapolis.—p. 495.

Diabetic Gangrene: Incidence and Pathogenesis: Analysis of Fifty-Eight Cases Among One Thousand and Eight Diabetics. D. W. Kramer, Philadelphia.—p. 503.

Effect of Lugol's Solution on Chronic Lymphatic Leukemia and Its Bearing on Pathogenesis of Exophthalmic Goiter. H. B. Friedgood, Ann Arbor, Mich.—p. 515.

Food Allergy in Differential Diagnosis of Abdominal Symptoms. A. H. Rowe, Oakland, Calif.—p. 529.

Syphilitic Arthritis with Effusion. D. H. Kling, New York.—p. 538.

Aseptic Purulent Meningitis: Report of Six Benign Cases. G. A. Young and A. E. Bennett, Omaha.—p. 550.

Spasmodic Torticollis: Results of Removal of Foci of Infection and Treatment with Specific Vaccine. E. H. Rynearson and H. W. Woltman, Rochester, Minn.—p. 559.

Clinical Cycle of Goiters. J. W. Hinton, New York.—p. 563.

**Physical Signs of Bundle-Branch Block.**—In an analysis of fifty consecutive cases of bundle-branch block, King and McEachern noted the following physical signs: visible reduplication of the apex thrust in forty-two (84 per cent), palpable reduplication in forty (80 per cent), first heart sound split into two elements in twenty-eight (56 per cent), two separate systolic murmurs in six (12 per cent), and a single first sound with a separate murmur in eight (16 per cent). On the basis of these signs a correct diagnosis was made prior to knowledge of the electrocardiogram in thirty-four of forty attempts (85 per cent); the presence of bundle-branch block was suspected in two (5 per cent) but was not definitely diagnosed; the diagnosis was not made in 4 (10 per cent). There was a difference of opinion in four other cases. In the remaining six cases, the presence of bundle-branch block was recognized only by electrocardiogram. In three patients showing complete auriculoventricular block as well as intraventricular block, the diagnosis of both conditions was made in two cases from clinical signs and the signs were equally clear in the third case; signs of bundle block were found and this condition recognized clinically in five of seven patients showing both fibrillation and bundle block. The latter two groups of cases show that the auricles are not concerned with the physical signs of bundle block. Presystolic gallop bears a superficial resemblance to the signs of bundle block: however, clinical evidence and apex cardiograms show the two conditions to be different, presystolic gallop being truly presystolic, and the signs of bundle block being limited to systole and causing a division of the apex systolic plateau. Normal controls failed to show systolic reduplication. A cinematographic film of the movement of a straw attached to the cardiac apex showed a double systolic thrust in each of five consecutive cases of bundle-branch block. On the basis of their observations, the authors draw the following conclusions: 1. Intraventricular block may be recognized in a majority of cases from physical signs. 2. The most constant signs consist of visible and palpable reduplication of the apex thrust. 3. The reduplication is within systole. The auricles do not play a part in the production of the physical signs.

**Erythromelalgia and Other Disturbances of Extremities.**—Brown calls attention to the fact that the term erythromelalgia is not entirely accurate, since redness and pain in the extremities are common to several vascular diseases of diverse types. In erythromelalgia attacks of local vasodilatation with increased local heat and pain constitute the basic disturbance. Four fundamental criteria are essential to diagnosis of the disease: (1) bilateral burning pain in the extremities; (2) sharp increase of local heat in the affected parts, though redness, flushing or congestion may vary in degree; (3) production and aggravation of the distress by heat and exercise, and (4) relief by rest, cold and elevation. During the attacks the temperature of the affected parts should be found to reach or exceed 33 or 34 C. (91.4 or 93.2 F.) and pain usually becomes evident when this temperature is reached or exceeded. Augmentation in arterial pulsation and the rate of loss of heat give further evidence of the high degree of dilatation of the arteries. The author outlines certain methods of study to distinguish between the different conditions in which burning extremities occur.

**Coronary Disease in Diabetic Persons.**—Nathanson reports that an analysis of 100 necropsies on diabetic persons showed an incidence of 41 per cent of severe coronary disease. Above the age of 50 years the incidence was 52.7 per cent, as compared with 9 per cent in an even larger series of nondiabetic persons of the same age. The frequency of coronary disease is almost as high in the female as in the male. The incidence of hypertensive hypertrophy of the heart indicates that hypertension is only slightly more frequent in the diabetic than in the nondiabetic person. In diabetic persons with gangrene, the incidence of coronary disease is higher than in the uncomplicated cases. The essential cardiac lesion of diabetes is coronary sclerosis. Other types of cardiac disease are of relatively rare occurrence.

### American Journal of Tropical Medicine, Baltimore

**12:** 101-197 (March) 1932

*Quinine Analysis of Blood, with Reference to Treatment of Malaria. J. H. St. John, Washington, D. C.—p. 101.

*Studies in Blackwater Fever: Part I. Variation in Intensity of Hemoglobinuria Following Administration of Quinine by Regulation of Dosage of Quinine in Susceptible Individual. U. Brahmachari, P. Brahmachari and R. Banerjea, Calcutta, India.—p. 117.

Quinine and Plasmochin Therapy in Plasmodium Rouxi Infections, with Further Notes on Effects of These Drugs on Other Avian Malarias. R. D. Manwell, Syracuse, N. Y.—p. 123.

Effect of Four Amebicidal Drugs on Tissues of Digestive Tract Grown in Vitro. M. J. Hogue, Philadelphia.—p. 149.

Simple Method of Immobilizing Animals for Laboratory Purposes. L. H. Dunn, Panama, R. de P.—p. 173.

**Quinine Analysis of Blood.**—On the basis of analyses of quinine in the blood by the technic of Vedder and Masen, St. John draws the following conclusions: 1. The administration of a single dose of 1.95 Gm. of quinine sulphate in capsules to four individuals resulted in the development of a concentration of quinine in the blood of three to more than 6 mg. per liter. Analyses in two of the four showed that the concentration decreased after the first eight hours and in one it had decreased to less than one half of the maximum noted at the end of twenty-four hours. 2. The administration of 650 mg. o quinine sulphate in capsules every eight hours to two individuals resulted in the development in both, and maintenance in one of a concentration of quinine in the blood in excess of 6 mg. per liter. 3. The administration of 325 mg. of quinine sulphate in capsules every four hours to five individuals resulted in the development of a concentration of quinine in the blood, in three in excess of 6 mg. per liter, while the remaining two failed to develop this concentration. 4. The administration of 650 mg of quinine sulphate in capsules every four hours to ten individuals resulted in the development and maintenance of concentrations of quinine in the blood in excess of 10 mg. per liter in eight, while the remaining two failed to maintain this concentration. 5. The analyses made within two hours after the administration of quinine sulphate in capsules shows tha the time of the development of the highest concentration o quinine in the blood is variable. 6. It was shown that the height of the concentration of quinine in the blood, *following* the administration of divided doses of 1.95 Gm. of quinine sulphate, depends on the proportion of this amount of quinine received prior to the analysis. If given at one dose a high concentration results within a few hours to decline gradually, while small divided amounts result in low initial concentrations to reach a maximum only after the entire 1.95 Gm. of quinine has been given. 7. Continued administration of quinine in the same doses used during the first twenty-four hours does not necessarily result in increased concentrations of quinine in the blood over the maximum observed during the first twenty-four hours. In fact, after several days of the administration a slight decrease may occur. Apparently the cumulative action of the drug is countered by an increased rate of disposal. 8. A comparison of concentrations of quinine in the blood following the administration of quinine sulphate in capsules discloses that a few individuals do not develop and maintain blood concentrations as readily as others, while some develop and maintain concentrations in excess of the average. This fact may partially explain why in some of the standard quinine treated cases of malaria the patients have a relapse while others respond so readily and are cured.

**Studies in Blackwater Fever.**—The Brahmacharis and Banerjea describe experiments from which they conclude that the erythrocytes in cases of blackwater fever following administration of quinine are slightly more vulnerable to quinine than those of normal individuals. There is no difference in the vulnerability of erythrocytes in cases of blackwater fever to quinine: (1) before hemoglobinuria; (2) during active hemolysis after administration of quinine, and (3) after the disappearance of the hemoglobinuria. The increased vulnerability of erythrocytes in cases of blackwater fever to the action of quinine is so slight that it cannot account for blackwater fever that may follow quinine administration, and, therefore, whatever may be the mechanism of hemoglobinuria following administration of quinine, there is no evidence to show, so far as experiments in vitro are concerned, that it is due to any direct action of quinine on the erythrocytes of susceptible individuals.

## Annals of Internal Medicine, Ann Arbor, Mich.

5: 1103-1220 (March) 1932

Cutaneous Manifestations of Systemic Disease. U. J. Wile, Ann Arbor, Mich.—p. 1103.
*Malignant Thymoma of Reticulum-Cell Type with Pressure on Left Lung, Trachea, Esophagus, Left Phrenic and Left Recurrent Laryngeal Nerves, and with Metastases to Glands of Left Side of Neck; Importance of Biopsy for Differential Diagnosis of Cervical Lymphadenopathies. L F. Barker, Baltimore.—p. 1113.
*Management of Severe and Atypical Hyperthyroidism. F. H. Lahey, Boston.—p. 1123.
*Fallacies and Dangers in Treatment of Exophthalmic Goiter by Iodine. W. O. Thompson and Phebe K. Thompson, Chicago.—p. 1129.
Subacute Bacterial Endocarditis Following Extraction of Teeth: Report of Case. M. Bernstein, Philadelphia.—p. 1138.
*Management of Coronary Thrombosis and Its Complications. B. P. Seward, Roanoke, Va.—p. 1145.
*Paroxysmal Tachycardia Related to Menstrual Period. J. H. Crawford, L. H. Sigler and H. Fruchter, Brooklyn.—p. 1155.
Coincidental Occurrence of Diabetes Mellitus and Pernicious Anemia: Report of Two Cases. C Shookhoff, Brooklyn.—p. 1161.
Significance of Meningeal Permeability. S. Katzenelbogen, Baltimore.—p. 1168.
Use of Histamine Hydrochloric Acid as Test Meal. H. H. Haft, Syracuse, N. Y.—p. 1175.
San Francisco as Medical Center. W. J. Kerr, San Francisco.—p. 1178.

**Malignant Thymoma.**—Barker considers that in the case reported by him there is no indication for surgical intervention. Attempts to remove the intrathoracic tumor are unjustifiable. The risk from the operation itself would be very great, in the first place, and, in the second place, there is no probability that such surgical intervention would prolong life. Nor is there any advantage to be derived from removal of the lymph nodes of the neck, except for diagnostic purposes. The best therapeutic methods of intervention available are high voltage roentgen therapy and radium therapy. It is possible that one may be able to reduce the size of the mass within the thorax and also the size of the enlarged lymph nodes of the neck by such treatment. Of course, everything should be done, in addition, to build up the general health and strength of the patient by diet and by suitable hygiene. One must recognize, however, that any favorable results of therapy will be of but temporary duration.

**Management of Severe and Atypical Hyperthyroidism.**—Lahey believes that a large percentage of patients who are permitted to get into the advanced state of thyroid crisis will die. Their salvation is the early detection of an impending thyroid crisis or undue intensification of their hyperthyroidism and its emergency treatment with iodine, morphine, amytal, "avertin," salt solution and dextrose. By the early application of these measures, patients may be kept out of thyroid crises, prepared and operated on by subtotal thyroidectomy within three weeks, and definitely relieved of their thyroidism. Apathetic hyperthyroidism is a state characterized by signs and symptoms quite contrary to those of typical activated hyperthyroidism. It is misleading not only as to its existence but also as to its seriousness, and it possesses graver dangers of a fatality under stress or operative procedure than does the typical activated hyperthyroidism. An appreciation of its atypical signs and symptoms will result in its early diagnosis, and an appreciation of its certain unobtrusive seriousness should make one realize the possibilities of a fatality when the patient is submitted to any considerable extra burden, particularly such as subtotal thyroidectomy in one stage. It should make one undertake surgical procedures in all patients of this type, no matter how good they appear as risks, in two stages. Its earlier recognition and submission to surgery will result in a considerable lowering of its operative and nonoperative mortality rate.

**Dangers in Treatment of Exophthalmic Goiter by Iodine.**—The Thompsons call attention to the fact that since the introduction of iodine the mortality from thyroidectomy for exophthalmic goiter in the leading clinics has been lowered from about 1 to 4 per cent to about 0.25 to 0.7 per cent. This reduction is, they believe, less than is generally appreciated. The actual clinical improvement and reduction in basal metabolism caused by iodine is also somewhat less than is generally appreciated, owing to the fact that the influence of rest is usually not controlled. In very severe cases of the disease, operation should be performed as soon as the metabolism reaches a level during the administration of iodine, because the beneficial effects in such cases may be of short duration. In cases in which the basal metabolism is high after the prolonged administration of iodine and those in which the basal metabolism is rising rapidly during the administration of iodine, no operative procedures should be undertaken until iodine has been omitted long enough for the refractoriness to it to disappear (usually about four weeks) and then readministered. In the routine preoperative treatment of exophthalmic goiter it is desirable to give suddenly an adequate excess of iodine and not to precede this with small doses. A few patients still die from typical postoperative thyroid crises in spite of the administration of large doses of iodine. These reactions sometimes occur in patients who have shown satisfactory responses to iodine before operation. There is more to the treatment of exophthalmic goiter than the administration of iodine and the performance of a subtotal thyroidectomy. The skill of the surgeon, selection of the time and type of operation, proper attention to calories, protein and fluid in the preoperative and postoperative periods, abolition of fear and worry, and the type of anesthesia all seem to be factors of importance in keeping the mortality low.

**Management of Coronary Thrombosis and Its Complications.**—According to Seward, the rational treatment of coronary thrombosis depends on a knowledge of the anatomic changes that occur in the heart following thrombosis, and of the functional changes accompanying these. Morphine should be given in doses large enough and often enough to control the pain. Heat should be applied to the body of the patient. Stimulation with drugs should be avoided unless the heart sounds are very feeble and arrhythmic; the pulse is small in volume or imperceptible; the respirations are irregular and cyanosis is prominent. Caffeine sodiobenzoate should then be given in small rather than large doses, and it should be continued as long as the condition of the patient requires it. When nausea prevents the patient from taking an adequate amount of fluid and food, a small quantity of a concentrated solution of dextrose should be given intravenously, and saline and dextrose solution by rectum daily, and both should be continued until he can take a sufficient amount of fluids and food by mouth. Dextrose is readily utilized by all the body tissues, and the saline solution not only prevents dehydration but will increase the secretion of urine, which is especially desirable if the blood urea should rise to a high figure. When cerebral complications occur, the patient should be kept as quiet as possible; the clinician should continue to direct his attention chiefly to the heart and to the comfort of the patient. It is probably better not to give digitalis soon after coronary thrombosis occurs unless signs of heart failure appear. When the indications for it arise, it may be given in doses based on one-fourth to one-third minim per pound of body weight. If digitalis is given, it is better to discontinue it before the full therapeutic effect is obtained. Other therapeutic measures of great value are absolute rest in bed until the patient is well past the acute stage, good nursing care, and a diet consisting of easily digested and nutritious food. Laxatives should not be given until the patient is well along the road to recovery, but an enema should be given daily. The administration of oxygen may be helpful to those patients in whom cyanosis is a prominent feature. After the patient has recovered from the acute attack, the most important consideration is the supervision of his habits of life so that the heart may be spared any undue strain. When he may get up, how much activity he may be allowed, the use of digitalis and other drugs, his rest in bed each day and his general condition are questions that require much thought.

**Paroxysmal Tachycardia Related to Menstrual Period.**—Crawford and his associates report two cases of paroxysmal tachycardia of supraventricular origin, in one of which the attacks commenced at puberty and recurred at each subsequent menstrual period. In the other, the paroxysms commenced later in life. In the early stages they occurred at frequent intervals, but for a period of years they have almost invariably had a definite relation to the menstrual period.

## Annals of Otol., Rhinol. and Laryngology, St. Louis

**41:** 1-322 (March) 1932

Malignant Diseases of Nose and Nasal Accessory Sinuses. J. C. Beck and M. R. Guttman, Chicago.—p. 1.

*Some Notes on Etiology and Treatment of Tinnitus Aurium. J. A. Babbitt, Philadelphia.—p. 21.

*Early Intrinsic Cancer of Larynx, Diagnosis and Treatment: Observations on Laryngofissure as Method of Treatment in Series of Cases. G. Tucker, Philadelphia.—p. 36.

*Physiology of Drainage of Nasal Mucus: II. Cilia and Mucin in Mechanical Defense of Nasal Mucosa: Motion Picture Demonstration. A. Hilding, Rochester, Minn.—p. 52.

Surgical Treatment of Certain Unusual Conditions of Frontal Sinus. H. I. Lillie, Rochestetr, Minn.—p. 59.

Malignant Tumors of Nasopharynx with Involvement of Nervous System. F. K. Hansel, St. Louis.—p. 74.

Three Unusual Endoscopic Cases Occurring Consecutively. F. T. Hill, Waterville, Maine.—p. 94.

Blood Count, Metabolic Rate and Blood Pressures in Nasal Sinusitis. E. R. Lewis, Los Angeles.—p. 102.

*Reactions to Infection. G. F. Harkness, Davenport, Iowa.—p. 108.

Some Intimate Studies of Nasal Function: Their Bearing on Diagnosis and Treatment. A. W. Proetz, St. Louis.—p. 125.

Improved Method of Collecting Nasal Cultures. C. S. Linton, St. Louis. p. 141.

*Significance of Allergic Nasal and Sinus Disease in Relation to Asthma. H. L. Baum, Denver.—p. 143.

Bilateral Diffuse Suppurative Labyrinthitis, with Diffuse Suppurative Leptomeningitis, Complicating an Apparently Unilateral Otitis Media. L. K. Guggenheim and Dorothy Wolff, St. Louis.—p. 150.

Cavernous Sinus Thrombophlebitis Following Tonsillectomy: Report of Case. E. H. Campbell, Philadelphia.—p. 170.

Important Points in Four Theories on Otosclerosis. E. P. Fowler, Jr., New York.—p. 175.

Atrophic Rhinitis. J. A. Pratt, Minneapolis.—p. 187.

*Continuous Rhythmic Movements of Palate, Pharynx and Larynx. N. Leshin, Chicago.—p. 194.

Treatment of Papillomas of Larynx with Calcined Magnesia. B. Katz, Los Angeles.—p. 202.

*Electrosurgical Tonsillectomy: Advantages and Limitations of Fractional Electrocoagulation Method. A. R. Hollender, Chicago.—p. 216.

Bárány Noise Apparatus. B. M. Becker, Brooklyn.—p. 222.

Lateral Sinus Thrombosis: Review of One Hundred and Eighty-Four Cases, with Especial Reference to Postoperative Type. L. R. Boies, Minneapolis.—p. 227.

Congenital Bilateral Atresia of Nasopharynx: Report of Case. O. H. Peterson, Corpus Christi, Texas.—p. 238.

Intra-Oral Injuries and Infections of Pharyngeal Lobe of Parotid Gland. L. V. B. Spake, Kansas City, Kan.—p. 240.

**Etiology and Treatment of Tinnitus Aurium.**—Babbitt considers the syndrome of tinnitus aurium too complex to justify any conventional routine treatment. In the absence of cochlear degeneration or loss of function in the eighth nerve, the tympanic cavity offers a promising surgical field for the relief of tinnitus. The assumption of memory tinnitus without demonstrable labyrinthine or eighth nerve involvement is unwarranted.

**Early Intrinsic Cancer of Larynx.**—According to Tucker, early intrinsic cancer of the larynx will be recognized when the profession fully realizes the possible significance of chronic hoarseness. Biopsy by means of direct laryngoscopy should be the final step in the diagnostic study. Early "anterior intrinsic cancer" of the larynx is amenable to cure by laryngofissure, which will save the patient's larynx as well as his life, with no operative mortality. The anterior intrinsic group includes a large percentage of all cases of cancer of the larynx. Laryngectomy will cure practically all recurrences after laryngofissure if the cases are properly followed. In twenty-five of thirty cases reported by the author, more than a year has elapsed since laryngofissure. There have been two recurrences in two patients, giving a proportion of lasting cure of 92 per cent to September, 1931. One patient with recurrence is well, without metastasis, following laryngectomy. Partial laryngectomy with postoperative irradiation has given good results when there was a contraindication to laryngectomy in several cases not in the series. The author believes that laryngectomy will cure a large percentage of posterior intrinsic cancer if the diagnosis is made while the lesion is still recent.

**Physiology of Drainage of Nasal Mucus.**—Hilding calls attention to the fact that ciliary action and a protective, moving film of mucin over the surface are the chief mechanical factors involved in the drainage and defense of the nasal mucosa. The drainage, as activated by the cilia, is rapid, powerful and effective. Gravity plays a minor part. Traction, on the other hand, exerted on the film of mucin as on a net is an important factor in drainage. A complete exchange of the film of secretion over the surface takes place every ten or fifteen minutes in the more active regions in the nose, and about once an hour in the inactive regions. The drainage is directed backward with a strong tendency to flow toward the best protected areas; namely, the middle and inferior meatuses. The inactive anterior third of the nose drains largely through these meatuses by means of traction. The sinuses (as represented by the frontal sinus of the dog) have definite and extremely efficient drainage that is *spiral in direction*. With these points in mind, the necessity of changing the point of view of treatment of nasal conditions from an anatomic to a physiologic one becomes apparent.

**Reactions to Infection.**—Harkness states that the primary resistance to infections and foreign proteins is measured by the cellular reaction capacity. Secondary factors are certain substances, antibodies, in the humoral element of the blood that are themselves the product of the primary cellular reaction capacity. Cellular phagocytosis is the most effective weapon that the cell possesses in eliminating foreign protein material. A primary avidity for phagocytosis is retained not only by the leukocytic cells of the blood but by certain fixed tissue and wandering tissue cells. The reticulo-endothelial system probably includes the cellular elements responsible for the production of antibodies; it constitutes a hematopoietic system and embraces those fixed tissue cells and wandering connective tissue cells that have retained the greatest avidity for phagocytosis. Specificity of cellular reaction is the basis of *infection control and immunity*. It seems probable that, when the secret of specificity of cellular reaction is known, the major problems of immunity and infection will be solved. The so-called reticulo-endothelial system seems to offer the most fruitful field for the investigation of this problem, first, as the source of the humoral substances and the cellular elements of the blood that take an active part in combating infection, and, secondly, through possessing cells that seem to have powers of selectivity. The secret of cell specificity and selectivity in production and activity forms the crux of the problem.

**Allergic Nasal and Sinus Disease in Relation to Asthma.**—Baum is of the opinion that nasal and sinus disease is primarily not an etiologic factor in the causation of asthma. Asthma and nasal and sinus disease are often concomitant manifestations of the same condition in two different localities in the same patient, both dependent on the same underlying etiologic factors. Nasal and sinus operations should not be *performed primarily* for the cure of asthma, only such surgery being done as would be indicated by the same observations in the upper respiratory tract of the nonasthmatic patient. Allergic manifestations in the nose and sinuses should serve as warning finger posts, pointing the way to danger, and the patient should be so advised and should have his state of hypersensitization studied and treated—not only as a therapeutic measure directed to the cure of nasal symptoms but as a prophylactic measure calculated to prevent more serious consequences later.

**Rhythmic Movements of Palate, Pharynx and Larynx.**—Leshin reports that continuous synchronous rhythmic movements of the palate, pharynx and larynx are comparatively rare; only twenty-nine cases have been found in the literature. The review of these cases shows a definite relationship of these movements to organic disease of the central nervous system. No localizing neurologic significance can be ascribed to them as yet because of the varied pathologic changes found in the few postmortem examinations made.

**Electrosurgical Tonsillectomy.**—While diathermy for removing the tonsils has gained popular favor and has become the method of choice of some specialists, Hollender does not recommend its use as a substitute for surgery for the majority of cases. There are, however, definite advantages in an adequate substitute method when surgery is considered hazardous in the presence of certain systemic diseases. Since electrocoagulation of the tonsils is a scientifically sound method for selected cases, the specialist should familiarize himself with its technic.

## Archives of Neurology and Psychiatry, Chicago

**27:** 489-760 (March) 1932

Sensation: I. Depth, Distribution and Probable Identification in Prepuce of Sensory End-Organs Concerned in Sensations of Temperature and Touch; Thermometric Conductivity. H. C. Bazett, B. McGlone, R. G. Williams and H M. Lufkin, Philadelphia.—p. 489.

Nerve Degeneration in Poliomyelitis: I. Vital Staining Methods with Neutral Red Applied to Nerve Degeneration. W. P. Covell and J L O'Leary, St. Louis.—p. 518.

Neurologic Problems in Childhood. B. Crothers, Boston.—p. 525

*Progressive Facial Hemiatrophy: Report of Three Cases. L. Archambault and N. K. Fromm, Albany, N. Y.—p. 529.

Transection of Spinal Cord in the New-Born: Case with Autopsy and Comparison with Normal Cord at Same Age. R. K. Byers, Boston. —p. 585.

*Chronic Progressive Vascular Subcortical Encephalopathy: Chronic Progressive Subcortical Encephalitis of Binswanger. F. J. Farnell, Providence, R. I., and J. H. Globus, New York.—p. 593.

*Histologic Changes in Brain in Cases of Fatal Injury to Head: III. Reaction of Microglia and Oligodendroglia. C. W. Rand and C. B. Courville, Los Angeles.—p. 605.

*Familial Progressive Muscular Atrophy. G. A. Moleen, Denver.—p. 645.

Principles of Gestalt in Copied Form in Mentally Defective and Schizophrenic Persons. Lauretta Bender, Baltimore.—p. 661.

Reflex Response Latencies in Manic and Depressive Cases of Cyclothymic Group and in Cases of Catatonic Stupor of Schizophrenic Group. J. M. Dorsey, Ann Arbor, Mich., and L. E. Travis, Iowa City.—p. 687

*Cerebrospinal Fluid in Differential Diagnosis of Brain Tumor. F. Fremont-Smith, Boston.—p. 691.

**Progressive Facial Hemiatrophy.**—Archambault and Fromm state that progressive facial hemiatrophy is a well defined syndrome having distinctive clinical features, resulting from widely varying types of lesions, which apparently involve in selective fashion the sympathetic division of the vegetative nervous system at some point in either its central or its peripheral course. The condition is much more common than was formerly believed, may develop at any period of life, and exhibits no material predilection for the female sex or for the left side, as was maintained by classic authors. The actual etiology of facial hemiatrophy still remains largely speculative, but it is believed that in many cases immediately antecedent infections and faciocervical traumas are an actual causative factor. Aside from its undeniably close relationship to scleroderma, which itself may be responsible for some cases, the various theories advanced to provide a logical pathogenesis, with the exception of the sympathetic theory, are believed to be totally untenable. Three cases of typical facial hemiatrophy are presented in detail, and all three exhibited unescapable evidence of disturbances in the domain of the cervical sympathetic system.

**Chronic Progressive Vascular Subcortical Encephalopathy.**—Farnell and Globus describe a case of Binswanger's chronic progressive encephalitis. It differs from the typical case in that it occurred in a somewhat younger person, ran a rather rapid clinical course, and manifested decerebrate rigidity as a striking atypical feature. The latter may find explanation in the degenerative changes noted in the substantia nigra. The disease is degenerative; Binswanger, though recognizing it as such, erred in choosing the term encephalitis. Instead, the term chronic progressive vascular subcortical encephalopathy is suggested as more descriptive of the lesion and of its possible etiology. The disease presents no clearly distinguishable clinical diagnostic features but merits consideration in the differential diagnosis of atypical instances of cerebral arteriosclerosis.

**Histologic Changes in Brain in Cases of Fatal Injury to Head.**—In studying histologic changes in the human brain consequent to injury, Rand and Courville utilized the newer metallic methods, as well as routine stains. In this contribution they limit themselves to a consideration of the microglia and oligodendroglia. The history of these two elements is briefly traced, with especial reference to more recent studies with specific metallic methods. To the present time the reaction of these elements to injury has been critically studied only in experimental animals. The authors attempt to follow the changes in the microglia and oligodendroglia in cases of fatal injuries to the human brain. They selected twenty-four cases from a larger series which represent fairly typically the sequence of changes occurring in edema, contusion and laceration, and gross and petechial hemorrhages of the brain. It was found that the microglia react to local destruction and disintegration of tissue. The oligodendroglia, on the contrary, are altered in response to general or widespread processes, particularly edema. Transitional forms of microglia were found within the first few hours following contusion or laceration of the brain. Compound granular corpuscles, however, were found only after three or four days and remained as long as the products of disintegration were present. Typical transitional stages could be traced from normal microglia to fully developed phagocytes. The oligodendroglia became enlarged and vacuolated almost immediately following injury. Within a few hours, typical widespread acute swelling of the cells was present. This reaction undoubtedly persists for weeks, especially in the region about local injuries. Both types of cells undergo destruction along with the nerve cells and neuroglia, at the margin of lacerations and in severely contused areas. Evidences of direct cell division were observed in both types of cells within a few hours after injury, and it was especially active during the first few days. Mitosis was found only in fully developed compound granular corpuscles. Changes in the astrocytes and nerve cells will be described in later communications.

**Familial Progressive Muscular Atrophy.**—Moleen presents a case of a symmetrical type of muscular atrophy, chronic and progressive in course, which had been under observation for over twenty years. Three brothers were subjects of the same disease; one died without the condition having been studied pathologically; one forms the basis of the author's study; the third is still living at the time of the report, in an advanced state of the disease. The absence of group muscular involvement referable to the enlargements of the cord is noteworthy in all three cases. The marked changes in the voluntary muscles reached a degree of almost complete disappearance of the fibers without evidence of inflammatory reaction. The negligible involvement of the spinal gray matter and the apparently normal functioning condition of the polar cells is remarkable if not unique. Noninflammatory degeneration of the myelinated elements of the peripheral nerves appears to constitute the primary pathologic lesion. The suspicion expressed with reference to the possible primary structural defect is strengthened by the familial incidence.

**Cerebrospinal Fluid in Differential Diagnosis of Brain Tumor.**—According to Fremont-Smith, a false low cerebrospinal fluid pressure may be caused either by dehydration due to catharsis, diarrhea or excessive vomiting, or by obstruction to free communication between the lumbar manometer and the ventricular fluid. Jugular compression should always be performed to test this communication, which may be completely or partially interrupted by a nerve root obstructing the tip of the needle, by a spinal subarachnoid block due to a spinal cord tumor, adhesive meningitis, and so on, or by a tumor of the posterior fossa or the third ventricle. If jugular compression fails to give a prompt rise in the lumbar manometer, abdominal compression should be tried. If abdominal compression fails to give a prompt rise, the needle is not properly in place or is obstructed by a nerve root. Prompt response to abdominal compression gives assurance that the lumbar manometer communicates freely with the lumbar fluid. When the spinal subarachnoid space is blocked by a tumor, Pott's disease or adhesions, abdominal compression gives a more prompt and more marked rise in the lumbar manometer than does the jugular compression. A brain tumor nearly always causes increased cerebrospinal fluid pressure unless the patient has been dehydrated. The pressure is often elevated for several months before the disks become choked. Very early tumors, infiltrating gliomas of the pons and pituitary tumors that remain within the sella turcica may give normal cerebrospinal fluid pressure. The author presents in tabular form the cytologic and chemical changes that occur in the cerebrospinal fluid in brain tumor and in various other pathologic conditions of the brain and spinal cord.

## Archives of Otolaryngology, Chicago

**15:** 339-502 (March) 1932

Bilateral Abductor Paralysis: Operative Treatment by Submucous Resection of Vocal Cords. W. B. Hoover, Boston.—p. 339.

*Intracranial Complications of Otitic Origin. I. Friesner and J. G. Druss, New York.—p. 356.

Pulmonary Metastasis from Hypernephroma Diagnosed by Bronchoscopy. P. P. Vinson and W. J. Martin, Jr., Rochester, Minn.—p. 368.

Value of Roentgenologic Examination of Neck. M. L. Sussman, New York.—p. 371.

Tuberculoma of Laryngeal Ventricle Resembling Prolapse of Mucous Membrane: Report of Case. E. F. Ziegelman, San Francisco.—p. 382.

*Histopathologic Reactions of Tracheotomic Wound: Experimental Study. L. Richards and F. Glenn, Boston.—p. 389.

Interrelation of Allergy and Otolaryngology. W. V. Mullin, Cleveland.—p. 413.

Otologic Observations in Cases of Intestinal Intoxication in Infants. J. L. Maybaum, New York.—p. 418.

Pneumococcic Membranous Nasopharyngitis in Infants. N. Fox, Chicago.—p. 426.

*Local Anesthesia in Tonsillectomy. H. A. Trotter, Buffalo.—p. 435.

**Intracranial Complications of Otitic Origin.**—Friesner and Druss call attention to the frequency with which disease extending from the middle ear and mastoid becomes localized about the posterosuperior portion of the pyramid. A bone focus at this site may develop a brain abscess in either the posterior or the middle fossa or a meningitis. The otologic surgeon must be equipped as a cranial surgeon as well. The authors believe that, with a technic such as Eagleton has described, these foci may be exposed. Furthermore, the question is again raised whether exploration of the brain might not be attended with better results if it were made through such an exposure.

**Histopathologic Reactions of Tracheotomic Wound.**—According to Richards and Glenn, simple incisions in the trachea, if not infected, tend to heal with great rapidity. The defect is closed by a connective tissue growth, without any evidence of true regeneration of cartilage. The mucous membrane between heals rapidly, though with a modified type of epithelium. There is little if any tendency for encroachment on the tracheal lumen by the healing tissues in this type of wound. The presence of a tracheal cannula delays the healing of the wound and increases the amount of connective tissue formed about it. So long as there is an adequate opening in the trachea for the cannula and no pressure against the cartilaginous edges, there is very little tendency toward the formation of granulations large enough to cause any appreciable obstruction to the tracheal lumen. Infection about the cannula, occasioned primarily by too close approximation of the wound edges about it, increases the tendency to connective tissue formation. With a large anterior tracheal defect there is little tendency for the superficial tissues to fall in and encroach on the lumen of the trachea. With a tracheal fistula, in the absence of a tube, the wound tends to close rapidly without any impairment of the tracheal lumen.

**Local Anesthesia in Tonsillectomy.**—In performing tonsillectomy, Trotter has used quinine and urea hydrochloride solution, 1 per cent in strength, 2.5 cc. to each tonsil. Ten minutes is allowed for full anesthesia. In 500 cases, nerve block anesthesia with quinine and urea hydrochloride proved satisfactory. The author has not experienced any complications or ill effects from either quinine and urea hydrochloride or epinephrine hydrochloride. The anesthesia at the time of operation is excellent, and the recovery of the patient is much smoother because the anesthesia lasts for several days.

## Canadian Public Health Journal, Toronto

**23:** 103-152 (March) 1932

Rural Sanitation in Quebec from Provincial Standpoint. A. Lessard, Quebec, Que.—p. 103.

Challenge of Tuberculosis. D. A. Stewart, Ninette, Manit.—p. 109.

Mental Hygiene of Critical Epochs of Life. C. A. Baragar, Edmonton, Alta.—p. 118.

Pathogenic and Antigenic Properties of Staphylococcus Toxin. C. E. Dolman, Toronto.—p. 125.

## Endocrinology, Los Angeles

**16:** 109-224 (March-April) 1932

*Endocrine Treatment of Paget's Disease. L. Berman, New York.—p. 109.

*Hyperpituitarism Beginning in Infancy: The Alton Giant. L. H. Behrens and D. P. Barr, St. Louis.—p. 120.

*Specificity in Action of Anterior Pituitary of Different Mammals as Well as of Urine of Pregnant Women on Sex Organs and Thyroid Gland of Immature Female Guinea-Pigs. L. Loeb, St. Louis.—p. 129.

Effects of Dietary Deficiency of Iodine on Thyroid and Parathyroid Glands in Rat. C. M. Jackson and M. T. P'an, Minneapolis.—p. 146.

Weight of Gold Fish Influenced by Testicular Substance Diet. L. L. Stanley and G. L. Tescher, San Quentin, Calif.—p. 153.

Cortin in Case of Possible Adrenal Insufficiency During Pregnancy. F. A. Hartman, G. W. Thorn and I. W. Potter, Buffalo.—p. 155.

*Quinine and Iodine in Exophthalmic Goiter. I. Bram, Philadelphia.—p. 157.

*Syndrome of Adrenal Hemorrhage in the New-Born. M. A. Goldzieher and M. B. Gordon, Brooklyn.—p. 165.

*Glycopenia: Efficacy of High Fat Diets in Treatment of Chronic Hypoglycemia. H. C. Shepardson, San Francisco.—p. 182.

Humoral Factors Affecting Uterine Motility. S. R. M. Reynolds, Baltimore.—p. 193.

**Endocrine Treatment of Paget's Disease.**—According to Berman, Paget's disease is an entity representing a disturbance of bone metabolism involving an imbalance between the parathyroids and the suprarenals, there being excessive function of the former and deficient function of the latter. In sixteen out of eighteen cases, the regular administration of suprarenal cortex hormone with a high calcium diet produced a relief of the pains in the extremities and the head, a restoration of the sense of health and well being with a return to occupational activity, and an apparent arrest of the disease as shown by the cessation of development of deformity and the symptoms of sympathetic nervous system irritability. The course of Paget's disease is chronically protracted; in general, its progress is downward. The results of the cases reported, although they are limited in number and have still to be checked and watched, justify the conclusion that suprarenal cortex hormone is a valuable remedy for a disease which has heretofore had no remedy.

**Hyperpituitarism Beginning in Infancy.** — Behrens and Barr report a case of preadolescent gigantism of pituitary origin in a youth, aged 13. An extraordinary feature was the beginning of abnormal development in early infancy. Growth has been steady without spurts during the entire period of childhood and has continued at an undiminished rate during nineteen months of observation. Of special interest is the low basal metabolic rate accompanied by subnormal temperature and cold hands and feet. Remarkable, also, is the extraordinary size of the mastoid cells and the pneumatization of the squamous portion of the temporal bone.

**Specific Action of Anterior Pituitary.**—Loeb states that samples of anterior pituitary substance from different species of mammals as well as of urine of pregnant women differ from one another in their effects on the genital organs and thyroid of immature guinea-pigs; these effects in the case of each species are specific. He discusses the possible interpretations of these observations, which are more readily compatible with the view that at least two constituents of the anterior pituitary are responsible for these effects than that the latter are attributable to the action of different quantities of one and the same substance, and that in these different species these two substances are distributed in different proportions. In the guinea-pig only guinea-pig anterior pituitary seems as a rule to be able to induce ovulation. The author recognized intermediate states of proliferation of the vagina which occur under the influence of large growing or mature follicles under certain conditions; there is some indication that the interstitial gland and theca interna lutein bodies, if present in sufficient quantity, may exert functions similar to that of the corpus luteum and, under certain conditions, inhibit ovulation and full proliferation of the vagina.

**Quinine and Iodine in Exophthalmic Goiter.**—Bram calls attention to the fact that persons with exophthalmic goiter are relatively insusceptible to cinchonism and can take quinine in doses of from 30 to 90 grains (2 to 6 Gm.) daily with impunity and often with benefit. This is the basis of the quinine test for hyperthyroidism especially when associated with exophthalmic goiter, and is again recommended as a safe, simple and dependable diagnostic procedure. The effects of quinine in exophthalmic goiter resemble, in many respects, those of iodine. Following its use there occurs in the average case an amelioration of the symptomatology of the syndrome. Quinine in large doses is a valuable asset in the armamentarium of the internist who has sufficient experience with subjects of exophthalmic goiter to realize the complex needs of these patients. It must be emphasized that quinine is not the mainstay but is a valuable asset in the broad regimen of therapy which must include attention to discoverable etiologic factors, diet, psychotherapy and proper environment. Quinine differs from iodine administration in exophthalmic goiter in the following respects: (1) Quinine can be given for an indefinite period of time without danger of flaring up of symptoms; (2) it does not produce the marked increase in size of the thyroid that often occurs after iodine administration, and (3) while the beneficial effects of quinine are slower in appearing than those of iodine, the results are continuous and cumulative. Quinine and iodine may complement each other in treatment. Also, quinine in proper dosage given in combination with iodine in small doses appears in the average case to serve as a deterrent to the classic rise in symptoms following prolonged iodine administration. When recovery is reached, the singular tolerance to large doses of quinine gives way to normal susceptibility to cinchonism.

**Suprarenal Hemorrhage in the New-Born.**—Goldzieher and Gordon believe that an intra vitam diagnosis of suprarenal hemorrhage in the new-born may be made on the basis of a definite syndrome. This consists of two groups of symptoms: those due to acute suprarenal insufficiency and those produced by internal hemorrhage. Either one of these may predominate. Symptoms of acute insufficiency consist of acute onset, high temperature, rapid respirations, petechial or purpuric rash, cyanosis and metabolic changes—especially hypoglycemia. Associated with these are gastro-intestinal and nervous disturbances. These may be accompanied or masked by signs of internal hemorrhage (shock, collapse, weak pulse) and local signs of abdominal distress, distention and the presence of a mass in one or both kidney regions. Five cases are reported in which an intra vitam diagnosis was made of suprarenal hemorrhage in the new-born. On the basis of the syndrome presented in these cases, an analysis is made of eighty-one cases of the condition both in the new-born and in infants. The treatment suggested by the authors consists of intravenous transfusion of blood, injections of dextrose, and the administration of a potent suprarenal cortical extract.

**Glycopenia.**—Shepardson reviews the various causative factors, besides hyperinsulinism, producing glycopenia. He reports two cases in which the hypoglycemia apparently resulted from primary hyperinsulinism. It is suggested, in contrast to the usual increase in carbohydrate intake, that the diet be markedly reduced in carbohydrates and that a relatively high fat diet be substituted, in the treatment of essential glycopenia. Results in the cases reported indicate that such alteration of the dietary formula apparently has an inhibiting influence on the incretory function of the pancreas.

## Georgia Medical Association Journal, Atlanta

**21:** 85-127 (March) 1932

Some Observations on Spinal Anesthesia. C. H. Richardson, Macon.—p. 85.
Progress in Psychiatry. N. M. Owensby, Atlanta.—p. 90.
Case For and Against Coffee. G. M. Niles, Atlanta.—p. 94.
Tetany Following Thyroidectomy: Case Reports. B. H. Clifton, Atlanta.—p. 97.
Transplantation of Ureters for Exstrophy of Bladder: Case Report. B. T. Wise, Americus.—p. 100.
Atavistic Human Foot: Its Developmental Significance. G. A. Williams, Atlanta.—p. 103.
Closed Tube Method of Treatment of Acute Thoracic Empyema. D. H. Poer, Atlanta.—p. 106.
Foreign Body in Rectum: Case Report. M. C. Pruitt, Atlanta.—p. 116.

## Iowa State Medical Society Journal, Des Moines

**22:** 107-158 (March) 1932

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Endometriosis of Abdominal Wall. H. E. Kleinberg, Des Moines.—p. 109.
Pernicious Anemia and Subacute Combined Degeneration of Spinal Cord. T. J. Pfeffer, De Witt.—p. 114.
The "Nervous" Child. Julia F. Hill, Des Moines.—p. 118.
Modified Barraquer Cataract Operation. O. Wolfe, Marshalltown.—p. 123.
Brain Abscess: Question of Treatment. H. A. Bender, Waterloo.—p. 130.

## Journal of Bacteriology, Baltimore

**23:** 195-279 (March) 1932

Further Studies on Effect of Various Carbohydrates on Production of Diphtheria Toxin, with Especial Reference to Its Flocculating Titer and Final *p*H. Elizabeth Lee Hazen and G. Heller, New York.—p. 195.
Spirella Sp.? Isolated from Guinea-Pig. Henrietta S. Rhees, Rochester, N. Y.—p. 211.
Studies on Antibodies: IV. Carbohydrate Content as Criterion of Suitability of Broth for Culture of Pneumococci. Grace McGuire, Eugenia Valentine, Elinor Whitney and K. G. Falk, New York.—p. 223.
Id.: V. Use of Green Bananas in Mediums for Culture of Pneumococci. K. G. Falk, Eugenia Valentine, Grace McGuire and Elinor Whitney, New York.—p. 235.
Milk-Borne Septic Sore Throat and Scarlet Fever and Their Relation to Beta Hemolytic Streptococci. Anna W. Williams and Caroline R. Gurley, Assisted by Eva Sobel and Margaret Castelda, New York.—p. 241.
Biochemical Characters of Human and Animal Strains of Hemolytic Streptococci. P. R. Edwards, Lexington, Ky.—p. 259.
Atypical (Slow) Lactose Fermenting Bacillus Coli. F. S. Jones, M. Orcutt and R. B. Little, Princeton, N. J.—p. 267.

## Journal of Experimental Medicine, New York

**55:** 505-681 (April) 1932

*Influence of Ligation of Pancreatic Ducts of Dogs on Serum Amylase Concentration. C. E. Johnson and C. H. Wies, New Haven, Conn.—p. 505.
Examination of Mechanism of Pneumococcus Immunity by Means of Bactericidal Measurements: I. Reaction Between Anticarbohydrate Antibody and Purified Specific Carbohydrate. H. K. Ward, Boston.—p. 511.
Id.: II. Reaction Between Anticarbohydrate Antibody and Type-Specific Products of Organism. H. K. Ward, Boston.—p. 519.
Further Separation of Types Among Pneumococci Hitherto Included in Group IV and Development of Therapeutic Antiserums for These Types. Georgia Cooper, Carolyn Rosenstein, Annabel Walter and Lenore Peizer, New York.—p. 531.
Quantitative Studies on Precipitin Reaction: Determination of Small Amounts of Specific Polysaccharide. M. Heidelberger and F. E. Kendall, New York.—p. 555.
*Studies on Cultivation of Typhus Fever Rickettsia in Presence of Live Tissue. Clara Nigg and K. Landsteiner, New York.—p. 563.
Age Factor in Velocity of Growth of Fibroblasts in Healing Wound. E. L. Howes and S. C. Harvey, New Haven, Conn.—p. 577.
*Reaction of Rabbits to Streptococci: Comparative Sensitizing Effect of Intracutaneous and Intravenous Inocula in Minute Doses. M. P. Schultz and H. F. Swift, New York.—p. 591.
Renal Thresholds for Hemoglobin in Dogs: Depression of Threshold Due to Frequent Hemoglobin Injections and Recovery During Rest Periods. J. A. Lichty, Jr., W. H. Havill and G. H. Whipple, Rochester, N. Y.—p. 603.
Renal Threshold for Hemoglobin in Dogs Uninfluenced by Mercury Poisoning. W. H. Havill, J. A. Lichty, Jr., G. B. Taylor and G. H. Whipple, Rochester, N. Y.—p. 617.
*Tolerance for Mercury Poisoning Increased by Frequent Hemoglobin Injections. W. H. Havill, J. A. Lichty, Jr., and G. H. Whipple, Rochester, N. Y.—p. 627.
Hemoglobin Injections and Conservation of Pigment by Kidney, Liver and Spleen: Influence of Diet and Bleeding. W. V. Newman and G. H. Whipple, Rochester, N. Y.—p. 637.
Iron Content of Blood Free Tissues and Viscera: Variations Due to Diet, Anemia and Hemoglobin Injections. R. P. Bogniard and G. H. Whipple, Rochester, N. Y.—p. 653.
Studies in Serology of Syphilis: VI. Induction of Antibodies to Tissue Lipoids (*Positive Wassermann Reaction*) *in Normal* Rabbits. H. Eagle, Baltimore.—p. 667.

**Influence of Ligation of Pancreatic Ducts of Dogs on Serum Amylase.**—Johnson and Wies demonstrated a sharp contrast in regard to the postoperative amylase concentration of the serums of dogs, depending on whether ligation of the pancreatic ducts was or was not a part of an otherwise prescribed operation. The characteristic feature is a marked rise of several hundred per cent in serum amylase concentration, sustained for several days, which is observed when the pancreatic ducts have been ligated.

**Cultivation of Typhus Fever Rickettsia in Presence of Live Tissue.**—According to Nigg and Landsteiner, Rickettsia prowazeki can be cultivated for many generations in vitro, without diminution in numbers or virulence, in mediums similar to those described by Maitland, Rivers and others for the cultivation of certain viruses. In all probability, such cultures can be maintained indefinitely. It has been impossible, thus far, to cultivate the typhus rickettsia without employing living tissue.

**Reaction of Rabbits to Streptococci.**—Schultz and Swift rendered rabbits very hypersensitive by relatively small doses of green streptococci given intracutaneously, and somewhat less hypersensitive by similar doses of heat-killed vaccine prepared from hemolytic streptococci. Animals receiving the same doses intravenously gave, on subsequent testing, lesions slightly more marked than normal controls; but these lesions were qualitatively hard and nodular compared with the large edematous lesions in the cutaneously sensitized group. There was no parallelism between the degree of cutaneous or ophthalmic hypersensitivity and agglutinin titer in the blood serum. The authors believe that bacterial hypersensitivity to whole streptococci depends more on previously induced focal infection than on circulating antibodies.

**Tolerance for Mercury Poisoning Increased by Frequent Hemoglobin Injections.**—Havill and his associates report that frequent injections of superthreshold amounts of dog hemoglobin will cause deposits of pigment material in the renal tubular epithelium. When this has happened, the dog will survive minimal lethal doses of mercuric chloride with little evidence of renal injury. In fact, some dogs will tolerate twice the minimal lethal dose without severe reaction. There is no evidence that continued injections of dog hemoglobin in these amounts will cause any injury or functional disability of the kidney. Rest periods will effect a disappearance of this pigment in the renal tubules.

## Journal of Lab. & Clinical Medicine, St. Louis

**17**: 507-610 (March) 1932

Broader Aspects of Routine Cultural Examinations. Ruth Gilbert, Albany, N. Y.—p. 507.
Use of Animals in Routine Diagnostic Work. K. F. Meyer, San Francisco.—p. 510.
Anaerobic Technic. M. H. Soule, Ann Arbor, Mich.—p. 519.
Technic for Isolation of Streptococci. W. J. Stainsby and Edith E. Nicholls, New York.—p. 530.
Preparation of Vaccines. L. W. Famulener, New York.—p. 538.
*Vaccines in Clinical Medicine. R. A. Keilty, Washington, D. C.—p. 545.
Examination for Pathogenic Fungi. F. W. Shaw, Richmond, Va.—p. 549.
*Bacteriology of Pus. J. F. Norton, Detroit.—p. 558.
Bacteriologic Examination of Blood and Spinal Fluid. W. J. Stainsby and Edith E. Nicholls, New York.—p. 566.
*Bacteriology of Nose and Throat. W. C. Noble, Jr., and D. H. Brainard, New York.—p. 573.
Bacteriology of Bile Obtained by Duodenal Tube Biliary Drainage. B. B. V. Lyon, Philadelphia.—p. 583.
*Laboratory Methods in Treatment of Pneumonia. N. Plummer, New York.—p. 594.

**Vaccines in Clinical Medicine.**—Keilty considers that the position of vaccines, theoretically, experimentally and clinically, is today one of imbalance. There has been too much accomplished in the past to disregard them entirely, and a middle ground is an acceptable attitude. A vaccine is defined as a vaccinogenic solution having the power of producing specific antibodies in vivo. Vaccines prepared from a multiple flora are selected by the author exclusively on their quantitative appearance in culture and their allergic cutaneous reactions. Vaccines must start out with the study and isolation of specific etiologic organisms. They must be prepared in such a way that the vaccinogenic factor is as nearly unaltered as possible, but no solution should be used in which a viable organism has any chance of becoming virulent. The present trend in dosage is to start with small amounts, 0.1 cc., increased in 0.1 cc. stages and given every other day over a long period. Each individual case is an entity and for this reason the best results are obtained after experience. In the preparation of a vaccine, one should pay no attention to the bacterial count but make heavy suspensions and vary the dosage according to general reactions. The desirability of general reactions for immunity producing purposes is stressed.

**Bacteriology of Pus.**—Norton emphasizes the fact that the proper collection of material is essential for a satisfactory laboratory examination. Skin contaminants must be rigidly excluded. Too great emphasis cannot be placed on this point, if the laboratory worker is to give the clinician a true picture of the bacteriology of the material submitted. The first step in laboratory examination of pus is, under all conditions, the preparation and examination of a proper smear on a microscope slide. Care should be taken to make thin film preparations. A stain according to Gram's method gives the most valuable indication of any single stain but will not, of course, detect the tubercle bacillus. Hence it is extremely desirable for the laboratory to be furnished with accurate information concerning the source of the material. Various modifications of the original Gram method have been introduced. The author's experience has been that careful attention to the details of the technic is fully as valuable in yielding consistent results as any modification of the solutions employed. This is particularly true in regard to the alcohol (or acetone) decolorization. In "old" pus the Gram stain may be uncertain. In many laboratories, the methylthionine chloride stain is used for the detection of gonococci. While this is reasonable under special conditions in which the clinician and the laboratory work in close cooperation, it is not to be recommended. Furthermore, it is highly desirable to make a Gram stain if organisms resembling the gonococci are seen in the material submitted, so little is gained by the use of methylthionine chloride. For pus from tuberculous conditions, the Ziehl-Neelsen method, or some of its modifications, is in general use. The methylthionine chloride stain may be used for detecting organisms resembling diphtheria bacilli, while either methylthionine chloride or gentian violet is useful for staining the spirochetes and fusiform bacilli characteristic of Vincent's infection.

**Bacteriology of Nose and Throat.**—Noble and Brainard call attention to the fact that many bacterial species are to be found in the nasal passages and throat, and that the same or apparently the same species occur on both the healthy and diseased mucous membrane. Therefore it is difficult, in the absence of a definite lesion, to appraise satisfactorily the clinical significance of many of the species encountered in a bacteriologic examination. This is especially true of the streptococci, whether green, indifferent or hemolytic, the pneumococci, staphylococci gram-negative cocci and hemoglobinophilic bacilli. If one considers the hemolytic streptococci as an example, one must remember that they constitute a large group of many strains which differ greatly in their pathogenicity and virulence, and that while certain strains may give rise to scarlet fever or to septic sore throat, others may be innocuous. The finding of hemolytic streptococci, therefore, is not necessarily significant, but the finding of a particular strain may be of great significance. Unfortunately, the demonstration of a particular pathogenic strain is not always easy and usually is not practical in routine examinations. The rôle of the anaerobic bacteria as incitants of colds and influenza is unknown; they would appear to be part of the normal flora and of little if any pathogenicity, but additional experimental evidence may change these views. Recent work has again directed attention to the probability that a filtrable virus is the primary cause of certain respiratory infections, preparing the way for the secondary complications, which may be brought about by many of the common bacteria harbored in the upper respiratory tract.

**Laboratory Methods in Treatment of Pneumonia.**—Plummer states that, during the past few years, pneumonia has been the subject of extensive investigation, but most of the discoveries have not yet reached the stage of practical significance. Perhaps the most important advance toward the solution of this problem has been the chemical fractionation of the pneumococcus. This information has recently been applied by Avery and Dubos to the development of an enzyme that splits the carbohydrate fraction of the type III pneumococcus and by so doing destroys the toxicity of this organism. Already these scientists have been able to protect mice against the type III pneumococcus infection, and it is probable that this agent will be of value in the treatment of pneumonia. The majority of pneumonia patients today are not given the benefit of typing, even when the advantages of type diagnosis are so striking, as shown by the following example: Two pneumonia patients with the same amount of lung involvement and the same degree of toxemia are seen late in their infection. Assume that one is a type I with a negative blood culture and the other a type III with a positive blood culture. The type III patient will almost certainly die, the type I has a good prognosis, and, if given the benefit of an efficient therapeutic agent, such as concentrated serum, will almost certainly recover. In the up-to-date management of pneumonia, the sputum should be carefully examined and rapidly typed as a guide to prognosis and to insure the prompt administration of serum in types in which it has been found efficacious. Blood cultures and other laboratory procedures should be instituted in order to recognize early the presence of septicemia and other complications. In short, it is evident that the modern treatment of pneumonia is dependent on the utilization of the latest bacteriologic and immunologic methods.

## Michigan State M. Soc. Journal, Grand Rapids

**31:** 243-300 (April) 1932

Relation of Physician to Public. E. S. Judd, Rochester, Minn.—p. 243.
Rôle of Amino-Acids in Animal Organism: I. Cystinuria and Cystine Calculi, Surgical and Medical Problem. H. B. Lewis, Ann Arbor. —p. 249.
Present Status of Prostatic Surgery. H. W. Plaggemeyer and C. G. Weltman, Detroit.—p. 254.
*Primary Ileostomy in Treatment of Generalized Peritonitis. E. C. Baumgarten, Detroit.—p. 257.
Practice of Medicine by Corporations: Partial Survey and Study of Problems Involved. F. C. Warnshuis, Grand Rapids.—p. 259.
Septic Abortion Associated with Meningococcic Meningitis. W. E. Larson and B. H. Starman, Wyandotte.—p. 267.
Plea for Preliminary Iridectomy. J. G. Huizinga, Grand Rapids.—p. 268.
Dislocation of Carpal Bones: Scaphoid and Semilunar: Report of Case. F. T. Andrews, Kalamazoo.—p. 269.
Neurologic and Psychopathic Manifestations of Pernicious Anemia. C. Kiely, Cincinnati.—p. 272.
Myasthenia Gravis Following Electrical Shock. F. G. Lindemulder, Ann Arbor.—p. 275.
The Doctor's Log. W. J. Stapleton, Jr., Detroit.—p. 277.
Michigan's Department of Health. C. C. Slemons, Lansing.—p. 281.

**Primary Ileostomy in Treatment of Generalized Peritonitis.**—Baumgarten states that patients with generalized peritonitis of appendiceal origin should be treated as cases of intestinal obstruction. Intestinal drainage is paramount in the treatment of these patients. Primary ileostomy is a satisfactory means of securing intestinal drainage, controlling dehydration and the acid-alkali balance of the blood plasma. Persistent fecal fistula is not a common complication. Nineteen cases of generalized peritonitis following appendicitis are reported by the author with three deaths, or a mortality rate of 15.7 per cent.

## Nebraska State Medical Journal, Lincoln

**17:** 132-176 (April) 1932

Wayside Gleanings of the Pioneer Surgeon. J. E. Summers, Omaha.—p. 146.
Some Annotations on the Summers Syllabus. F. A. Long, Madison. —p. 151.
Clinical Aspects of Cancer Problem. G. W. Crile, Cleveland.—p. 153.
Concerning Nature of Epigastric Hernia and Its Relation to Gastric and Other Disturbances. L. Freeman, Denver.—p. 159.
Indications for Intestinal Drainage: Enterostomy and Colostomy: Technic of Operation: Report of One Hundred and Thirty-Four Cases. D. Macrae, Jr., Council Bluffs, Iowa.—p. 161.
Surgical Dynamics of Alimentation. C. A. Roeder, Omaha.—p. 165.

## New England Journal of Medicine, Boston

**206:** 601-658 (March 24) 1932

*Craniocerebral Injuries from Point of View of General Surgeon. E. H. Risley, Waterville, Maine.—p. 601.
Hospitalization of Cancer in Massachusetts. G. H. Bigelow and H. L. Lombard, Boston.—p. 607.
*"Avertin" as Basal Anesthetic. F. W. Marvin, Boston.—p. 609.
Blood Pressure Fall Occurring in "Avertin" Anesthesia. G. W. Taylor and C. C. Lund, Boston.—p. 612.
Bill to Register Chiropractors. S. Rushmore, Boston.—p. 614.
Mortality and Expectation of Life in Mental Deficiency in Massachusetts: Analysis of Fourteen-Year Period 1917-1930. N. A. Dayton, C. R. Doering, Margaret M. Hilferty, Helen C. Maher and Helen H. Dolan, Boston.—p. 616.
Spontaneous Rupture of Heart: Case Report. F. R. Barnes, Fall River, Mass.—p. 631.
Horseshoe Kidney: Report of Unusual Form. J. Tartakoff, Worcester, Mass.—p. 633.

**Craniocerebral Injuries.**—Risley discusses the question of the element of danger in doing spinal tap in acute cases of craniocerebral injury, for the emergency within the skull is so great, because of the rapid accumulation of fluid within its closed walls, that permanent cerebral damage is quickly accomplished unless this rapidly accumulating fluid is speedily removed. Edema and hemorrhage, accompanying the more severe grades of brain injury, immediately result in the interference with absorption of cerebrospinal fluid by the normal paths, and a vicious circle is set up, which causes further pressure on the brain and a resulting cerebral anemia. This anemia, if not relieved at once, leads with great rapidity to gliosis and lasting changes in the cerebral tissues, which, in turn, effect permanent changes in the disposition, character and mentality of the patient. Relief of this tension is therefore essential and should be brought about without delay. It is best accomplished by repeated spinal taps. It has further been demonstrated that this procedure, if carried out as a routine, will in the vast majority of cases obviate the necessity of later decompression operations. This measure is especially applicable to cases of fracture of the base of the skull. The picture in the more severe types of fractured base is rarely clean cut, and, unless one is able to get an absolute confirmation by roentgen examination, one is liable to have a confused and ill defined picture presented and can make a diagnosis only by a process of elimination. If, however, one estimates the extent of cerebral damage by a measurement of intracranial pressure, one can obtain a much more clearly defined picture, and the treatment can be worked out much more logically. The author emphasizes the fact that the important consideration, in all types of head injury, is the prevention of cerebral damage. This is to be accomplished by efforts to keep the intracranial pressure as nearly normal as possible.

**"Avertin" as Basal Anesthetic.**—Marvin believes that "avertin" should be used only as a basal anesthetic. It should be given only by a well trained anesthetist or under his direction. Every detail of technic should be executed accurately. Carelessness will be penalized by morbidity and mortality. It causes a peaceful, quiet and rather rapid induction with early relaxation. The amount of ether or nitrous oxide used as an adjunct is greatly reduced. It should be used alone, and not in combination with other drugs whose synergistic action might produce serious complications.

## Ohio State Medical Journal, Columbus

**28:** 233-312 (April) 1932

Premature Infants: Report of Eleven Hundred and Twelve Consecutive Cases. J. H. Hess and Evelyn C. Lundeen, Chicago.—p. 253.
Extrasystoles and Their Treatment with Quinidine Sulphate. J. McGuire, Cincinnati.—p. 260.
General Medical Aspects of Endocrinology, with Remarks Concerning Some of the Newer Hormones. E. P. McCullagh, Cleveland.—p. 263.
Whooping Cough: Pertussis. F. van Orsdall, Columbus.—p. 268.
Clinical Examination of Autonomic Nervous System. A. T. Steegmann, Cleveland.—p. 272.
*Focal Infection as Factor in Heart Disease. R. L. Haden, Cleveland. —p. 276.

**Focal Infection as Factor in Heart Disease.**—In studying some problems in dental focal infection, Haden injected 1,500 rabbits intravenously with bacteria from periapical infection. The organisms were principally nonhemolytic streptococci. Each animal received 5 cc. of a twenty-four-hour broth culture and was examined post mortem in from three to six days. The organisms were grown under partial oxygen tension, a point most important in preserving pathogenicity during the period intervening between removal of the bacteria from the body and their injection into the experimental animal. All gross lesions observed at the routine necropsy were tabulated. In this series, 18 per cent showed gross endocardial lesions and 10 per cent showed lesions in the myocardium. The lesions recorded are only those which were visible to the naked eye. If microscopic studies had been made, the incidence of lesions in the myocardium would certainly have been much higher. The myocardial lesions observed were hemorrhage, sometimes limited to the right auricle, areas of necrosis of the heart muscle, and occasionally small abscesses. It seems apparent from such results that the organisms in chronic septic foci are well able to produce disease of the myocardium and heart valves. The important lesson to be learned from a study such as this is the realization on the part of the clinician of the potential danger to the heart of chronic septic foci. If this is kept in mind, the importance of removal of focal infection early instead of late is apparent. There seems to be no doubt that the judicious removal of septic foci will do much to lessen the incidence of heart disease, especially of the myocardium. In patients in whom the heart valves are already damaged by the rheumatic virus, the removal of foci of infection should lessen also the incidence of subacute bacterial endocarditis. Early removal of chronic foci in all diseases of focal origin cannot be stressed too strongly. Too often the late removal is disappointing and the importance of chronic foci is underestimated because the systemic disease, although of focal origin, is beyond repair. Systemic disease of focal origin should be cured before it develops.

## Public Health Reports, Washington, D. C.

**47:** 651-710 (March 18) 1932

Impinger Dust Sampling Apparatus as Used by United States Public Health Service. L. Greenburg and J. J. Bloomfield.—p. 654.

## Southern Medical Journal, Birmingham, Ala.

**25:** 211-324 (March) 1932

Massive Bone Grafts: Report of Cases. O. L. Miller, Charlotte, N. C.—p. 211.

Plaster Cast, Bone Pin Method in Fractures of Lower Leg. J. W. White, Greenville, S. C.—p. 218.

*Eczema in Infancy and Childhood: Its Relation to Allergy. L. Bivings, Atlanta, Ga.—p. 223.

*Herpetic Fever with Stomatitis: Report and Discussion of Case in Which Virus Was Isolated. J. B. Youmans, Nashville, Tenn.—p. 228.

*Solitary Cysts of Kidney. R. W. McKay, Charlotte, N. C.—p. 234.

Oleothorax: Its Use in Chronic Noninfectious Pleural Effusion: Report of Two Cases. W. Baumgarten and H. A. Rusk, St. Louis.—p. 239.

Factors Concerned in Prognosis of Pulmonary Tuberculosis. P. H. Ringer, Asheville, N. C.—p. 243.

Rôle of Roentgen Ray in Determining Cause of Gastro-Intestinal Bleeding. E. M. McPeak, Washington, D. C.—p. 247.

Management of Toxic Goiters. A. G. Brenizer, Charlotte, N. C.—p. 251.

*End-Results of Treatment for Peptic Ulcer. W. G. Morgan, Washington, D. C.—p. 256.

Etiology and Treatment of Functional Uterine Bleeding. E. Novak, Baltimore—p. 261.

Mental Reactions Associated with Menopause. Eleanora B. Saunders, Towson, Md.—p. 266.

Use of Thymophysin and Similar Substances in Labor. R. Paddock, St. Louis.—p. 271.

Advantages of Spinal Anesthesia. C. C. Green, Houston, Texas.—p. 274.

Treatment of Some of the Commoner Lid Conditions. O. Wilkinson, Washington, D. C.—p. 277.

Parinaud's Conjunctivitis. A. G. Wilde, Jackson, Miss—p. 282.

Significance of Hematuria. J. Hume, New Orleans.—p. 288.

Morphologic Effects of Obstructive Jaundice on Liver of Dog. J. L. Brakefield, Birmingham, Ala.—p. 289.

History of Yellow Fever Since the New Orleans Epidemic of 1905. W. A. Sawyer, New York.—p. 291.

Acute Intestinal Diseases in Infants. W. H. F. Warthen, Baltimore.—p. 297.

Earliest American Casualties in World War. R. U. Patterson, Washington, D. C.—p. 305.

The Teaching of Pharmacology. W. D. MacNider, Chapel Hill, N. C.—p. 309.

Undergraduate Medical Teaching and Radiology. V. W. Archer, University, Va.—p. 313.

**Eczema in Infancy and Childhood.**—According to Bivings, most infantile eczemas are allergic in origin. Prompt and lasting relief can usually be obtained by thorough testing and the elimination of offending foods. The phenomenon of immunity will result in recovery, without treatment, in the mild cases and in the more severe also, but a long period of suffering can be eliminated if the cause is determined and removed. Cow's milk, eggs and wheat are the most common offenders, but many errors and failures will result if they are the only factors considered. Local treatment, combined with testing and elimination, is probably the method to be recommended.

**Herpetic Fever with Stomatitis.**—Youmans reports a case of idiopathic herpetic fever with stomatitis, in which the virus was isolated from lesions of the mouth. Attempts to isolate the virus from the blood and spinal fluid failed. The author discusses the significance of the clinical features and laboratory studies with respect to the pathogenesis of herpetic fever.

**Solitary Cysts of Kidney.**—McKay believes that Hepler's explanation that solitary cysts of the kidney are the results of urinary obstruction to part of the kidney parenchyma plus interference with the blood supply is the most logical theory that has been advanced. A plain roentgenogram with the colon cleared of gas will usually show the outline of the cyst. Pyelograms may vary. They are usually confused with renal neoplasms. All solitary cysts of the kidney should be operated on. The serous cysts should be resected when sufficient renal parenchyma remains. In all solitary cysts of the kidney that are hemorrhagic, however, a nephrectomy should be done.

**End-Results of Treatment for Peptic Ulcer.**—Contrary to the practice of many clinicians, Morgan does not employ alkalis to any great extent in the treatment of peptic ulcer, using only magnesium oxide. Early in his practice he formed the opinion that soda in any form administered in peptic ulcer cases not only did little good but often seemed to retard healing. This experience gained in the early years of his practice has become a settled conviction after years of extensive experience with this type of digestive disorder. From his own experience of thirty-five years in dealing with peptic ulcer, and from an exhaustive study of the literature bearing on this subject, he is convinced that individuals who have been cured of the subjective and objective symptoms of peptic ulcer, and have been free from symptoms for a period of five years, have not only as favorable a life expectancy, but are as comprehensively unimpaired for the carrying on of their accustomed vocation, as any similar group who have suffered any other serious illness.

## Southwestern Medicine, Phoenix, Ariz.

**14:** 101-148 (March) 1932

Do Operative Mortality and Sequelae Justify Operations on Borderland Gallbladder Cases? W. L. Brown, C. P. Brown and J. L. Murphy, El Paso, Texas.—p. 101.

Fungus Infection, with Especial Reference to Lungs. W. W. Watkins, Phoenix, Ariz.—p. 103.

Extrapleural Pneumolysis: Preliminary Report of Cases. V. Randolph, Phoenix, Ariz.—p. 107.

Current Medical Problems of Central America, with Especial Reference to Treatment of Amebiasis. H. H. Anderson, San Francisco.—p. 110.

Climatic Factors of Salt River Valley as Therapeutic Aids. O. H. Brown, Phoenix, Ariz.—p. 113.

Acute Benign Lymphadenosis: Infectious Mononucleosis, Glandular Fever: Case. P. H. Guttman and L. B. Baldwin, Phoenix, Ariz.—p. 115.

Surgical Treatment of Peptic Ulcer. V. C. Hunt, Los Angeles.—p. 118.

Analytic Work Essential to Rational Sewage Disposal Plant Design and Operation. F. M. Veatch, Kansas City, Mo.—p. 122.

## Western J. Surg., Obst. & Gynecology, Portland, Ore.

**40:** 161-224 (April) 1932

*Effect of Distention of Bowel on Its Circulation and on Absorption from Its Lumen. W. D. Gatch, J. E. Owen and H. M. Trusler, Indianapolis.—p. 161.

Study of Abdominal Adhesions. Rea Smith, Los Angeles.—p. 171.

Appendicitis Statistics. C. E. Black, Jacksonville, Ill.—p. 176.

Discussion of Appendicitis Based on Thirteen Hundred Consecutive Appendectomies. F. R. Fairchild, Woodland, Calif.—p. 188.

Appendicitis: When to and When Not to Operate. P. W. Willis, Seattle.—p. 195.

*Statistical Study of Acute Appendicitis. L. W. Jordan, Portland, Ore.—p. 201.

**Bowel Distention.**—Gatch and his associates describe experiments which indicate that the factors which govern the absorption of the toxic material from the intestine are more important than those which govern its formation. They favor the opinion that this absorption is mostly transperitoneal and that the peritoneum has considerable ability to hinder it. They lend support to the view that the best treatment of advanced ileus is simple relief of obstruction. The ability of seminecrotic bowel to recover is phenomenal. The authors' experiments show that a rapid drop in blood pressure is the most constant indication that absorption of toxic material has occurred. They believe that this makes spinal anesthesia dangerous.

**Statistical Study of Acute Appendicitis.**—Jordan studied a series of 587 cases of acute appendicitis. Of this number, 30, or 5.11 per cent, ended fatally. Only those surgical cases were considered in which there was a pathologic diagnosis of acute appendicitis. During the acute attack, previous to their entrance to the hospitals, many of the patients had had laxatives and enemas. In this series of cases, the average clinical picture of acute appendicitis was determined. In comparing the nonfatal cases with the fatal cases, the differences between the symptoms, physical signs and laboratory observations in the two groups were not great enough to be of much practical significance in determining the prognosis. Delay in surgical treatment was found to increase the death rate, which was 5.11 per cent.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Physical Medicine, London

**6:** 243-262 (March) 1932

*Diathermy of Brain. J. Kowarschik.—p. 245.
Movement in Organic Disease. E. Kingscote.—p. 248.
*Elimination of Uric Acid Through Skin Following Mud Packs. M. Comel.—p. 250.
Types of Arthritis Amenable to Treatment of Pelvic Organs by Diathermy and Ionization. C. A. Robinson —p. 251.
Spas and Spa Treatment in Europe. M. B. Ray.—p. 253.

**Diathermy of Brain.**—Kowarschik states that there are two ways of diathermizing the brain. The first is the transverse method. Here one uses two small lead electrodes (5 by 5 cm.) placed on both temples, and fastened with a bandage. The second method is by sending the current through the head in a sagittal direction. One electrode (4 by 12 cm.) is placed on the forehead, above the eyebrows; the other (of the same size) on the back of the head, at the hair border, or even on the hair, if this is well wetted with soap and water. The sagittal diathermizing of the brain will warm up the frontal lobes, the midbrain, the pons, the medulla oblongata and the cerebellum. With both methods the current should be strong enough to produce only a mild and agreeable feeling of warmth; in most cases from 0.2 to 0.3 ampere will suffice. Stronger currents will sometimes cause dizziness or headaches. To avoid dizziness, it is best to have the patient recumbent during the treatment, which should not be longer than about fifteen or twenty minutes—though some recommend as long as an hour. By the use of either method one can diathermize the brain, producing a hyperemia and so improving the functions of the brain centers. These respond frequently to diathermy. One notes a decrease of blood pressure in cases of hypertonia, a regaining of consciousness with uremia, an increase of urine in many persons, an increase of basal metabolism, and an effect on the activity of the generative glands. The author believes that in the past these many effects of cerebral diathermy have been used far too little in therapeutics and strongly recommends their more frequent use—the more so since diathermy is entirely free from danger.

**Elimination of Uric Acid.**—Comel states that, following thermal mud-packs, great amounts of uric acid are excreted through the skin. A drainage of uric acid from tissues admittedly occurs, as the elimination of uric acid is very high even with a purine-free diet, and is particularly high in persons with gout and those showing hyperuricemic arthritis.

### British Journal of Radiology, London

**5:** 193-288 (March) 1932

*Discussion on Lipiodol in Diagnosis of Intrathoracic Disease. L. S. T. Burrell.—p. 193.
*Discussion on Radiation Treatment of Leukemia. T. Horder.—p. 202.
Discussion on International Protection Recommendations. F. Roberts. —p 215.
Congenital Diseases of Lungs P. Kerley.—p. 234.
Radiology of Gallstones and Gallbladder. G. E. Vilvandre.—p. 241.
Hypertrophy of Both Breasts Treated by Roentgen Rays. A. H. Laird. —p. 249.
Variation of Total Roentgen-Ray Energy with Potentials. W. Moppett. —p. 250.
Advances in Roentgen-Ray Engineering, with Especial Reference to High Potentials. G. Grossmann.—p. 252.
Experimental Radiography Utilizing Gamma Rays of Radium. C. G. Osment.—p. 269.
Power Factor in Radiography. W. E. Schall.—p. 275.
Roentgen-Ray and Radium Therapy. T. Horder.—p. 278.

**Iodized Poppy-Seed Oil in Diagnosis of Intrathoracic Disease.**—Burrell reviews the various methods of administering iodized poppy-seed oil 40 per cent. There are disadvantages in the cricothyroid method. If it is not given properly, the material, instead of being injected into the trachea, goes into the surrounding tissues and may lead to cellulitis and a considerable amount of pain, if not actual danger. Introduction by the nasal route is simple, but there is a possibility of laryngeal spasm. The usual method of introduction at present is through the cords with a laryngeal syringe. The most obvious indication for the use of the oil is bronchiectasis, in which condition it is a guide to treatment, which depends largely on whether the disease is unilateral or bilateral. The author has frequently had a patient with obvious signs of bronchiectasis in one lung, and only by the use of the oil has he discovered that there was considerable bronchiectatic dilatation on the other side. Before urging a surgical operation of any magnitude, therefore, it is essential to have a roentgen examination after using the oil. Again, it is difficult or impossible to determine clinically the extent of the bronchiectasis, and treatment depends largely on extent. If bronchiectasis is confined to the extreme lower lobe of the lung, it is possible to have that lobe excised. The author has been most impressed by the results of operation. It was not until iodized poppy-seed oil 40 per cent was introduced that one recognized that a certain proportion of cases of unexplained hemoptysis were really bronchiectasis. Formerly such patients would be sent to a sanatorium, but now it is possible to clinch the diagnosis in many cases. Every case of unexplained hemoptysis should be examined by roentgen rays after injection of the oil.

**Radiation Treatment of Leukemia.**—Horder reports that roentgen rays applied to the left upper abdomen have great value in both myelocytic and lymphatic leukemia. They probably prolong life in most cases and they certainly make the patient much more comfortable. Radiations must be used carefully, but in sufficient doses. The tendency at present is to underdose. On the other hand, great care must be exercised at the beginning of the treatment. The state of the red cells and hemoglobin must be taken into account in controlling dosage. They have, in fact, even greater importance than the white cells.

### British Medical Journal, London

**1:** 457-506 (March 12) 1932

Recent Work on Afferent Control of Circulation in Health and Disease. S. Wright.—p. 457.
Flatfoot. M. Forrester-Brown.—p. 463.
*Blood Sedimentation Rate in Pulmonary Tuberculosis: Its Value in Management of Patient. H. Roche.—p. 466.
Essential Hypertension: Review of One Hundred Cases. R. Marshall. —p. 468.
*Conservative Mastoidectomy for Chronic Suppurative Otitis Media. L. G. Brown.—p. 470.

**Blood Sedimentation Rate in Pulmonary Tuberculosis.**—Roche considers that the blood sedimentation rate is of proved value in the management of cases of pulmonary tuberculosis. The technic is simple. Readings at the end of the first hour are usually sufficient. Regular and repeated estimations are essential. The author strongly urges that the information provided by such estimations should be carefully considered when prescribing rest and exercise, particularly in patients whose temperatures and pulse rates are within normal limits. It is his opinion that attention to this point will tend to minimize the risk of relapse.

**Conservative Mastoidectomy for Chronic Suppurative Otitis Media.**—Brown calls attention to the fact that chronic suppurative otitis media (in reality, chronic mastoid disease) still remains far too prevalent in spite of its admitted dangers to the patient and the loss of national efficiency due to deafness. Conservative mastoidectomy, though devised and advocated as long ago as 1907 by Charles Heath, has not yet gained the universal support it deserves. The author advocates a modification of Heath's operation, termed "transantral attico-tympanotomy," and describes the results he obtained in a series of cases.

### Glasgow Medical Journal

**36:** 113-168 (March) 1932

*Convulsions in Infancy: Part I. S. Graham.—p. 113.
Id.: Part II. N. Morris.—p. 126.
*Id.: Part III. J. B. Rennie.—p. 133.

**Convulsions in Infancy.**—Graham stresses the great value of chloral hydrate in convulsions in infancy (2 to 4 grains, or 0.013 to 0.026 Gm.) by mouth, or, if the patient is unable to swallow, 5 grains (0.03 Gm.) dissolved in a little water and given by rectum. The action is rapid and very effective and obviously more lasting than chloroform. Indeed, in the idiopathic type of convulsion, chloral hydrate given in this way and repeated every two hours if necessary (1 grain, or 0.0065 Gm.) to an infant 1 month of age is a most satisfactory form of treatment. The chloral hydrate should not be stopped when the convulsions cease, but the dose must be reduced gradually and the interval lengthened until the daily amount given is very small. This gradual reduction of the chloral over a period of several days is most important. Having controlled the attack, it is necessary for rational treatment to ascertain if possible the cause. Fever is usually present, not as effect but as cause, and usually indicates some infection. The discovery of an early bronchopneumonia or an otitis media, for example, renders the most probable cause of the convulsion tetany. The facial phenomenon will be absent after the convulsion, and probably none of the other signs of tetany will be present, but this does not invalidate such a diagnosis of tetany. The most difficult task is the decision regarding the presence or absence of disease of the nervous system, especially meningitis. A bulging fontanel always demands a lumbar puncture as a therapeutic as well as a diagnostic measure, although the results of lumbar puncture as a means of controlling the attacks are particularly disappointing. If a diagnosis of tetany has been arrived at, treatment with calcium chloride and cod liver oil (or one of its substitutes) should be instituted. Terminal convulsions, such as occur so commonly in tuberculous meningitis and less commonly in pneumonias and other similar infections, are best combated by chloral hydrate. Morphine may be used, but it is less safe and less efficient, while the bromides are perfectly safe but still not as efficient. Generally speaking, in all cases the bowels should be attended to. The dose of castor oil, or, if in a hospital, the rectal wash-out, will be helpful in any event at the onset of an infection, but when this has been done properly it is not necessary and may be distinctly harmful to repeat the procedure. The continued use of such drugs as mercury with chalk under these circumstances is unwarranted.

**Blood Changes in Convulsions in Infancy.**—According to Rennie, the total serum calcium and diffusible calcium are reduced not only in cases with clinical signs of tetany but in many cases of convulsions with no other evidence of tetany. The serum protein influences only the protein-bound calcium, which is inert as regards neuromuscular excitability. The injection of amino-acids intravenously in animals causes a definite fall in the serum calcium. From these results it seems fair to conclude that the products of protein decomposition, certainly those in the form of amino-acids, can combine with calcium, remove it from the serum, and thus induce hypocalcemia. It may be, therefore, that the presence of excess amino-acids in many conditions causes low serum calcium and convulsions.

## Guy's Hospital Gazette, London

**46**: 97-114 (March 19) 1932

Cerebrospinal Meningitis. A. C. Hampson.—p. 98.
Cleft Palate. J. B. Hunter.—p. 102.

## Indian Medical Gazette, Calcutta

**67**: 121-180 (March) 1932

Intradermal Method of Injecting Hydnocarpus Preparations in Leprosy. E. Muir.—p. 121.
"Mercurochrome-220 Soluble" in Leprosy Work. G. R. Rao and A. T. Roy.—p. 124.
Preliminary Note on Action of Alkaloid of Moringa Pterygosperma (N. O. Moringae). R. N. Chopra and P. De.—p. 128.
Cytologic Studies of Blood and Tissues in Kala-Azar and Associated Conditions: II. Morphology of Leukocytes in Supravital Preparations. K. V. Krishnan, J. C. Lal and L. E. Napier.—p. 130.
Id.: III. Large Mononuclear Cells in Human Malaria. L. E. Napier, K. V. Krishnan and J. C. Lal.—p. 135.
Isohemagglutination. P. N. Mitra.—p. 139.
Calcium Content of Common Dietaries in India. D. R. N. Sahu and A. N. Bose.—p. 140.

## Journal of Mental Science, London

**78**: 1-262 (Jan.) 1932

Pathogenesis of Anaerobic Microbic Infections in Major and Minor Psychoses, with Control Cases. W. M. Ford-Robertson.—p. 12.
*Serodiagnosis of Syphilis in Mental Hospital Practice. J. E. Nicole and E. J. Fitzgerald.—p. 96.
Some Aspects of Leukocyte Associated with Mental Disorder. G. W. T. H. Fleming.—p. 129.
*Alleged Hemoclasia in Insane: Study of Fifty Cases, with Especial Reference to Technic. T. D. Power and A. W. Pettit.—p. 147.
*Experimental Error in Enumeration of Leukocytes and Its Application to Hemoclastic Crisis. Irene Yates and J. C. Batt.—p. 160.

**Syphilis in Mental Hospital Practice.**—Nicole and Fitzgerald did the micro-Meinicke clarification reaction in 1,350 mental cases, 175 of these being selected for comparison with other tests, these others being the macro-Meinicke clarification reaction, the original Sachs-Georgi test, the Sachs-Witebsky test and the Wassermann test, performed on an average five at a time on each serum. Cerebrospinal fluid was tested in 170 of these cases by means of an average of four of these reactions and also by six usual chemical tests. The cases included 53 nonsyphilitic persons, 38 syphilitic persons (without dementia paralytica), of which 17 had been treated, 26 dementia paralytica patients before treatment and 58 after malaria. Disagreements between these tests occurred (in blood) in 36 cases, of which 4 were nonsyphilitic, 5 untreated syphilitic persons, and 27 treated (including dementia paralytica). Noteworthy points were: 1. The micro-Meinicke clarification reaction and the macro-Meinicke clarification reaction were only once wrongly negative. 2. The Sachs-Witebsky was never wrongly positive, and was more sensitive than the original Sachs-Georgi, but not more sensitive than the Wassermann. 3. The Meinicke clarification reactions were superior to all others in sensitivity. A routine procedure is suggested, consisting of applying a micro-Meinicke clarification reaction to all patients on admission, and testing the ones giving a positive reaction by means of a macro-Meinicke clarification reaction. By this means a correct diagnosis is likely to be arrived at in at least 99.7 per cent of the cases. The procedure for cerebrospinal fluid consists of testing all fluids by means of a macro-Meinicke clarification reaction, and checking the negatives by a Sachs-Witebsky. The likely errors would probably number only 2 per cent.

**Alleged Hemoclasia in Insane.**—Power and Pettit failed throughout their investigations to find any reasonable grounds for concluding that, among the insane, there occurs either a digestion leukocytosis or a digestion leukopenia. Variations in a succession of blood counts developed in a large number of patients, whether the latter had been given milk or were fasting, and there was no definite evidence that the taking of food had any effect whatever on the leukocytic curve. It is just possible that the hourly and daily rhythm of the leukocytes, described by Sabin and Shaw, may not be exactly the same in the mentally deranged as among normal individuals; but this must be a matter for future research and has nothing to do with the subject of hemoclasia.

**Error in Enumeration of Leukocytes.**—Yates and Batt show that certain errors are inevitable when leukocytes are enumerated, and demonstrate that results from such enumerations must be interpreted with mathematical considerations. In the past the mathematical applications have been ignored to a large extent, and only the actual experimental figures considered. The authors endeavor to correlate the two, and refer to fallacies that may be present when conclusions from such results are under consideration. Thirty-six cases investigated for hemoclastic crises gave results within the experimental error. A review of the literature on hemoclastic crises shows that many authors underestimate the error of counting.

## Journal of Tropical Medicine and Hygiene, London

**35**: 81-96 (March 15) 1932

Bacillus Fermenting with Production of Gas Rhamnose but no Other Carbohydrate, Alcohol or Hydro-Aromatic Compound, Among Series of Twenty-Eight Such Substances Tried: Use of Bacillus in Detection and Identification of Rhamnose. A. Castellani.—p. 81.
Parasites and Their Environment. F. G. Cawston.—p. 85.
Etiology of "Egyptian Splenomegaly." R. Girges.—p. 86.

## Lancet, London

**1**: 653-708 (March 26) 1932

*Pathology and Treatment of Anemia. L. J. Witts.—p. 653.
Treatment of Clonic Facial Spasm by Alcohol Injection and by Nerve Anastomosis. W. Harris and A. D. Wright.—p. 657.
*Occurrence of Pituitary Hormones in Urine in Conditions Unassociated with Pregnancy. T. N. A. Jeffcoate.—p. 662.
Operation Under Local Anesthesia: Preparation and Care of Patient. W. Moffatt.—p. 666.

**Pathology and Treatment of Anemia.**—Witts presents data on the basis of which he separates the hemolytic anemias from pernicious and allied anemias, and subdivides the hemolytic anemias into acute and chronic forms. Acute hemolytic anemia and the hemolytic anemia of pregnancy differ from pernicious and allied anemias in the absence of any nutritional or digestive defect, in the fever and general constitutional disturbance, in the regenerative character of the anemia with reticulocytosis and leukocytosis, in the fluctuations in the resistance of the red cells, and in the self-limited course. They differ from chronic hemolytic anemia in clinical features, natural history, and response to treatment. They may be so acute that hemoglobinuria develops, or they may be subacute and torpid; but death or spontaneous recovery occurs within a period rarely longer than a year. On the other hand, one must be impressed by the close resemblance of acute hemolytic anemia and the hemolytic anemia of pregnancy. Every feature of the one disease is duplicated in the other, and they differ only in the fact of pregnancy. For the peculiar frequency of a disease in youth and in pregnancy, one has a parallel in acute yellow atrophy of the liver. For the initiation or recrudescence of an anemia in pregnancy there is a parallel in the bartonella anemia of experimental animals, which may develop only under special conditions, such as after splenectomy or after artificial hemolysis, though the micro-organisms were previously present in the host. There is no valid reason in pathology for the separation of acute hemolytic anemia and the hemolytic anemia of pregnancy, and every symptom points to their identity.

**Pituitary Hormones in Urine Apart from Pregnancy.**—Jeffcoate gives experimental results confirming the work of other observers who have stated that prolan A can be found in the urine at the menopause after castration and in some cases of malignant disease. In a series of cases studied by the author, prolan B was never excreted in the urine except when the patient had living chorionic elements present in the body. In other words, a positive Aschheim-Zondek reaction never obtained except in the presence of such elements. It is shown that prolan A can be detected in the urine of rabbits after castration. Prolan A was found also in the urine of patients who had had subtotal thyroidectomy performed for exophthalmic goiter. The finding of prolan A in the urine of patients with malignant disease was almost entirely confined to those cases in which the genital tract was the site of the tumor.

## Medical Journal of Australia, Sydney

**1:** *283-314 (Feb. 27) 1932*

*Cardiac Arrhythmias. E. Murphy.—p. 283.
*Relation of Sluder's Neuralgia to Trigeminal Nerve and to Other Facial Neuralgias. L. B. Cox.—p. 292.
John Abernethy, 1764-1831. H R. G. Poate.—p. 298.
Fable of Loaded Cecum. H. C. Trumble.—p. 301.

**Cardiac Arrhythmias.**—Murphy enumerates the causes of heart block as follows: (1) Acute infections, such as rheumatism, diphtheria and pneumonia; (2) chronic infections, such as syphilis; (3) degenerative changes—coronary sclerosis or fibrous myocarditis; (4) new growths or hydatid cysts—situated in the bundle of His, and (5) digitalis in large doses. The important features in heart block are the condition of the heart muscle generally; in acute infections, mild heart block may be the only sign of some myocardial damage. The occurrence of syncopal or epileptiform attacks may lead to difficulty. They are distinguished from true epilepsy, because there is no aura—the attack comes on quite suddenly without warning, and it is associated with a very slow pulse. The convulsion and loss of consciousness are due to the cerebral anemia produced during the period of complete block, before the ventricle takes on its own rhythm. It is not uncommonly fatal. Patients who suffer in this way should be warned against going out alone, and they should not expose themselves to any risk of falling down in the traffic. With the less severe forms of heart block, a fairly active life may be led for an indefinite period. A 1:1,000 solution of epinephrine in doses of from 0.3 to 0.6 cc. (5 to 10 minims) in the attack is frequently successful. Digitalis may be given in complete block and congestive failure. Atropine, 0.4 to 0.6 mg. ($\frac{1}{150}$ to $\frac{1}{100}$ grain), will act in those cases associated with vagal irritation. Barium chloride, 0.12 Gm. (2 grains), has been advocated. When some systemic disease such as syphilis is present, antisyphilitic treatment must be undertaken. Mercury in these cases appears to be safer than the arsenic preparations, and many patients are completely cured.

**Relation of Sluder's Neuralgia to Trigeminal Nerve.**—Cox describes section of the sensory root of the trigeminal nerve in a patient with a Sluder's neuralgia following an empyema of one sphenoidal sinus. The operation was done in three stages, but no effect was produced until the conjunctiva became hypesthetic. It is suggested that the condition is a neuralgia of the nasociliary nerve of infective origin. The author discusses atypical facial neuralgias and their relation to Sluder's neuralgia, and to the anatomy of the facial region.

## Practitioner, London

**128:** *209-368 (March) 1932*

Significance and Pathogenesis of Certain Dermatoses. H. W. Barber.—p. 209.
Pruritus. E. Graham-Little.—p. 224.
Roentgen-Ray Treatment of Skin Diseases. A. M. H. Gray.—p. 232.
Radon in Dermatology. A. C. Roxburgh.—p. 242.
Some Uses of Ultraviolet Radiations in Skin Diseases. R. Aitken.—p. 252.
Errors and Accidents of Treatment. H. C. Semon.—p. 262.
Skin Diseases in General Practice. R. Gibson.—p. 271.
Urticaria. W. N. Goldsmith.—p. 281.
Some Recent Work on Psoriasis. H. Haldin-Davis.—p. 293.
Eczema. G. B. Dowling.—p. 299.
Ringworm of Scalp. W. J. O'Donovan.—p. 315.
Seborrhea. F. Gardiner.—p. 322.
Diet as Factor in Etiology of Acne Vulgaris. W. K. Wills.—p. 331.
Impetigo. J. G. Tomkinson.—p. 334.
Modern Treatment of Lupus Vulgaris. J. Beatty.—p. 343.
Carcinoma of Skin: Its Treatment by Radium. R. Ward.—p. 351.

## Tubercle, London

**13:** *241-288 (March) 1932*

Observations on Tuberculocutaneous Reactions and Tuberculosis. F. J. Allen.—p. 241.
Antituberculosis Work in Czechoslovakia. Eva Morton.—p. 255.
Duty of State Toward Sufferer from Chronic Pulmonary Tuberculosis. Jane Walker.—p. 259.
Id.: F. J. Bentley.—p. 260.

## Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

**58:** 439-495 (March 19) 1932

Action and Use of Electric Bistoury in Treatment of Cancer. Heitz-Boyer.—p. 449.
Cinematizations with Straps in Paralysis of Limbs. A. Pellegrini.—p. 468.
Embolism of Superior Mesenteric Artery with Necrosis, Ulcers and Perforation of Intestinal Wall. P. A. Petridis.—p. 472.
Immediate and Early Diagnosis of Carcinomas of Testis. M. Chevassu.—p. 475.
Bacteriotherapy in Surgical Tuberculosis. L. Bazy.—p. 485.
*Severe Staphylococcus Septicemia Cured by Intravenous Injection of Bacteriophage. Brulé and Sauvé.—p. 491.

**Case of Septicemia Cured by Injection of Bacteriophage.**—Brulé and Sauvé's patient consulted them because of furunculosis. A large abscess was cured by them with local bacteriophage treatment. He returned three months later in a serious condition; a diagnosis of septicemia was made, confirmed by a positive blood culture (Staphylococcus aureus). The symptoms of septicemia had set in eight days following a large injection of vaccine. Finding no general improvement after surgical intervention in the femoral osteomyelitis, the authors gave an injection of bacteriophage in a peptone-free medium, following a blood transfusion. This was followed two days later by an autohemotherapy of 20 cc., after which the temperature dropped, the blood cultures remained negative and a great improvement in the general condition of the patient, leading finally to cure, resulted. Reviewing the case, the authors point out the danger of transforming a latent infection into a generalized septicemia by the injection of a large quantity of vaccine and that the way to obtain a substantial production of antibodies is by progressive and methodical vaccination. Discussing the parts played by the bacteriophage and the autohemotherapy in effecting the cure, the authors suggest that the autohemotherapy destroyed the antiphages, thereby permitting the exclusive action of the bacteriophage.

## Schweizerische medizinische Wochenschrift, Basel

**62:** 297-320 (March 26) 1932

Occurrence of Pellagroid Diseases in Alcoholic Addicts and in Patients with Mental Defects. B. Slotopolsky.—p. 297.
*Clinical Significance of Pericancerous Inflammation and Possibilities of Counteracting It. A. Neumann.—p. 301.
Relations Between Pharmacologic Action and Optic Rotation of Substances. L. Rosenthaler.—p. 305.
*Magnesium Sulphate in Treatment of Tetanus. M. Saegesser.—p. 306.

**Pericancerous Inflammation.**—Neumann shows that pericancerous inflammation, which is well known in pathology, has been largely disregarded in the clinic and in practice. He recommends that it be given careful attention, for it is often possible to influence the carcinoma favorably, particularly in inoperable and ray refractory cases. The treatment of the pericancerous inflammation may be general and passive as well as active. In discussing the general treatment, the author emphasizes the necessity of careful handling in manual and in instrumental examinations, and advises that they should be avoided as much as possible. He also points to the dangers of exploratory excisions. For active therapy the author recommends medicinal antiinflammatory treatment, and for this purpose he considers guaiacol valerianate especially valuable, as it inhibits inflammations in general and also has antispasmodic effects. However, in case of hemorrhage of the mucous membrane of the gastro-intestinal tract, guaiacol valerianate is contraindicated. But, in the majority of cases, small doses are helpful. The author's main object was to show that in the cancer treatment of today one considers almost exclusively the tumor as such and neglects to consider and treat properly the pericancerous inflammation. He is convinced that the proper treatment of the latter could reduce the painfulness, especially in inoperable cases, and in some instances might even arrest the further growth.

**Magnesium Sulphate in Treatment of Tetanus.**—Saegesser points out that, as serotherapy has gained in significance in the treatment of tetanus, magnesium therapy has been largely disregarded. Accordingly he investigated whether serotherapy makes magnesium treatment superfluous. He made experiments on rats and found that after tetanus has become manifest it can be influenced neither by subcutaneous nor by intramuscular injection of magnesium sulphate, for the animals treated thus died at the same time as the control animals. The simultaneous injection of magnesium sulphate and tetanus toxin retards neither the outbreak of the tetanus nor the death of the animals. A preliminary injection of magnesium sulphate farther proximal from the site of the toxin injection retards the tetanus and makes the course more mild, so that the animals survive the tetanus. If instead of magnesium sulphate the same amount of physiologic solution of sodium chloride is injected into the tail, the course of the disease is the same in the animals that have received the injection as in the controls; that is, they die within the first ten hours. From these experiments the author concludes that in animals the perineural and intralumbar injection of magnesium sulphate blocks the central nervous system against the tetanus toxin. In the test tube it could be observed that toxin which has been absorbed by the cerebral substance can be liberated by the addition of magnesium sulphate. The author considers the perineural and intralumbar injection of magnesium sulphate in combination with the intravenous injection of large doses of serum a promising therapeutic method for human tetanus.

## Boll. d. Soc. Medico-Chirurgica di Modena

**31:** 1-116, 1931

Paralysis of Left Recurrent Nerve in Mitral Lesion. G. Nannini.—p. 3.
*Plastic Operation Using Gracilis Muscle in Recurrent Subumbilical Hernia After Laparatomy. A. Comolli.—p. 11.
Sulci and Convolutions of Orbital Aspect of Frontal Lobe in Criminals. L. Rubbiani.—p. 19.
Cancer and Mucocele of Appendix. U. Fogliani.—p. 31.
*Case of Primary Sarcoma of Rectum. M. Montanari Reggiani.—p. 49.
Pathogenesis of Hemorrhagic Infarcts of Intestine. M. Barbiroli.—p. 67.
Case of Sodoku in Province of Reggio Emilia. F. Corfini.—p. 89.
Tonsillectomy and Tonsillotomy. E. Pallestrini.—p. 95.
Clinical and Anatomopathologic Observations on Two Cases of Noma. A. Cavazzuti.—p. 105.

**Plastic Operation for Subumbilical Hernia After Laparotomy.**—Comolli illustrates and advocates his new method based on a single case in which it was impossible to keep the rectus muscles in place, because of separation and atrophy. The procedure consists in cutting the two gracilis muscles at their distal extremity, leaving the proximal insertion intact, passing them through a subcutaneous tunnel to the lower edge of the abdominal incision, and placing them one beside another over the umbilicopubic line in front of the previously sutured breach between the rectus muscles.

**Primary Sarcoma of Rectum.**—Montanari Reggiani states that the rectum is seldom the seat of primary tumors of connective tissue origin and that the clinical diagnosis of rectal sarcoma is still difficult. He briefly discusses the existing literature and describes the case history of a patient with fusocellular sarcoma of the rectum and sarcomatous metastases, first of the liver and then of the lungs by the circulatory route.

## Rivista d'Ostetricia e Ginecologia Pratica, Milan

**14:** 47-94 (Feb.) 1932

*Fibromyoma of Uterus: Spontaneous Evacuation. M. Nizza.—p. 51.
Rare Case of Survival of Very Premature Child. C. Cantone.—p. 60.

**Fibromyoma of Uterus: Spontaneous Evacuation.**—Nizza takes only large fibromyomas into consideration, the smaller ones being more frequent and inconsequential. He finds that they result often from lack of personal hygiene and that profuse menorrhagia is the first symptom. The expulsion of the tumor is conditioned by its growing protrusion inside the uterine cavity, which initiates the necessary mechanisms. The following factors determine expulsion: 1. The increasing growth of the tumor with repulsion of surrounding tissues. 2. The pressure exerted by surrounding fibromatous nodules. 3. Contraction of the uterus, as in the pains of parturition. Parturition favorably influences spontaneous expulsion. The uterine contractions mobilize the tumor, facilitating its passage through the genital tract, and even beyond any resistance offered by the pedicle. Laceration of the pedicle is the final consequence of the parturition. Uterine inversion indicates that the tumoral insertion is located at the lower part of the uterus and is favored by sessile fibromyomas or by short and excessively resistant pedicles with flaccidity of the uterine tissue. The adhesion of the fibromyomas to the wall of the vagina is due to prolonged contact and deprivation of the epithelium occasioned by circulatory disturbance and pressure.

## Archiv für Gynäkologie, Berlin

**148:** 541-774 (March 8) 1932

*Various Forms of Ovarian Tumor Known as Type Brenner: Their Differentiation from Granulosa Cell Tumor and Classification with Other Ovarian Tumors. R. Meyer.—p. 541.
*Rare Causes of Severe Obstetric Hemorrhages. H. Naujoks.—p. 597.
Superfetation. V. Föderl.—p. 653.
Lymphocystic Fibroma of Uterus. L. Motiloff.—p. 674.
Oleogranulomas in Walls of Dermoid Cysts. E. Petrowa.—p. 698.
Anatomy of Sex Organs of the New-Born. H. Hartmann.—p. 708.
Histologic Changes in Uterine Tubes in Different Phases of Life and in Case of Ovarian Tumors. K. Tietze.—p. 724.
Postoperative Course in Gynecologic Interventions. W. Fröhlich.—p. 738.

**Forms of Ovarian Tumor Known as Type Brenner.**—Meyer shows that Brenner's tumor is a macroscopically as well as microscopically well defined type of tumor of the ovary and that it is not related to the granulosa cell tumor, for it has neither a hormonal action on the uterus nor other noticeable functions. Brenner's tumor occurs sometimes in the solid form, but it may also contain cysts. Characteristic for Brenner's tumor are indifferent glycogen-containing cells with carcinoma-like arrangement in epithelial strands without interposition of fibrils in the epithelium. There is a tendency to swelling and to the formation of smaller or larger cavities with colloidal, mucous or mixed contents. Epithelial formations are found arranged in smaller or larger nests in a firm, fibrous connective tissue, which constitutes a large or by far the largest portion of the solid tumor. The epithelial portions of the tumor originate neither in the ovarian parenchyma nor in its preliminary stages (granulosa balls) but in special cells that have no relation to the normal tissue structure of the ovary, but rather are abnormal embeddings. Their development is traced to embryologic conditions. According to their genesis, the author considers Brenner's tumors as belonging to a systematic order together with the majority of the serous cystomas, adenomatous, papillomatous and partially fibromatous cystomas up to the adenofibromas and the mixed serous-mucinous tumors. Brenner's tumor is benign. Relapses and metastases are absent and it is found mostly in the higher age groups.

**Rare Causes of Severe Obstetric Hemorrhages.**—Naujoks first discusses premature, total detachment of the placenta. He considers the hematomas of the uterine wall as an early developing sequela of a toxicosis, the later and more serious complication of which is the detachment of the placenta. The diagnosis can be based not only on the known symptoms but also on the intra-amniotic hemorrhage, which becomes manifest following rupture of the bag of waters. In regard to the treatment, it is stated that in severe cases a laparotomy is necessary but extirpation of the uterus should be resorted to only in extreme cases. The author further discusses placenta praevia cervicalis. Its diagnosis can be based on hemorrhages that develop during the early periods of pregnancy and continue for some time. The dangerous aspect of this condition is not the cervical location of the placenta but rather the usually resulting placental adhesions with subsequent atony. Tamponade is not reliable as a treatment in placenta cervicalis, even after the entire placenta has been detached. The author advises particularly against tight tamponade of the cervix. Prompt and radical intervention is here more necessary than in any other obstetric complication. In regard to spontaneous inversion of the puerperal uterus, it is stated that the danger of shock should not be stressed too much and the danger of fatal hemorrhage should not be underestimated. If collapse does not exist, prompt reposition is advisable. An expectant attitude involves the danger of a fatal hemorrhage, and for this reason it is justified only in existing collapse. In the last part of the article the author discusses varicosis and formation of hematomas. He thinks that varicosis genitalis is given too little consideration. It may cause a number of serious complications during and after labor, of which the formation of hematoma is one of the most important. For the deep hematomas the author recommends conservative measures, and the smaller hematomas should if possible not be incised. In the case of larger hematomas, an early incision should be done only if absolutely necessary. A later incision, after several weeks, cannot usually be avoided, since the spontaneous resorption of the blood clots is unfavorable.

## Archiv für Verdauungs-Krankheiten, Berlin

**51:** 145-280 (March) 1932

Agastric Anemia. K. Eimer and H. Preidt.—p. 145.
Pernicious Anemia and Its Treatment with Especial Consideration of Syphilis. C. Traugott.—p. 158
Sugar Cures in Gastric and Duodenal Ulcers. H. Strauss—p. 168.
Action of Atropine and of Several Bromides on Gastric Secretion. G. Baltaceanu.—p. 175.
Significance of Sigmoid Colon for Course of Peristalsis in Colon. W. Tönnis.—p. 184.
*Peristalsis Stimulating Substance in Gastric Mucous Membrane. N. Onodera, Y. Nishina, K. Yukawa, S. Kato and S. Emura.—p. 197.
Pathogenesis of Cholecystitis. J. Vilardell.—p. 207.
Types of Gastric Secretion. J. Fleckel.—p. 227.

**Peristalsis Stimulating Substance in Gastric Mucous Membrane.**—Onodera and his associates found that, by introducing from 40 to 60 cc. of a 20 to 25 per cent solution of magnesium sulphate directly into the duodenum, diarrhea is rarely produced. However, if the same quantity of magnesium sulphate is given by mouth, diarrhea usually results. This observation gave the authors the idea that by contact of the magnesium sulphate solution with the mucous membrane of the mouth, esophagus or stomach a substance develops which stimulates the peristalsis of the digestive canal. Accordingly, with the aid of a concentrated magnesium sulphate solution they made extracts from various portions of the oral, the esophageal, the gastric and the intestinal mucous membranes and also from several organs, and injected these extracts intravenously into animals and then studied the action on the tonus and the contractions of the intestinal wall. It was found that the gastric mucous membrane contains a substance that increases the peristalsis and minute amounts of this substance are also present in the spleen; however, all the other portions of the mucous membrane as well as the other organs that were tested did not contain this substance. The substance is readily dialyzable, boiling for a period of thirty minutes does not destroy it, and it differs somewhat from Zülzer's peristalsis hormone. One of the authors isolated from the magnesium sulphate extract of the gastric mucous membrane a crystalline substance, the aqueous solution of which, when injected intravenously, increases the tonus and the peristalsis of the stomach and of the intestine. The authors also made experiments with amino-acids and a 25 per cent solution of magnesium sulphate and obtained peculiar crystals of double salts, which differ from the crystals of the magnesium sulphate as well as from those of the amino-acids. The intravenous injection of the aqueous solution of these peculiar crystals had a peristaltic effect; especially strong was this effect with the double salts from magnesium sulphate and the aliphatic amino-acids, whereas the double salts of magnesium sulphate with the aromatic amino-acids had only a slight or an entirely negative peristaltic action. The authors conclude that the former assumption that the purgative action of magnesium sulphate is entirely due to its nonresorbability is not quite correct but that a small portion is absorbed, which with the aliphatic amino-acids forms a hormone-like substance with a peristaltic action. The largest portion of the magnesium sulphate, however, is not resorbed but keeps the intestinal contents in a fluid state. Thus the resulting diarrhea is due to two factors; namely, the increased peristalsis and the fluid condition of the intestinal contents.

## Beiträge zur Klinik der Tuberkulose, Berlin

**79:** 257-514 (Feb. 22) 1932

*Pathologic-Anatomic Investigations on Tuberculosis of Bone System. E. Randerath.—p. 257.
Differential Diagnosis of Pulmonary Infiltrations: Early Infiltrates with Especial Consideration of Time of Retrogression. W. Löffler.—p. 338.
Idem: Successive Transient Infiltrates (with Eosinophilia). W. Löffler.—p. 368.
Development and Casuistics of Pulmonary Tuberculosis. W. Pagel.—p. 383.
Studies on Tuberculous Meningitis: Secondary Tuberculosis and Tuberculous Meningitis; Late Secondary Meningitis. D. Orosz.—p. 401.
Idem: Relation Between Early Secondary Meningitis and Pleuritis. D. Orosz.—p. 408.
*Carbon Treatment of Pulmonary Tuberculosis. G. Sommerlad.—p. 414.
Animal Experiments on Nonspecific Therapeutic Modification of Pulmonary Tuberculosis. B. Scharlau.—p. 474.
Prognosis of Pulmonary Tuberculosis in Considerable Unilateral Contraction of Thorax Following Exudative Pleuritis. W. Illig.—p. 478.
Oleothorax Therapy. G. von Haffner.—p. 485.
Simultaneous Continuous Extrafamilial Infection with Tuberculous Meningitis in Two Siblings. W. Pockels.—p. 496.
Concurrence of Acute Miliary Tuberculosis and Acute Myeloblastic Leukemia. H. Lenhartz.—p. 501.
Rudimentary Polyserositis. G. L. Patronikola.—p. 508.

**Tuberculosis of Bone System.**—In generalized hematogenic miliary tuberculosis, Randerath demonstrated in all carefully examined cases the presence of miliary tubercles in the bone marrow. In this form of tuberculosis the nodules were found mainly in the myeloid portions of the bone system, whereas the pure fat marrow portions contained but few tubercles. In some cases of miliary tuberculosis, tubercles were entirely absent from the fat marrow. This contrast in the density of the tubercles in the myeloid marrow and in the fat marrow was noted in all cases. In examining the bone marrow in chronic, isolated pulmonary tuberculosis the author noted an unusual frequency of miliary tubercles in the bone system. In eighteen out of twenty-two cases, miliary bone marrow tubercles were found. In contradistinction to general miliary tuberculosis, the nodules in this group showed certain peculiarities in regard to their developmental stages. In one group, all tubercles in the bone marrow showed the aspects of "primary tissue impairment," in the sense of more or less advanced circumscribed necroses. In another group, all the tubercles in the bones belonged to the productive stage. And in a third group there were in the bone marrow, similar to conditions found in generalized miliary tuberculosis, all developmental stages of tubercles side by side. In examining cases of chronic isolated tuberculosis of the bone system, the author found sometimes more caseous and then again more granulating productive processes. But a strict differentiation of bone tuberculosis in a caseous and a granulating form, he does not consider justified, since the two stages merge into each other.

**Carbon Treatment of Pulmonary Tuberculosis.**—Sommerlad shows that of the various forms of nonspecific stimulation therapy for pulmonary tuberculosis the carbon treatment deserves special consideration, not only because it can be employed in a larger number of cases but also because it is less dangerous than is treatment with metal salts. The carbon treatment has the aim to increase the natural defensive action of the reticulo-endothelial system. The suspension that the author employed for intravenous injection is ready prepared in ampules of from 3 to 4 cc. It consists of small carbon particles in an isotonic calcium chloride solution. The injection is made slowly, and care is taken that the carbon particles are evenly distributed in the suspension. From five to ten hours after the injection there is usually an increase in temperature and also headache, weakness, pains in the joints, lack of appetite and in rare instances also chills and nausea. The temperature increase usually recurs on the following day, but on the third day it has usually reached the former level. With the reduction in temperature the other symptoms likewise disappear, and on the fourth or fifth day the patients usually feel quite well again. For at least three days following the injection, strict rest in bed is required. The author reports his experiences with intravenous carbon injections in fifty-eight patients, most of them with severe pulmonary tuberculosis. In thirty-seven of them a considerable improvement was effected. The number of injections varied in different patients; some received three or four injections, while others received as high as eighteen. The indications for the treatment and the dosage are discussed and it is emphasized that the treatment should be given only in institutions and that it usually requires several months. The influence of the injections on the reticulo-endothelial system was carefully controlled by means of the blood pictures. Numerous roentgenograms are shown.

## Deutsche medizinische Wochenschrift, Leipzig

**58:** 359-398 (March 4) 1932. Partial Index

Organization of Crusade Against Cancer in Sweden. G. Forssell.—p. 359.
*Radium Treatment of Malignant Tumors of Oral Cavity. E. Berven.—p. 363.
Experiences with Radiologic Treatment of Genital Carcinoma. J. Heyman.—p. 367.
Special Tasks of Section for Tumor Pathology of the Radiumhemmet. O. Reuterwall.—p. 368.
Sedimentation Speed of Erythrocytes in Acute Diseases of Childhood. H. Plonsker.—p. 370.
Therapy of Pathologic Conditions of Irritation on Male Genitalia. H. Wollstein.—p. 372.
Barium Poisoning. G. Gottwald.—p. 373.
Teaching Staff, Student Body and State Supervision in German Universities. W. Hellpach.—p. 375.

**Radium Treatment of Malignant Tumors of Oral Cavity.**—Berven emphasizes the better results that have been obtained in recent years with radium treatment of tumors of the oral cavity. He ascribes the more favorable results to the improved technic of recent years. His report covers the years from 1916 to 1926. In the first half of this period, from 1916 to 1921, the treatment was usually begun with roentgen irradiation and was followed by surface contact application of radium tubes. After 1921 the brachyradium therapy in the form of surface contact application or of intratumoral application was gradually discontinued and teleradium treatment (from 5 to 6 cm. distance) was employed. The teleradium treatment was given in such a manner that the cone of rays attacked the tumor from various sides. The author gives tabular reports which show the number of cases of lingual, sublingual, mandibular and buccal carcinomas that were treated during the years from 1916 to 1921, and during the period from 1921 to 1926, and the percentage of cures in each group. In another table the carcinomas are grouped according to stages during which treatment was begun and the result obtained in each stage, and other tables show the results obtained in lympho-epithelioma of the tonsils and in sarcoma of the tonsils. In the conclusion the author points out that because the teleradium therapy requires great experience it should be given only in special clinics.

## Jahrbuch für Kinderheilkunde, Berlin

**135:** 1-128 (March) 1932

*Epituberculous Infiltration of Lung During Childhood. W. Blacher.—p. 1.
*Possibility of Cure of Tuberculous Meningitis by Means of High Voltage Roentgen Irradiation. Z. von Bókay.—p. 69.
Aspects of Pneumococcic Meningitis During Early Childhood. E. Stransky.—p. 82.
Blood-Brain Barrier During Nursling Age. M. Tatsumi.—p. 91.
Facialis Phenomenon (Chvostek's Sign). K. Huldschinsky.—p. 96.
Diphtheritic Polyneuritis. O. Krönig.—p. 113.

**Epituberculous Infiltration of Lung During Childhood.**—Blacher in his comprehensive study first discusses the various terms that have been applied to the epituberculous infiltration and also the different opinions about its pathogenesis and its significance. His own observations were made on 214 cases of acute tuberculous disease. He found epituberculous infiltration in only 5 per cent of these cases and therefore concludes that it is comparatively rare. He gives ten detailed case reports and on the basis of his observations concludes that epituberculous infiltration is a manifestation of a defense reaction on the part of the pulmonary tissue surrounding the primary focus. The case histories indicate that the age of a child and perhaps also the localization of the tuberculous infiltration are significant for the course of the process. In all younger children, regardless of the localization, and in all infiltrations of the upper lobe, regardless of the age of the child, the healing tendency was retarded. The size and density of the infiltration do not permit an inference as to the size of the tuberculous focus and the type of the tissue reaction. The ready reactivity to tuberculin and other irritants indicates a tuberculous origin of the infiltrate. The pulmonary infiltration was often accompanied by a disease of the pleura. The latter sometimes preceded the infiltration and from this it may be assumed not merely that it is an accompanying manifestation but that it may be a factor in the pathogenesis of the infiltration. Three cases that were kept under careful roentgen control indicate the great significance of the primary focus for the development of the epituberculous infiltration. Of decisive significance for the pathogenesis of the epituberculous infiltration is the connection of two biologic factors, namely, the constitutionally conditioned reactivity of the entire organism referred to as "allergic diathesis" and the sensitization of the pulmonary tissue by the tuberculous infection.

**Treatment of Tuberculous Meningitis with High Voltage Roentgen Irradiation.**—Von Bókay thinks that the cause of death in tuberculous meningitis is not so much the tuberculosis as such but that the patient dies after the process has extended over certain areas; that death is the result of the injury of certain centers by inflammation and pressure. Accordingly he decided to counteract not so much the general tuberculous infection but rather the local foci. Because in pulmonary tuberculosis and in tuberculosis of the bones he had obtained favorable results with high voltage roentgen irradiation, he decided to try it also in tuberculous meningitis. A trial seemed the more justified since in tuberculous meningitis the mortality rate is almost 100 per cent. The treatment consists of a thorough irradiation of the brain and of the medulla oblongata. This requires a high tensioned and strongly filtered radiation. In order to increase the deep dosage, the focus distance was taken as wide as possible. The quality of the rays was individually determined according to the patient's condition. The treatment was usually given on three successive days and when necessary also on the fourth and fifth days. The rays were applied successively on adjoining fields. The author gives detailed reports of five cases in which this treatment effected cure, but in twelve other cases it was ineffective. That five patients could be cured justifies a certain hopefulness, particularly in view of the fact that formerly the prognosis was almost entirely unfavorable. The author hopes that his procedure may be tried on a larger material. He admits that the high voltage roentgen irradiation also involves certain dangers, such as partial or total loss of hair, which, however, is usually reversible; but even if the alopecia should prove permanent, it would be a slight disadvantage compared to the life saving possibilities of the irradiation.

## Klinische Wochenschrift, Berlin

**11:** 441-488 (March 12) 1932

Sites of Formation of Bile Pigments. F. Rosenthal.—p. 441.
*Thyroxine-Prolan Treatment of Obesity in Women with Early Amenorrhea. A. Schittenhelm and B. Eisler.—p. 446.
Modification of Sex Characters. O. O. Fellner.—p. 447.
Does Acute Aseptic Meningitis Belong to the Encephalitic Disorders? H. Knauer.—p. 449.
Sporadic Pellagra in Central Europe. A. Meyer.—p. 451.
Successful Palliative Treatment of Inoperable Hypophyseal Tumors. R. Demel.—p. 454.
*Experimental Contributions to Organ Anaphylaxis. I. Róth and B. Szauter.—p. 456.
Capillary Reaction in Carbon Dioxide Brine Bath. H. Scheiner.—p. 460.
*Nasal Pruritus in Cerebral Tumors. R. Wartenberg.—p. 461.
Iodine in Colloid of Hyophysis of Cattle. P. Noether.—p. 462.
Clinical Aspects of Addison's Disease. R. Schmidt.—p. 464.

**Thyroxine-Prolan Treatment of Obesity in Women with Early Amenorrhea.**—According to Schittenhelm and Eisler, prolan influences not only the ovaries but also the metabolism. They decided to employ it together with thyroxine for the reduction of obesity in women who also had menstrual disturbances, such as amenorrhea. The treatment was begun by giving for four days, three times daily, 3 mg. of thyroxine by mouth. Then the thyroxine was omitted and prolan was given instead, likewise by mouth (from 80 to 300 units). On the basis of their observations the authors conclude that a rightly conducted thyroxine-prolan therapy is effective in that it not only reduces the obesity but also aids the return of the menstrual flow. However, in women with normal menstruation, they consider the use of prolan dangerous and therefore advise against its prolonged administration in such cases.

**Experimental Contributions to Organ Anaphylaxis.**—A review of the literature convinced Róth and Szauter that the type as well as the intensity of the anaphylactic shock differs according to the site of reinjection. That the typical anaphylactic shock is characterized by pulmonary symptoms is due to the fact that in the usual modes of injection the antigen comes first in contact with the capillary sphere of the lung. If, however, the site of reinjection is chosen so that the capillary sphere, which first comes in contact with the antigen, is not the lung, the symptoms are essentially different. The authors describe tests on guinea-pigs and on rabbits. In a first group of animals they produced anaphylaxis of cerebral character by intracarotid reinjection. The symptoms were loss of consciousness, tonoclonic spasms and typical cerebral symptoms. In a second group of animals, intrajugular reinjection was done and the pulmonary symptoms predominated. In a third group of animals, in which intraportal reinjection was done, there were changes in the secretion of the bile and in the function of the liver. These functional changes in the organs correspond to the anatomic changes that were found. In the cerebral anaphylaxis there were intensive hyperemia of the brain, and in some instances capillary hemorrhages. The hyperemia was usually most marked on the side on which the injection was made. After jugular reinjection, the anatomic changes were found mostly in the lung: emphysema with edema, pleural hemorrhages, and in one case even subpleural transudate. In intraportal reinjection the surface of the liver showed the lobular outlines plainly, because of the dilatation of the interlobular vessels.

**Nasal Pruritus in Cerebral Tumors.**—Wartenberg points out that it is frequently noted that patients with cerebral tumors rub the tips of their noses and their nostrils, because of an intense itching. He describes two cases of cerebral tumors, in both of which this symptom was noted. The beginning of the nasal pruritus concurs with the signs of increased cerebral pressure. The pathogenesis of this sign is as yet not definitely known, but the author assumes that it is the result of irritation of the trigeminus. A review of the literature proved that this symptom had been noticed by others, but the fact that in a recent monograph on brain tumors it is not mentioned, and also his two recent observations, induced him to call attention to it again.

## Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

**90:** 401-488 (March) 1932

*Basal Metabolism During Pregnancy Especially in Patients with Goiter: Influence on Thyroidal Function of the New-Born. V. Niederwieser.—p. 401.
Plastic Operation for Fat Abdomen. F. Kögler.—p. 412.
Anatomic Investigation on Human Amnion Following Dyestuff Diffusion. F. Speckmann.—p. 423.
Two Twin Monsters (Sternopagus and Dicephalus). H. J. Freyschmidt.—p. 429.
Interruption of Pregnancy by Means of Injection of Ointment: Its Dangers and Attempts to Overcome Them. H. Sellheim.—p. 441.
Preliminary Report on Ointment Method in Induced Abortion. J. T. Leunbach.—p. 446.

**Basal Metabolism During Pregnancy in Patients with Goiter.**—In an Alpine region where goiter is endemic, Niederwieser found that in pregnant women the basal metabolism is increased even if they do not have goiter. The average increase is about 15 per cent. The size of the goiter and its consistency have no noticeable influence on the basal metabolism, and the same can be said about the age of the gravida and the number of her confinements. However, there is a parallelism between the depth of respiration, which gradually increases with the advancing pregnancy, and the basal metabolism. The specific dynamic action is reduced during pregnancy, and the author thinks that this is due to the morphologic changes in the hypophysis. The goiter exerts no noticeable influence on the course of pregnancy. The thyroidal function of the new-born is influenced neither by the type and size of the mother's goiter nor by her basal metabolism.

## Wiener klinische Wochenschrift, Vienna

**45:** 385-416 (March 25) 1932

Relations Between Hypophysis and Female Genital Tract. H. Heller.—p. 385.
Pulsatory Movements of Thoracic Wall in Normal Persons and in Those with Heart Disease. W. Dressler.—p. 387.
Gold Therapy of Tuberculosis. E. Waltuch and O. Weiss.—p. 394.
Blood Picture in Oxygen Deficiency. F. Asztalos, H. Elias and H. Kaunitz.—p. 397.
*Skin Reaction for Demonstration of Deep Gonorrheal Processes. J. Neuer.—p. 398.
Mechanism and Treatment of Central Dyspnea. A. Vogl.—p. 399.
Idem. R. Singer.—p. 399.
*Treatment of Primary Sciatica by Surgical Stretching of Sciatic Nerve. G. S. Toprower.—p. 400.
Prophylaxis and Therapy of Measles, Epidemic Meningitis and Poliomyelitis. A. Bratusch-Marrain.—p. 402.
Relapses Following Gallstone Operations. C. Ewald.—p. 404.
Forms and Treatment of Anuria. T. Hryntschak.—p. 405.

**Skin Reaction for Demonstration of Deep Gonorrheal Processes.**—According to Neuer, the recognition of acute deep gonorrheal processes is usually possible on the basis of the anamnesis and of the examination of smears. However, chronic deep processes are less readily recognized. The Müller-Oppenheim complement fixation method is helpful, but it often involves difficulties and for this reason the author devised a simpler method; namely, a skin test by means of an ointment, containing killed gonococci. After the skin of the upper arm has been cleaned with ether, it is scarified on three places. To one of the scarified areas only an indifferent substance is applied, and to the two others the ointment is applied. If the test is positive the reaction is most severe after twenty-four hours; there is inflammatory reddishness and formation of small pustules on the site of vaccination. After a day these manifestations begin to disappear. In negative cases, neither the sites of vaccination nor the control scarification show a reaction. It is advisable to have always at least two areas of scarification, the one for vaccination and the other one for control. The results that the author obtained with this test tallied with the complement fixation reaction.

**Treatment of Primary Sciatica by Stretching of Sciatic Nerve.**—Toprower points out that surgical stretching of the sciatic nerve was first recommended by Billroth. Later it was employed indiscriminately by some surgeons and thus it came into discredit and was almost entirely abandoned. The author takes the stand that in suitable cases it is of great therapeutic value. He thinks that in the beginning stage sciatica should receive conservative treatment. However, if within six months this treatment does not effect improvement, surgical stretching should be resorted to. From observations in twelve cases in which this treatment was employed, the author concludes that in cases of chronic primary sciatica surgical stretching of the nerve is effective. However, in typical neuritis of the sciatic nerve, with muscular atrophy and sensitiveness to pressure along the entire course of the nerve, and in diseases of the central nervous system, surgical stretching is not advisable.

## Zeitschrift für Kinderheilkunde, Berlin

**52:** 431-618 (March 14) 1932

Galactorrhea in Nursing Mothers. A. N. Antonov.—p. 431.
Etiology, Prophylaxis and Serotherapy of Scarlet Fever. S. Zlatogoroff.—p. 442.
*Occurrence of "Tetanigenic Substance" in Urine of Spasmophilic Children. W. Hertz.—p. 452.
Digestion of Vegetables Used in Children's Diet. H. Langer.—p. 465.
*Influence of Vegetables on Nitrogen and Mineral Metabolisms of Children. E. Edelstein.—p. 483.
Types of Body Structures in Children and Their Calculation. Else Liefmann.—p. 504.
Generalized Sepsis in Nursling, Caused by Bacillus Suipestifer. H. Rau.—p. 510.
Chronic Syphilitic Bronchitis as Typical Manifestation of Late Syphilis in Children. J. Duken.—p. 512.
Myositis Ossificans Circumscripta as Result of Intramuscular Injection of Blood in Children. J. Duken.—p. 528.
Complicated Postencephalitic Tic in Children. F. von Bernuth.—p. 534.
*Actions of Viosterol on Organism, Particularly on Skeletal System of Rachitic Child. K. Strauss.—p. 556.
Sphygmographic Tests on Nurslings. E. Rominger and H. Meyer.—p. 577.
Egg-White Antibody Content of Blood of Eczematous Nurslings. P. Woringer.—p. 586.
Blood-Brain Barrier in Whooping Cough. Y. Yamaoka.—p. 594.

**"Tetanigenic Substance" in Urine of Spasmophilic Children.**—Hertz repeated Nitschke's experiments by which the latter had demonstrated in the urine of spasmophilic children a substance that proved tetanigenic for rabbits. However, he was able to demonstrate the tetany toxin in only five out of eleven cases of spasmophilia. He thinks it probable that the diet of spasmophilic nurslings influences the outcome of the animal experiment but has as yet not proved it. With the urinary sediment of nonspasmophilic children, who had other disorders, it was possible to produce in six cases a reduction of the calcium content of rabbits. The age of the children is evidently of no importance in this connection. The substance that is tetanigenic for rabbits, therefore, does not necessarily have to produce spasmophilic symptoms in patients who eliminate it with their urine. Thus there is as yet no definite proof for a relation between tetany in infants and the artificial spasmophilic syndrome in rabbits. The solution of this problem depends on a better isolation of the tetany toxin postulated by Nitschke. So far it can only be said that in the urine of children with considerable disintegration of cells or with marked disturbance of the metabolism (among others also spasmophilia) a mixture of substances is eliminated which reduces the calcium content of the serum of rabbits and thus produces in these animals symptoms that indicate irritation of the nervous system.

**Influence of Vegetables on Nitrogen and Mineral Metabolisms of Children.**—Edelstein found that by adding spinach or carrots to the milk diet there is almost regularly a reduction in the retention of nitrogen, of ash, of calcium oxide and of phosphorus pentoxide. It is probable that the reduction in the retention is due to a lessened utilization in the intestine. In the influence on the retention there is no difference between fresh vegetables and canned vegetables. However, besides their influence on the utilization, the vegetables have yet other functions in the organism: they act as regulators by providing roughage and also are sources of vitamins.

**Actions of Viosterol.**—Strauss cites reports from the literature in which large doses of viosterol resulted in severe cachexia and death of the animals, and the necropsies revealed calcium deposits and degenerative processes in the vital organs. On the other hand, some experimenters noted a loss of calcium in the skeleton of animals fed with large doses of viosterol. In general, the injurious effects were noted only after excessive doses; however, they have also been noted after comparatively small doses. The author reports the case of a rachitic child, aged 18 months, to whom 100 mg. of viosterol had been administered in the course of two and one-half months. He describes the observations during the necropsy, particularly the calcification processes in the skeletal system. He noted that, as in the spontaneous cure of rickets, a new zone of calcification develops far toward the epiphysis, whereas the proliferated cartilage of the rachitic zone remains uncalcified. The osteoid trabeculae of the diaphysis and of the metaphysis calcify likewise to a considerable extent, but certain sections remain free from calcium. Later in the healing process new osteoid margins develop, which in regard to surface as well as depth far exceed the normal; that is, they still have some rachitic characteristics. The author discusses three possible explanations of the calcification process in the rachitic bone: (1) the humoral theory, (2) that perhaps the viosterol exerts a certain influence on the colloids by producing an increased calcium affinity, and (3) that the influence on the bone cell itself is the primary action of the viosterol.

### Zeitschrift für Krebsforschung, Berlin

**35:** 543-650 (March 16) 1932

*Studies on Concentration of Active Carcinoma-Inducing Principle in Oils and Tars. C. C. Twort and J. D. Fulton.—p. 543.
Development of Granulation Tissues and of Tar Carcinomas in Animals Following Blockade of Reticulo-Endothelial System. A. Satoh.—p. 574.
So-Called Disseminated Carcinoma of Stomach: Attempt to Explain Its Pathogenesis. R. Ernst.—p. 585.
Precarcinosis and Pathologic Loss of Differentiation. C. S. Engel.—p. 610.
Value of Bendien's Flocculation Reaction for Diagnosis of Cancer. E. Meyer.—p. 622.
Biochemistry of Rous Sarcoma of Chickens. V. Morávek.—p. 626.
Immunity Experiments with Transplantable Rabbit Epithelium. W. A. Collier and A. Cohn.—p. 641.

**Carcinoma-Inducing Principle in Oils and Tars.**—Twort and Fulton show that carcinoma-inducing substances can be prepared synthetically from many organic substances. For the concentration of the carcinoma-inducing units in synthetic tars distillation is helpful, and to a certain extent distillation is also helpful for the concentration of the carcinoma-inducing units in mineral oils. Saturation by oxidation or reduction of agents of the nature of hydrocarbons apparently always reduces the carcinoma-inducing units. The action of organic enzymes is doubtful; it appears that living yeast cells reduce the number of carcinoma-inducing units, probably because they act as reductases. Filtration of an oil through silicic acid gel or through clay reduces the carcinoma-inducing units in the filtered as well as in the remaining substance, and it is probable that adsorption and polymerization are the most important factors. The action of ultraviolet rays and of radon reduces the carcinoma-inducing units. Methyl sulphide, trinitrophenol and alcohol primarily extract the carcinoma-inducing substances and their accompanying defense substances. Treatment of mineral oils with sulphuric acid reduces their carcinoma-inducing units. Mercury acetate in acid solution reduces the number of carcinoma-inducing units, whereas the neutral solution exerts only a slight influence. Attempts were made to determine the amount of carcinoma-inducing units in liquid petrolatum by physical and by chemical means. Among the various procedures that were tried, the specific gravity, the refractive index and the iodine number were found to be the best indicators, but there may yet be other methods that may prove helpful. The authors think that it may eventually be possible to dispense with the use of animals for testing the carcinoma-inducing action of oils.

### Zentralblatt für Gynäkologie, Leipzig

**56:** 705-768 (March 19) 1932

Embryonal Development, Time of Conception and of Ovulation. O. Grosser.—p. 706.
Determination of Term of Ovulation on Human Uterus in Situ. H. Knaus.—p. 710.
Reply to Preceding Article. K. F. Schultze.—p. 720.
*Term of Conception in Woman and Its Practical Significance. K. Ogino.—p. 721.
Spermatozoon and Serum of Pregnant Women. H. Lotze and W. Schultz.—p. 732.
*Ligation of Uterine Vessels in Hemorrhages in Placenta Praevia. W. Kerwin.—p. 741.
Reliable Hemostatic Methods in Dangerous Cases. G. Frank.—p. 744.
New Self-Holding Vaginal Speculum. H. Högler.—p. 747.

**Term of Conception in Women.**—From careful studies, Ogino concludes that the term of conception as a rule lasts eight days. It extends from the nineteenth to the twelfth day before the succeeding menstruation. In the time between the twenty-fourth and twentieth day before the next menstruation, a conception is extremely rare, but there are as yet not sufficient observations to exclude the possibility of a conception during these four days; because of the rarity of conception during this period, however, it can be considered as practically sterile. But during the eleven days before the onset of the next menstruation conception is impossible. The author thinks that the determination of these factors will enable women who have to practice sexual abstinence or resort to contraceptives to do without these at least during some periods. For practical purposes it is advisable to determine the period of conception from the onset of the last menstruation. If the cycle lasts twenty-eight days the time of conception is between the tenth and seventeenth day after the onset of the last menstruation. If the cycle is longer or shorter than twenty-eight days, the term of conception is shifted by so many days backward or forward. Since there are comparatively few women in whom the menstrual cycle is always of the same duration, the formula for the time of conception has to be expressed as follows: Beginning of term of conception is ten plus (minimal duration of cycle minus twenty-eight days). End of term of conception is seventeen plus (maximal cycle minus twenty-eight days). The maximal and minimal duration of the cycle have to be determined from the last twelve series of cycles; to take into account only three or four cycles is not sufficient. However, since most women do not keep a record of their menstrual cycles, they have to give the maximal and minimal duration from memory. The formula mentioned is of value only for women in whom the menstrual cycle has a maximal fluctuation of not more than ten days. The greater the fluctuations, the lesser the value of the formula.

**Ligation of Uterine Vessels in Hemorrhages in Placenta Praevia.**—In anatomic hemorrhages or in hemorrhages caused by tears following vaginal delivery in placenta praevia, Kerwin recommends bilateral ligation of the uterine vessels through the vaginal wall. The method does not require special instruments but only those that every obstetrician has at his disposal. By means of a large round needle a strong catgut thread is introduced into the parametrium, where the vaginal wall meets the cervix. The point of the needle is directed upward toward the uterus and comes out again through the vaginal wall 3 cm. lower. The suture is tied, and the same procedure is repeated on the other side. The vaginal wall remains unimpaired except for the opening at which the needle entered. The hemorrhage ceases immediately after the second ligation is completed. Nine women, who were threatened by death from severe hemorrhage, were saved by this method. Two of them have since had spontaneous deliveries. The method is suitable for the clinic as well as for obstetrics in the home.

## Nowotwory (Néoplasmes), Warsaw

**6:** 145-256, 1931

Cystadenoma of Pancreas E. Schlönvogt.—p. 145.
Chloroma. J. Stein.—p. 159.
*Influence of Internal Secretions on Experimental Malignant Tumors. W. Karnicki.—p. 174.
Carcinoma in Young Adults. K. Kosieradzki —p. 193
Tumors: Polish Bibliography for Second Semester of 1930. A. Czyżewicz. —p. 223.

**Internal Secretions and Experimental Malignant Tumors.**—Karnicki investigated eight series of experimental rabbits, besides the control series, in order to find the relation between the internal secretions and experimental carcinoma. Gas tar was used as an irritant. The rabbits in the eight series were subjected to (1) thymusectomy, (2) thyroidectomy with unilateral parathyroidectomy, (3) testectomy, (4) unilateral suprarenalectomy, (5) thymusectomy combined with testectomy, (6) implantation of thymus and testes, (7) experimental carcinoma plus injections with extracts from the previously excised glands, and (8) hypophysectomy. The animals of the eighth series did not survive the operation. The results reported by the author were as follows: 1. The glands of internal secretion have an influence on the genesis and development of experimental carcinomas in rabbits. 2. Thymusectomy accelerates the appearance of experimental tumors in the relation of 4 to 1. 3. Thyroidectomy with unilateral parathyroidectomy hastens also the formation of tumors in the relation of 3 to 1. 4. Testectomy produces less acceleration than thyroidectomy with unilateral parathyroidectomy and considerably less than thymusectomy. 5. After unilateral suprarenalectomy there is a marked retardation of both the appearance and the growth of tumors. 6. The acceleration of the appearance of tumors after thymusectomy combined with testectomy in the same animal is marked. 7. Implantation of thymus and testes considerably retards the appearance of tumors. 8. Injections of extracts from thymus and testes cause dehydration and breakdown of tumors, also shrinkage of the larger nodules and destruction of the smaller ones. The large nodules soften in the later phases of the injection periods. From this time on, even increased doses do not cause further reduction of the nodules. After the injections have been suspended, also, further growth does not follow.

## Polska Gazeta Lekarska, Lwów

**11:** 193-212 (March 13) 1932

New Biologic Tests for Pregnancy. B Stępowski.—p. 193.
Hydrogen Ion Concentration on Surface of Skin (C'cn.). J. Stopczański. —p. 195
*Round Basophilic Bodies in Splenic Pulp in Gaucher's Disease. A. Sokolowski.—p. 197.
Postoperative, Histologic Diagnosis of Orbital Gumma. A. Musial.—p. 200.
Medical Reports on Social Medicine. J. Szumski.—p. 202.

**Basophilic Bodies in Gaucher's Disease and Value of Sternal Puncture.**—In the case of Gaucher's disease described by Sokolowski, the material obtained by splenic puncture was stained by several methods. The most distinct preparations came out when the May-Grünwald-Giemsa method was used. In these preparations there were, besides the known cells, minute, roundish, granular bodies, basophilic, scattered more or less in groups, and occasionally surrounding the roundish nuclei. In the specimen from the sternal bone marrow were found certain cells, corresponding completely in every detail with the cells described in preparations from the splenic pulp and known as Gaucher's cells. The author concludes that: 1. For diagnostic purposes in suspected Gaucher's disease it may not be necessary to perform splenic puncture as long as the sternal (manubrium) bone marrow contains the material, with abundance of characteristic cells. 2. The basophilic bodies described represent a detail which contributes to the symptomatology of Gaucher's disease.

## Hospitalstidende, Copenhagen

**75:** 299-326 (Feb. 11) 1932

*Course of Complement Fixation Reaction in Gonorrhea in Men. V. Genner, K. Antons, and H. Boas.—p. 299.
*Blood Sedimentation and Basal Metabolism. G. Bredemose.—p. 319.
Case of Fatal Genital Gangrene. G. Bindslev.—p. 322.

**Course of Complement Fixation Reaction in Gonorrhea in Men.**—Genner and his associates made complement fixation tests in sixty-six patients with gonorrhea during the disease and in most cases after clinical recovery. They say that in epididymitis and in arthritis with acute onset the reaction rises rapidly according to the clinical acuity, often reaching the maximum in the course of a week, and falls slowly, usually becoming negative in from six months to two years, somewhat sooner in epididymitis than in arthritis. In prostatitis the rise is less rapid and the reaction apparently remains positive somewhat longer than in epididymitis. The reaction is a valuable supplement in cases with doubtful exploratory results and seems to show that many cases regarded as posterior urethritis are really instances of latent prostatitis. A positive reaction occurred in a small number of control cases; such cases the authors would for the present designate, not as "nonspecific," but as "cases with positive gonorrhea reaction as the only symptom."

**Blood Sedimentation and Basal Metabolism.**—Bredemose finds that the sedimentation reaction recommended by Goldmann and Taterka as preferable to basal metabolism tests for determining the therapeutic effect in cases of hyperthyreosis and hypothyreosis is without practical value for this purpose.

**75:** 327-370 (Feb. 18) 1932

*Malignant Trigeminal Neuralgia: Treatment with Radical Operation. F. Djørup.—p. 327.

**Malignant Trigeminal Neuralgia.**—In the sixty-eight severe cases reported in detail by Djørup, the condition, mostly of many years' standing, was so resistant to all other operative measures and to the various medicinal treatments that resection of the gasserian ganglion or retrogasserian neurotomy became necessary as a last resort. Forty-one patients (thirty operated on during the last five years, eleven more than five years ago) are without pain, although in twenty of these primary or secondary complications cause a certain inconvenience; seven are improved, ten unchanged and ten dead. He considers it more and more evident, in spite of the occurrence of complications and the technical difficulty of the operation, that retrogasserian neurotomy is about to become the safest and best means of operative treatment in malignant trigeminal neuralgia in its gravest forms.

**75:** 371-398 (Feb. 25) 1932

*Postoperative Phlebitis, Thrombosis and Embolism. E. Dahl-Iversen and E. Ramberg.—p. 371.

**Postoperative Phlebitis, Thrombosis and Embolism.**—A study made by Dahl-Iversen and Ramberg of 18,168 operative cases with 636 cases of postoperative phlebitis, thrombosis and embolism shows no increase in these complications during the last twenty years. According to the present status of knowledge, they assume that the origin of thrombosis after aseptic operative treatment depends on the interplay of three factors: (1) changes in the blood plasma and in the relation of the formed elements, (2) retarding of the blood stream, and (3) probable changes in the endothelial cells of the blood vessels. For prophylaxis they advise reduction of the cell degeneration accompanying every operation by careful hemostasis, avoidance of contusion of the tissue in the operative field, and inclusion of as little tissue as possible in the ligatures; in preoperative treatment, reduction of the loss of fluids in the organism, avoidance of unnecessary inanition, administration of large quantities of fluids, and exercises in deep respiration and in movement of the patient in bed; in postoperative treatment, application of the same principles as in preparatory treatment. Compression bandages on the lower extremities and elevation of the foot of the bed are also recommended.

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# CARCINOMA OF THE CERVIX UTERI

## A STATISTICAL SURVEY OF TWENTY-ONE YEARS OF TREATMENT

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ST. LOUIS

This study is based on an analysis of the result of treatment of all cases of cancer of the cervix seen at the Barnard Free Skin and Cancer Hospital from 1906 through 1926, the first twenty-one years of its existence. During this time the gynecologic service was in charge of Drs. George Gellhorn and F. J. Taussig, who alternated every six months. The service, up to recent years, has consisted largely of far-advanced cases, owing to the fact that other hospitals have sent many patients to our free cancer wards. Comparisons of statistics from different institutions are of little value. More information is obtained by setting side by side the results of different methods of treatment at various times in the same place and under similar conditions. For this reason, an analysis of our material promises to be instructive.

This study is based on 634 patients suffering from carcinoma of the cervix, of whom 498 were treated while the remaining 136 received no treatment except medicine and general advice. The cases have been divided into two major groups: those treated from 1906 to 1916 inclusive and those treated from 1917 to 1926 inclusive. The reason for this division is the fact that radium was obtained in 1917 and brought about a radical change in the cancer therapy at our hospital.

A study of the figures, as will be seen later, discloses a lower five-year cure rate than is usually reported. A large factor is the geographic location of this clinic and the source of our material. A large fraction of our patients come from Arkansas, Missouri, Mississippi, southern Illinois, Kentucky and Tennessee. During the years of the study, the vital statistics in some of these states were incomplete so that we were not always able to follow up our patients after they had been discharged; and on general principle we count every patient whom we cannot locate as dead from cancer. In this respect we are less fortunate than workers in Eastern centers, where follow up is easier. A considerable number of patients from this area were unable to communicate with the clinic, owing to illiteracy.

As has previously been stated, 634 cases of primary cervical cancer were seen in the twenty-one years covered by this report, of which 498 were treated in the outpatient department and hospital. The total percentage of cure (table 1) is relative, as it is based only on the number of cases treated rather than those seen. One hundred and thirty-six patients did not receive any treatment either because they absented themselves or were in an altogether hopeless condition; others were referred back to their family physician or were not entitled to free service. After the introduction of radium in 1917, however, even the apparently hopeless cases were given the benefit of radiation.

Table 1 shows that cures of five years were obtained in but 9.64 per cent. This low percentage is in part explained in table 2, which shows the large number of patients (17.6 per cent) who could not be located. It must be repeated that all patients not accounted for were listed as having died of cancer.

Table 3 shows the age incidence of the patients coming to the clinic. During the early years of the study our records were relatively incomplete, thereby causing some discrepancy in the figures. It will be noted that almost a majority of the cases fall into the age group of 40 to 55, commonly known as the "cancer age." However, attention is called to the fact that 29.09 per cent of the patients seen were under the age of 40.

Table 4 demonstrates the cases treated year by year and the results obtained by the various methods of treatment. In addition, some idea of the permanence of the cures is obtained from the large number (thirty-five) alive at the end of 1931. Of the remaining thirteen patients, now dead but who remained free from cancer five years after treatment, only six died as a result of carcinoma.

We have classified the cases of both major categories into clinical groups according to the extent of the disease (table 5). This classification was determined solely by the physical examination. Group 1 comprises those cases in which involvement was limited to one half or less of the cervix. Group 2 comprises those cases in which more than half of the cervix was involved but in which there was no palpable vaginal or parametrial extension, although one or the other could occasionally be demonstrated microscopically. Group 3 comprises those cases in which the malignant process had invaded the vaginal wall without perforation and/or parametrial thickening to one pelvic wall. The other parametrium might be involved but was not infiltrated to the pelvic wall. Group 4 includes all cases in which there was total fixation of the uterus, due to parametrial infiltration, fistula or metastasis to distant organs, bones or glands.

An analysis of five-year cures for the first group of cases, 1906 to 1916 inclusive, during which time no radium was available for treatment, is seen in table 6. The methods of treatment during this period were excochleation, acetone locally, pancreatic treatment, copper treatment, and radical surgery. It is almost superfluous to state that the only cures established were

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From the Gynecologic Service, Barnard Free Skin and Cancer Hospital.

by means of surgery. The proportion of cures (27.2 per cent in group 1 and 26.66 per cent in group 2) does not compare unfavorably with other figures reported for that period. The operability rate during this period was 17 per cent, although "inoperable" cases were occasionally subjected to operation but without success.

TABLE 1.—*Percentage of Cure in Cases Treated*

| | | | |
|---|---|---|---|
| Total cases seen | | | 634 |
| Untreated | | 136 | |
| Treated, *1906 to 1916* | *147* | | |
| Treated, 1917 to 1926 | 351 | | |
| | — | 498 | |
| | | — | |
| | | 634 | |
| Total cures: 1906 to 1926 | | 48, or | 9.64% |
| 1906 to 1916 | | 7, or | 4.76% |
| 1917 to 1926 | | 41, or | 11.68% |

TABLE 2.—*Patients Lost Before the End of the Five Year Period* *

| Period | Number of Patients |
|---|---|
| 1906 to 1916 | 46 |
| 1917 to 1926 | 42 |

* Some of these patients were lost as late as four years and six months after treatment, but all go into the statistics as having died of cancer when lost.

TABLE 3.—*Ages of Patients*

| Age | Number of Patients | Per Cent |
|---|---|---|
| 22 to 30 | 18 | 3.68 |
| 30 to 35 | 45 | 9.22 |
| 35 to 40 | 79 | 16.19 |
| 40 to 55 | 225 | 45.81 |
| 55 to 60 | 63 | 12.91 |
| 60 to 70 | 45 | 9.22 |
| 70 to 90 | 13 | 2.66 |

A similar analysis for the second group of cases, from 1917 to 1926 inclusive, is seen in table 7. In this series the operability rate was 15.6 per cent, compared with 17 per cent for the earlier series. This lowering of the operability rate was due, no doubt, to the sudden influx of far-advanced cases that were received during the latter portion of 1917 and during the entire year of 1918. The knowledge that radium had become available in the treatment of carcinoma in this clinic was responsible for many obviously incurable patients presenting themselves to us at this time. Referring back to table 4, it will be seen that in 1918 thirty new cases were treated with but one five-year cure. Such a figure is not duplicated anywhere in this series, the next lowest year being 1919, when the percentage of cure was 10 per cent, exactly three times that of 1918. In table 7, the proportion of five-year cures of group 1 is 54.17 per cent, treated by all methods, a figure that may well be called satisfactory. The results in the other three groups are also fairly satisfactory. Our poor salvage rate of but 3.20 per cent in group 4 cases can be explained by the extremely far-advanced condition that was found when these patients presented themselves to us.

A comparison of all cases treated by operation or with radium during the years 1917 to 1926 is seen in table 8. The surgical cures were accomplished solely by means of radical operations of the Wertheim or Schauta types with the exception of one patient, who remained well after a radical ignicauterization by the Byrne method. In groups 1 and 2 there can be noted a definite advantage of the results of surgery over radiation. In the remaining cases, radiation offered the only hope of a cure. Of thirty-one cases of all groups subjected to operation, 48.38 per cent remained well and free of cancer for at least five years. Three hundred and twelve patients were treated with radium; of these, only 8.33 per cent survived the five-year period, but of course there were among them a majority in the advanced stage of the disease.

TABLE 4.—*Cures by Years*

| Year | Number of Cases Treated | Cures | Per Cent Cured | Living, January, 1932 |
|---|---|---|---|---|
| 1906 | 9 | 0 | 0 | 0 |
| 1907 | 4 | 0 | 0 | 0 |
| 1908 | 15 | 1 | 6.66 | 0 |
| 1909 | 9 | 1 | 11.11 | 0 |
| 1910 | 13 | 0 | 0 | 0 |
| 1911 | 14 | 0 | 0 | 0 |
| 1912 | 13 | 0 | 0 | 0 |
| 1913 | 9 | 0 | 0 | 0 |
| 1914 | 17 | 0 | 0 | 0 |
| 1915 | 25 | 2 | 8.00 | 1 |
| 1916 | 19 | 3 | 15.78 | 2 |
| 1917 | 13 | 2 | 15.38 | 1 |
| 1918 | 30 | 1 | 3.33 | 0 |
| 1919 | 30 | 3 | 10.00 | 2 |
| 1920 | 25 | 3 | 12.00 | 2 |
| 1921 | 39 | 4 | 10.25 | 3 |
| 1922 | 46 | 5 | 10.87 | 3 |
| 1923 | 50 | 8 | 16.00 | 6 |
| 1924 | 35 | 4 | 11.42 | 4 |
| 1925 | 49 | 7 | 14.28 | 7 |
| 1926 | 36 | 4 | 11.11 | 4 |
| | 498 | 48 | | 35 |

During this second series of cases the following methods were used: (1) radical surgery; (2) radium therapy; (3) surgery preceded or followed by irradiation; (4) roentgen therapy.

TABLE 5.—*Clinical Classification of Patients*

| Classification | 1906–1916 | 1917–1926 |
|---|---|---|
| Group 1 | 11 | 24 |
| Group 2 | 15 | 31 |
| Group 3 | 37 | 70 |
| Group 4 | 82 | 187 |
| Recurrence in stump or vagina | 1 | 35 |
| Unclassified | 1 | 4 |
| Total | 147 | 351 |

TABLE 6.—*Analysis of Cures, 1906-1916 (No Radium Available)*

| Clinical Classification | Number of Cases | Number of Cures | Per Cent of Cures (Absolute) | Number of Operations | Per cent Operative Cures |
|---|---|---|---|---|---|
| Group 1 | 11 | 3 | 27.2 | 10 | 30 |
| Group 2 | 15 | 4 | 26.66 | 12 | 36.36 |
| Group 3 | 37 | 0 | 0 | 9 | 0 |
| Group 4 | 82 | 0 | 0 | 4 | 0 |
| Stump of cervix | 1 | 0 | 0 | 0 | 0 |
| Unclassified | 1 | 0 | 0 | 0 | 0 |
| | 147 | 7 | | 35 | |

Seven cures of 35 operated cases = 20 per cent relative operative cures.

1. As previously stated, radical surgery was by the Wertheim or the Schauta type of operation.

2. Radium was not at first used in a standardized method. The radium element (150 mg.) was used in the form of bare needles, and also with screening of rubber, lead, brass and/or dental wax. It was used in

varying dosages; as low as 2,200 milligram hours and as high as 8,000 milligram hours were used in an attempt to effect a cure. Radon also was used during this time with varying success. It was not until the end of the period of this paper that a definite method of radium therapy came into use.

Table 7.—*Five Year Cures, All Treatments, 1917-1926*

| Clinical Classification | Number of Cases | Number of Cures | Per Cent of Cures (Absolute) |
|---|---|---|---|
| Group 1 | 24 | 13 | 54.17 |
| Group 2 | 31 | 10 | 32.25 |
| Group 3 | 70 | 9 | 12.85 |
| Group 4 | 187 | 6 | 3.20 |
| Stump of cervix | 35 | 3 | 8.57 |
| Unclassified | 4 | 0 | 0 |
| | 351 | 41 | |

3. Radium and radical surgery were used in a few cases *in combination.* When a cure or failure was encountered in the use of this combined form of treatment, the method which was deemed by careful examination to be the cause of success or failure was so credited. This was done on microscopic examination of the tissue removed before or at the time of the second treatment. For example, a patient having received a preliminary dose of radium was operated on at a later date. Microscopic examination of the cervix showed an active carcinoma. This patient remained well for five years, and the cure was listed as an operative one.

Table 8.—*Radium or Operative Cures, 1917-1926* *

| Clinical Classification | Number of Operations | Number of Cures | Per Cent of Operative Cures | Number Irradiated | Number of Cures | Per Cent of Radium Cures |
|---|---|---|---|---|---|---|
| Group 1 | 15 | 9 | 60.00 | 9 | 4 | 44.40 |
| Group 2 | 10 | 5 | 50.00 | 21 | 5 | 23.81 |
| Group 3 | 4 | 0 | 0 | 66 | 9 | 13.48 |
| Group 4 | 2 † | 1 † | 50.00 | 181 | 5 | 2.76 |
| Stump of cervix | 0 | 0 | none treated | 35 | 3 | 8.57 |
| | 31 | 15 | 48.38 | 312 | 26 | = 8.33 |

Operated ........ 31
Radiated ......... 312
343
No radium or operation (palliative-acetone, etc.) ..... 8
351

Cures:
Operative.. 15 out of 31 cases = 48.38%
Radium.... 26 out of 312 cases = 8.33%
41 out of 343 cases = 11.96% of all cases treated with radium or operation.

---

* Operations were either Wertheim or Schauta or radical cauterization (Byrne).
† Cautery.

4. High voltage roentgen therapy as a supplement to other forms of treatment was used in a minority of the cases. Palliative results in the control of bleeding, discharge and pain were obtained. In the past five years more intensive and systematic roentgen therapy has been given as an auxiliary to radium therapy and to surgery.

Table 9 demonstrates the relation of age to cure. It is seen that the very young women, of whom there were eighteen below the age of 30, have indeed a poor prognosis, as our percentage of 5.55 would tend to show. Our greatest number of five-year cures are seen in the age groups of 30 to 35 and 55 to 60. Of the patients coming to us after the age of 70 there were no five-year cures.

The end-results of all radical operations for carcinoma of the cervix over the entire period of this survey are seen in table 10. The 20 per cent primary operative mortality seems rather high, but at the present time, with greater care in the selection of cases, better preoperative preparation and preliminary radium treatment, this has been greatly reduced. A total of sixty-six cases shows a five-year cure rate of 33 per cent. These figures include fourteen inoperable cases in which operation was performed prior to 1917. Were it possible to omit these cases from our figures, a much higher five-year cure rate would result with a slightly lower primary operative mortality. In compiling this table it was noted that 75 + per cent of all patients treated with radium were dead within one year and 90 + per cent were dead within twenty-four months. A patient who has been treated with radium and who survives two years seems to have a very good chance of remaining free from recurrence for at least five years. This summary also demonstrates the low operability rate of all patients seen in this clinic. The absolute operability rate, including the 136 untreated cases, is 12.7 per cent; the relative figure computed only with respect to the number of treated patients is 16.27 per cent. These figures once more emphasize the unfavorable quality of the material that congregates in a cancer hospital.

Table 9.—*Relation of Age to Cure*

| Age | Cures | Cases | Per Cent of Cure |
|---|---|---|---|
| 20 to 30 | 1 | 18 | 5.55 |
| 30 to 35 | 6 | 45 | 13.32 |
| 35 to 40 | 6 | 79 | 7.59 |
| 40 to 55 | 23 | 225 | 10.22 |
| 55 to 60 | 9 | 63 | 14.28 |
| 60 to 70 | 3 | 45 | 6.66 |
| 70 to 90 | 0 | 13 | 0 |
| | 48 | 488 | |
| Ages unknown | .. | 10 | |
| | | 498 | |

A study of the cases revealed the fact that 96 per cent of all patients seen were multiparous. This figure is larger than one would expect in a similar group of women of the same age not having cancer and adds to the evidence that the irritation of the cervix due to pregnancy with subsequent dilatation of the cervix is one of the factors influencing the frequency of the neoplasm at this site.

Irradiation was repeated in twenty-three cases at periods varying from four months to two years after the completion of the primary therapeutic course. Three of these patients survived the five-year period. This is practically double the rate obtained in those cases in which irradiation was not repeated (13.1 per cent compared to 7.7 per cent). In the past three years, increasing numbers of patients have been irradiated more than once with satisfactory results.

Table 10.—*Radical Operations, 1906-1926*

| | Number | Per Cent |
|---|---|---|
| Lost after leaving hospital | 13 | 20 |
| Died postoperatively | 13 | 20 |
| Alive 5 years or more | 22 | 33 |
| Alive 4 years | 2 | 3 |
| Alive 3 years | 4 | 6 |
| Alive 2 years | 8 | 12 |
| Alive less than 2 years | 4 | 6 |
| | 66 | 100 |

Radium cases:
90+% dead within 24 months
75+% dead within 12 months
But 81 cases of 634 seen were classified as operative (groups 1 and 2), an operability rate of but 12.74%

Material for the study of the index of malignancy as described by Broders was found available in the pathologic files in more than 300 cases from 1906 to 1926. The details of this histologic study will be published at a later date.

### SUMMARY

1. This paper is based on 498 cases of primary carcinoma of the cervix treated from 1906 to 1926 at the Barnard Free Skin and Cancer Hospital.

2. The low percentage of cure may be in part ascribed to the geographic location of this clinic, with the resulting difficulties in the follow up of patients, and also by the large percentage of far-advanced cases presenting themselves for treatment.

3. Prior to the use of radium, but 4.76 per cent of the patients survived a five-year period. After the use of radium was begun, 11.67 per cent of the patients survived a five-year period.

4. The educational campaign instituted by the American Society for the Control of Cancer has definitely increased the number of patients applying to our hospital, but the percentage of early cases has not greatly increased (from 11 per cent to 16 per cent).

5. The repetition of irradiation is of considerable importance and should increase the survival rate. This feature is dependent on an efficient social service follow-up system to insure frequent systematic examinations to detect recurrences at the earliest possible time. This service can function efficiently, as is borne out by the fact that no case in this service has been lost in the past three years.

6. In certain cases a combination of surgery and irradiation would seem definitely indicated.

7. Radium and roentgen therapy offer the only hope of cure in cases of clinical group 3 and group 4 carcinoma of the cervix.

8. Radical surgery proved superior to radium therapy in establishing a cure in patients in whom the carcinoma was apparently confined to the cervix. In groups 1 and 2 of the period 1917-1926, 56 per cent of twenty-five operated on were cured, whereas only 30 per cent of the thirty irradiated remained well over five years. Furthermore, the operative results showed greater permanence after the five-year period than did the irradiated patients. For these reasons I believe that our results indicate that radical surgery still offers the greater hope of cure in early carcinoma of the cervix.

730 Missouri Building.

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**The Eosinophil and Basophil Cells in the Pituitary.**—Evans and Simpson have been able to isolate from the eosinophil cells a hormone which is concerned with growth, and another from the basophil cells which is concerned with sexual development. Moreover, there is a definite antagonism between them, the growth hormone being capable of completely nullifying the other if both are simultaneously injected. That growth precedes sexual maturity is presumably due to the early predominance of the growth hormone. When the basophil cells are about to assert themselves over the eosinophil cells, puberty occurs. The association between the eosinophil cells and growth is indicated by the coincidence of eosinophilous adenomas with gigantism or hemihypertrophy, if they develop before the epiphyses join up, and with acromegaly if they develop subsequently. Gigantism is sometimes quite partial—as in one finger. Beware of removing such local gigantisms; the operation has been followed by a gigantic growth of the whole limb. This has an interesting bearing on Susman's recent hypothesis as to the influence of overactivity of the anterior lobe in the causation of malignant disease.—Brown, W. L.: Remarks on the Endocrines and Some Associated Psychoneuroses, *Brit. M. J.*, Feb. 6, 1932.

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# “ABORTIVE” POLIOMYELITIS

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To Wickman,[1] credit is usually and justly given for the first adequate description of so-called abortive poliomyelitis, although a few years previously reference had been made to the existence of variant forms of the disease.[2] It would seem, however, that present-day usage of the somewhat unfortunate term abortive poliomyelitis does not embrace all the manifestations of the disease that Wickman had in mind. He included four varieties of poliomyelitis of the abortive type: (1) cases running the course of a general infection; (2) cases in which signs of meningeal irritation were especially prominent ("pseudomeningism"); (3) cases accompanied by distinct tenderness ("pseudo-influenzal"), and (4) cases with disturbances of the gastro-intestinal tract. He believed that abortive cases, representing any or all of his four types, made up a considerable proportion of all the cases in any epidemic of poliomyelitis but that their exact ratio could not be determined.

The same general concept has been held by Draper,[3] who, in emphasizing the dual phases of clinical poliomyelitis, points out that in the first phase the cardinal symptoms may be those of a gastro-intestinal upset, tonsillitis or malaise, and that from 50 to 80 per cent of the total incidence of the disease may be limited to this phase. However, such nondescript symptoms as those which characterize the first phase do not present a clinical picture which may be readily identified, and perhaps this is the reason that many physicians seem unwilling to make a diagnosis of either poliomyelitis or abortive poliomyelitis in the absence of meningitic or myelitic involvement. In any event, the question of uncertainty of diagnosis has precluded the inclusion of such cases in statistics on poliomyelitis,[4] although it is needless to point out that, if the disease is thus limited, such a concept will enormously influence views not only on its epidemiology but also on its fundamental nature. Furthermore, although there are occasional early instances of the demonstration of specific protective bodies in the blood of patients who had sustained an attack of abortive poliomyelitis,[5] its status as a concrete entity has been somewhat shaken by a recent study by Kramer and Aycock.[6] Their results tend to show that a group of children who had passed through minor illnesses (probably comparable to Wickman's abortive types), which occurred coincidentally

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From the Departments of Pediatrics and Medicine, Yale University School of Medicine.

[1] Wickman, Ivan: Acute Poliomyelitis, Nervous and Mental Disease Monograph Series 16, New York, 1913. (Also previous papers.)

[2] Caverly, C. S.: Notes of an Epidemic of Acute Anterior Poliomyelitis, J. A. M. A. **26:** 1 (Jan. 4) 1896.

[3] Draper, George: Acute Poliomyelitis, Nelson's Loose-Leaf Living Medicine, New York, Thomas Nelson & Sons **2:** 67, 1926.

[4] Lavinder, C. H.; Freeman, A. W., and Frost, W. H.: Epidemiological Studies of Poliomyelitis in New York City and the Northeastern United States During the Year 1916, Pub. Health Bull. 91, Washington, D. C., Government Printing Office, 1918.

[5] Netter, A., and Levaditi, C.: Action microbicide exercée sur le virus de la poliomyélite aigue par le sérum des sujets antérieurement atteints de paralysie infantile: Sa constatation dans le sérum d'un sujet qui a présenté une forme abortive, Compt. rend. Soc. de biol. **68:** 855, 1910. Anderson, J. F., and Frost, W. H.: Abortive Cases of Poliomyelitis, J. A. M. A. **56:** 663 (March 4) 1911.

[6] Kramer, S. D., and Aycock, W. L.: *Abortive Poliomyelitis*, Proc. Soc. Exper. Biol. & Med. **29:** 98 (Oct.) 1931. Abortive Poliomyelitis, editorial, J. A. M. A. **98:** 405 (Jan. 30) 1932.

with an epidemic of poliomyelitis, failed to show a higher percentage of specific protective bodies in their blood than did two control groups of children.

Our own studies, which were made in New Haven during the summer of 1931, deal with certain aspects of the same general problem: namely, What is abortive poliomyelitis? and How important is it?

Both questions were rather vividly impressed on us by the difficulties in diagnosis experienced during the recent epidemic. For practical purposes some diagnostic criteria seemed necessary and these gradually resolved themselves into the following features which were accepted as positive evidence of poliomyelitis: (*a*) the development of paralysis in association with the usual signs of the disease, with or without the association of positive manifestations of the spinal fluid; and (*b*) the presence of a pleocytosis (i. e., more than 12 cells), or a definite increase of globulin in the spinal fluid, in association with the usual signs of the nonparalytic form of the disease. Such criteria eliminate innumerable cases characterized only by sore throat, fever, vomiting or headache with or without mild stiff neck which accompany an epidemic of poliomyelitis. Obviously the accepted criteria are incomplete, but it is equally obvious that the question as to where to draw the line is difficult.

In an effort to answer some of the problems of definition in this disease, studies on the symptomatology and particularly the laboratory observations were carried out in a series of suspected cases. An analysis of these results will appear in another publication.[7] In brief, it was found that the usual diagnostic procedures including lumbar puncture were inadequate to answer the question as to whether or not we were dealing with poliomyelitis in many borderline cases. Consequently, resort was had to other methods of approach furnished by the presence of an epidemic. The first object in our epidemiologic studies was to determine the incidence of minor illnesses[8] in association with cases of bona fide poliomyelitis. Two lines of approach were used: (1) family studies and (2) community studies.

## I. FAMILY STUDIES ON THE INCIDENCE OF MINOR ILLNESSES OCCURRING COINCIDENTALLY WITH POLIOMYELITIS

Following methods which have been developed by Opie and his co-workers in studying the spread of tuberculosis through families,[9] and which two of us have similarly employed in rheumatic fever,[10] data were assembled and charted in 222 families, from each of which had come one or more bona fide cases of poliomyelitis. It has been generally observed that there is but little tendency for poliomyelitis to spread in families, and in the epidemic of 1916 only 4.3 per cent of 8,634 families attacked in New York City were reported as having more than one case.[11] Furthermore, there are indications that the majority of multiple cases (80 per cent) are of common source appearing more or less contemporaneously with one another.[12] By taking advantage of the latter fact we have subjected families to a period of intensive observation on or about the time at which a known case of poliomyelitis appeared, having as our particular object the acquisition of first hand observations or of records, not only of other familial examples of recognizable poliomyelitis during this period, but also examples of any type of illness, however mild.[13]

In the course of this work it immediately became apparent that in these families the illnesses, other than those reported to the local board of health as examples of poliomyelitis, divided themselves into three groups: (A) an acute, febrile episode, characterized by sore throat, headache and vomiting, which frequently lasted only twenty-four or thirty-six hours but as a rule left the child feeling below par for several days; (B) mild upsets referable to the upper respiratory or gastro-intestinal tract, such as colds without fever or diarrhea; (C) recognizable clinical entities such as pertussis and ivy poisoning, with which we had little concern. It has been difficult to draw a sharp line between groups A and B, but the attempt has been made to restrict our use of the term characteristic minor illness only to those cases fulfilling the criteria mentioned under group A. In one of our statistical compilations, group B has, however, been included as a separate category (as in figure 3).

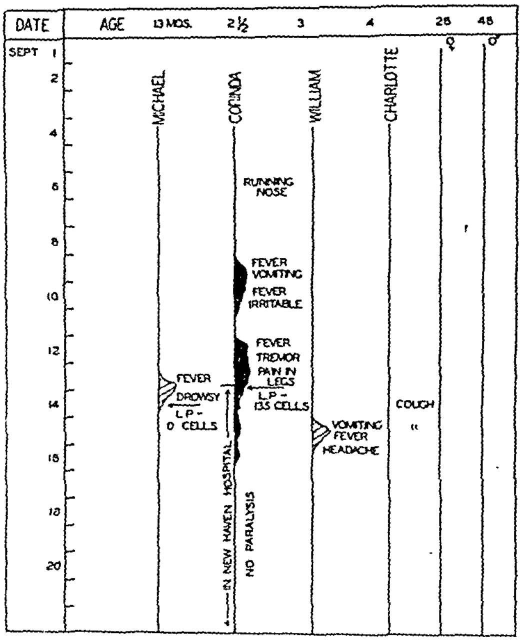

Fig. 1.—A schematic diagram of family Rn. The vertical lines indicate different members of the family; their ages appear at the top. The solid black areas indicate the onset and course of a poliomyelitic infection in one child; the shaded areas indicate the course of minor illnesses. The initials L. P., surmounted by an arrow, denote the time at which lumbar punctures were performed.

A sample family appears in figure 1. Here it will be seen that in a family with four children there occurred one case of poliomyelitis, which was followed closely by two cases of characteristic minor illness in two other children; in one of the latter, the most prominent symptom was fever, and in the other, fever, vomiting and headache. In the youngest child the symptoms were sufficiently suggestive to warrant a diagnostic lumbar puncture, which proved negative. There are enough examples in the literature of family epidemics similar to that shown in figure 1 (notably those appearing in the reports of Taylor and Amoss [14] and Aycock and Luther [15]) to suggest that this situation is not a rare one, but it was one of our main purposes to estimate the frequency with which it actually occurred. For these estimates, data and charts similar to that shown in figure 1 were prepared in all of our 222 families. They revealed that the situation shown in figure 1 is quite common. Actually it was found that, in families in which one or more cases of poliomyelitis arose, illness similar to that shown by Michael and William in figure 1 appeared among the other children in the various percentages shown in table 1.

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[7] Harper, P. A., and Trask, J. D.: A Diagnostic Problem in Poliomyelitis, to be published.

[8] We have employed the term minor illness in subsequent sections of this article rather than "abortive poliomyelitis." Both are vague, but many of the minor illnesses in which we have been interested present symptoms so remote from that of "abortive poliomyelitis" in the usually accepted sense that, until surer ground has been reached, the term minor illness seems preferable.

[9] Opie, E. L., and McPhedran, F. M.: Spread of Tuberculosis Within Families, J. A. M. A. **87**: 1549 (Nov. 6) 1926.

[10] Paul, J. R., and Salinger, Robert: The Spread of Rheumatic Fever Through Families, J. Clin. Investigation **10**: 33 (April) 1931.

[11] Emerson, Haven: Monograph on the Epidemic of Poliomyelitis in New York City in 1916, New York, Dept. of Health, 1917.

[12] Aycock, W. L., and Eaton, P.: The Epidemiology of Infantile Paralysis: The Relation Between Multiple Cases in the Same Family, Am. J. Hyg. **5**: 724 (Nov.) 1925.

[13] We are indebted to Drs. J. L. Rice and D. M. Lewis of the Department of Health, City of New Haven, for the privilege of studying these families

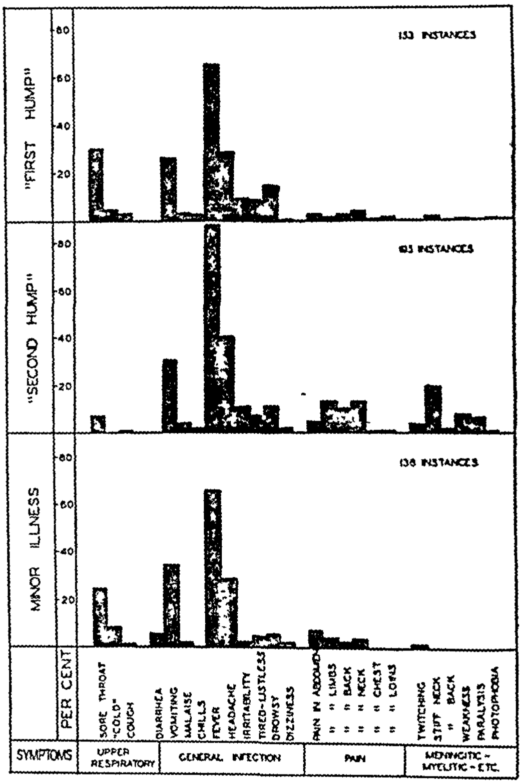

Fig. 2.—A diagrammatic representation of the percentage incidence in which different early symptoms were recorded in the histories of patients in the first and second phases or "hump" of poliomyelitis, as compared with the symptoms appearing in characteristic, familial, minor illnesses.

A comparison between the high rate of incidence of these characteristic minor illnesses can be made with the results obtained from control children representing families from which no case of poliomyelitis had come. Comparable data were obtained on these control families during the epidemic period.

As we have already mentioned, these minor illnesses present a fairly characteristic, although by no means specific, clinical picture, and, furthermore, the spinal fluid obtained from lumbar punctures performed early in the illness generally fails to show abnormal conditions. In an analysis of their symptomatology, we have compared them with the two clinical phases of poliomyelitis.[16] A graphic representation of this analysis, based entirely on data obtained from the patients' histories, appears in figure 2. As is well known and as has been particularly emphasized by Draper,[3] the first phase or "hump" in the so-called dromedary type of the disease is, when present, usually characterized by symptoms of a general infection, and the second "hump" by those of infection with myelitic involvement.

TABLE 1.—*Percentages of Children with Characteristic Minor Illness*

| | | Age | | | | |
|---|---|---|---|---|---|---|
| | | Under 1 | 1-4 | 5-9 | 10-14 | 15-19 |
| 222 Poliomyelitis Families | Number of children in each age group | 23 | 109 | 138 | 107 | 73 |
| | Percentage with characteristic minor illness (group A)* | 12 | 39 | 32 | 17 | 7 |
| 60 (control) Nonpoliomyelitis Families | Number of children in each age group | 10 | 54 | 90 | 76 | 39 |
| | Percentage with characteristic minor illness (group A)† | 0 | 10 | 8 | 0 | 0 |

* Only those examples of illness are included which appeared within three weeks of the time of onset of a familial case of poliomyelitis.

† This includes illness which appeared within a period of six weeks during the time the local poliomyelitis epidemic prevailed.

In our analysis of the symptoms of 195 cases of poliomyelitis, it will be seen that first phase symptoms and early symptoms of the second phase differed from each other essentially in two respects: (*a*) by the increased presence of symptoms of the upper respiratory tract, particularly sore throat in the first "hump," and (*b*) by the presence of signs pointing to meningitic or myelitic involvement in the second. The symptomatology of the coincidental intrafamilial minor illnesses corresponds somewhat more closely to the first "hump" in that here again symptoms of involvement of the upper respiratory tract, such as sore throat, were prominent, and obviously signs of meningitic and myelitic involvement were practically absent. The inference naturally arises, therefore, as to whether these *minor illnesses* actually represent the first phase of poliomyelitis, as Draper believes, and it would seem that on a symptomatologic basis most of the evidence

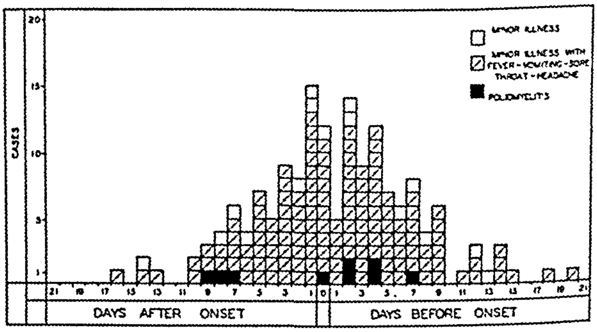

Fig. 3.—Time relationships of the onset of multiple familial cases of poliomyelitis compared with similar relationships of the onset of characteristic familial minor illnesses. Squares with a diagonal represent group A; open squares, group B.

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[14] Taylor, E., and Amoss, H. L.: Carriage of the Virus of Poliomyelitis, with Subsequent Development of the Infection, J. Exper. Med. **26**: 745 (Nov.) 1917.

[15] Aycock, W. L., and Luther, E. H.: The Incubation Period of Poliomyelitis, J. Prev. Med. **3**: 103 (March) 1929.

[16] In an unpublished clinical analysis of 195 patients with poliomyelitis, admitted to the New Haven Hospital during the summer of 1931, those showing the characteristic double phase represented 54 per cent of the series.

would point this way. However, this issue is slightly clouded by the fact that in our series of minor illnesses here again two phases or periods of illness were observed in about 10 per cent of the cases. All that can be said at the moment, therefore, is that our data on this point suggest that generally the symptomatology of the minor illness mimics that of the first phase of poliomyelitis.

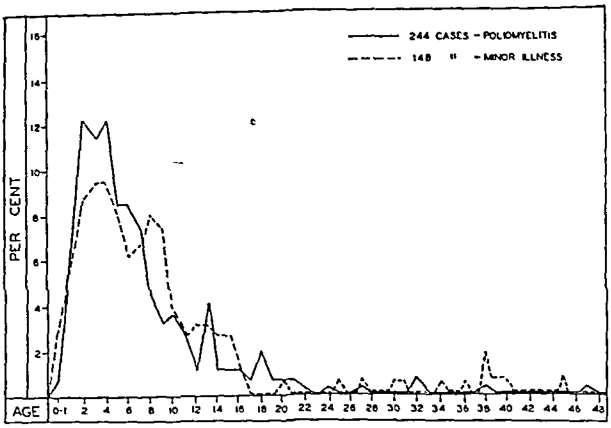

Fig. 4.—The age distribution of cases of poliomyelitis, occurring locally during the 1931 epidemic, as compared with the age distribution of characteristic minor illnesses which occurred in the families of these patients.

In figure 3 is shown the relatively close relationship in time of onset which these characteristic minor illnesses (group A), and also other less characteristic minor illnesses (group B), bore to the day of onset (zero day in fig. 3) of a familial case of poliomyelitis.[17] Similar time relationships between multiple intrafamilial cases of poliomyelitis are also shown. It is evident, therefore, not only that multiple familial cases of poliomyelitis appear more or less contemporaneously but also that minor illnesses appear more or less contemporaneously with familial cases of poliomyelitis.

Another comparison which may be made is that of the age groups affected by poliomyelitis on the one hand, and by these characteristic minor illnesses on the other. In figure 4 the age incidence of 244 cases of poliomyelitis seen in the New Haven Hospital during the summer of 1931 has been charted, together with the age incidence of 148 instances of contemporary minor illness occurring in the families of these patients. The similarity of the two curves is quite striking.

## II. COMMUNITY STUDIES ON THE INCIDENCE OF MINOR ILLNESS OCCURRING COINCIDENTALLY WITH POLIOMYELITIS

Following the leads afforded by the family observations, three more or less isolated communities adjacent to New Haven were chosen for intensive study. The criteria employed in selecting the communities were that (*a*) at least two cases of poliomyelitis had occurred in the community; (*b*) the geographic limits of the community could be defined; (*c*) the size of the total susceptible (juvenile) population could be determined, and (*d*) all the families in the community could be studied.

Data from one of our community studies appear in figures 5 and 6. In figure 5 a rough diagrammatic map of the situation is shown. The community consisted of a group of summer cottages situated on the shore of Long Island Sound which were, fortunately, occupied by very intelligent and cooperative families.[18] The events that transpired in this community during the summer of 1931 are shown in figure 6; all the juvenile (i. e., under 16) members of the group have been portrayed as vertical lines, on which illnesses have been recorded by the symbols used in figure 1. It will be seen that the population was not fixed, in that families were constantly moving in or out. Late in July and early in August several cases of mild illness characterized by sore throat, fever, vomiting and headache appeared among the children, but although there was considerable apprehension by attending physicians and the community itself as to whether the illnesses might be poliomyelitis, none of them showed symptoms from which a definite diagnosis could be made, and so they were labeled "summer grip."

On August 20, a child from family 9, who had left the summer colony the week before, developed poliomyelitis, and shortly thereafter three other cases appeared among members of the colony in rather rapid succession. Meanwhile, the "summer grip" continued, although three out of five of the children who contracted it during September had arrived in the community subsequent to August 15. In all, therefore, out of forty-one children in the community there were twenty-nine instances of acute illness between July 30 and September 22. Four of these illnesses proved to be poliomyelitis. Many of the others merely consisted of fever, headache, and vomiting of one day's duration, but some were of several days' duration; others presented two distinct phases, and not a few offered real problems in the differential diagnosis of poliomyelitis. Practically the same experiences were encountered in our two other community studies; and in all three the ratio of cases of poliomyelitis to minor illnesses proved to be practically the same, namely, 1 : 6. If one were to

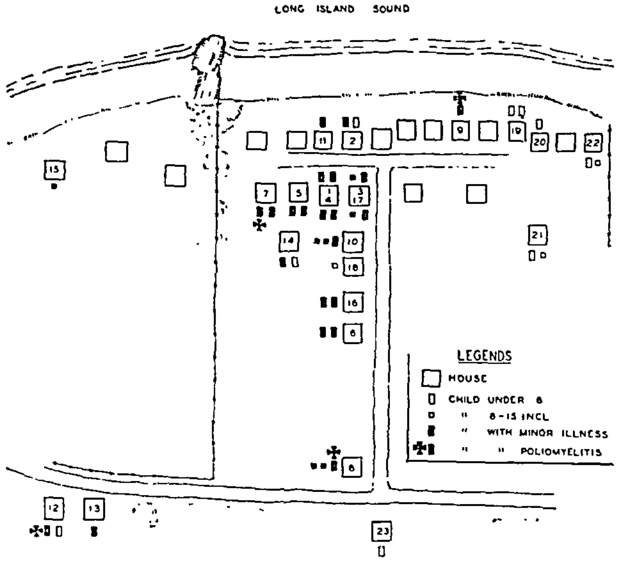

Fig. 5.—A diagrammatic map of community 3 in which are shown the total juvenile population and the number who suffered from minor illnesses or from poliomyelitis between July 25 and Sept. 25, 1931.

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[17] In determining the time of onset of a case of poliomyelitis we have designated the first appearance of symptoms, including first phase symptoms when present, as the first day of the disease.

[18] We are indebted to Dr. Millard Knowlton of the Department of Health, State of Connecticut, and to Dr. M. P. Rindge, district health officer of Madison, Conn., for the privilege of studying this community.

be so bold as to suggest that these minor illnesses were actually mild forms of poliomyelitis one would be led to the conclusion that, under the circumstances described, mild or "abortive" poliomyelitis occurred six times as frequently as did poliomyelitis in which the diagnosis could be made with certainty according to present-day criteria.

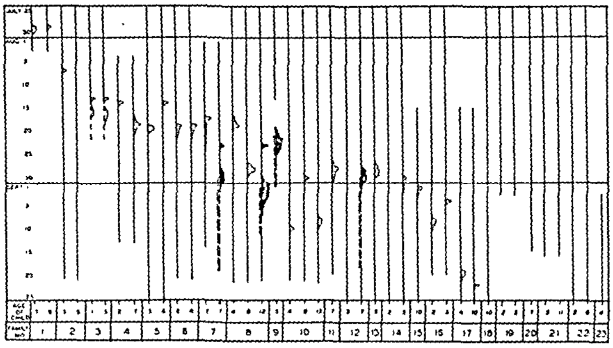

Fig. 6.—The juvenile population of community 3 The onset and course of poliomyelitis and characteristic minor illnesses is denoted by symbols similar to those used in figure 1.

A summary of the data shown thus far from our family and community studies merely goes to show that circumstantial evidence has been raised, pointing to a close relationship between the characteristic minor illness on which we have laid so much stress, and poliomyelitis. To test this circumstantial evidence from another angle, recourse was had to experimental methods.

### DEMONSTRATION OF THE VIRUS OF POLIOMYELITIS IN ORAL SECRETIONS FROM CASES OF MINOR ILLNESS

It is an established fact that the poliomyelitic virus may be detected by the monkey inoculation test, in washings from the throats of acute cases of poliomyelitis,[19] but rarely from human throats under other conditions.[20] To our knowledge there are two examples of its detection in pooled nasopharyngeal washings taken from healthy familial contacts (Flexner, Clark and Fraser,[21] Kling and Pettersson [22]).[23] An important observation which has direct bearing on our studies is that of Taylor and Amoss,[14] who were successful in isolating the virus from two members of a family of four children in which three, or probably four, cases of poliomyelitis occurred. One of the successful instances was obtained from a child five days before she came down with a mild attack of the disease; the other from a child four days subsequent to the development of symptoms which recall those of our characteristic minor illnesses. The number of attempts to repeat the previously quoted observation is unknown, but it is evident from the small number of successful reports of the isolation of the virus from patients not suffering from bona fide poliomyelitis that it is not easy, and it was with rather meager hopes of success that our experiments were initiated.

The technic used was varied from time to time, and our two successful results were attained with unconcentrated as well as with concentrated washings.

The patient was instructed to gargle the throat with from 25 to 125 cc. of sterile water, or it was washed through the nasopharynx by means of a nasal catheter. The washings were collected in a flask containing glass beads, which were shaken vigorously for fifteen minutes. This material was then usually concentrated by vacuum distillation at 37 C. for a period not exceeding six hours (by this procedure we were seldom able to reduce the washings to less than a fourth of their original volume). To the concentrated washings 0.5 per cent phenol was added and the material allowed to stand for half an hour, in order to reduce the number of bacteria. This step in the procedure was employed in preference to filtration, as it has been shown that, in spite of the bactericidal properties of phenol, poliomyelitic virus may remain active in 0.5 per cent phenol for many months.[24] Between 0.5 and 1.0 cc. of the phenolized material was then inoculated intracerebrally into the brain of an etherized monkey. Material thus treated and inoculated intracerebrally into twenty monkeys gave rise to pyogenic infection, or brain abscess, once. Rectal temperatures were taken twice daily on all monkeys thus inoculated, for a period of three weeks. If suspicious or definite signs of paralysis developed, the animal was killed and an autopsy was done. Practically all the surviving monkeys in this

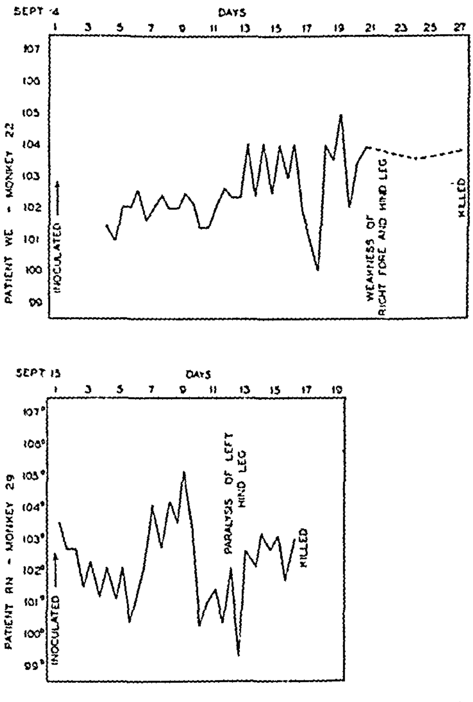

Fig. 7.—Temperature curves shown by the two monkeys (22 and 29) in which the experimental disease was produced as a result of the intracerebral inoculation of nasopharyngeal washings from two cases of minor illness.

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[19] The literature is reviewed by Flexner, Simon, and Amoss, H. L.: Persistence of the Virus of Poliomyelitis in the Nasopharynx, J. Exper. Med. **29:** 379 (April) 1919.

[20] Lucas, W. P., and Osgood, R. B.: Transmission Experiments with the Virus of Poliomyelitis, J. A. M. A. **60:** 1611 (May 24) 1913.

[21] Flexner, Simon; Clark, P. F., and Fraser, F. R.: Epidemic Poliomyelitis: Fourteenth Note: Passive Human Carriage of the Virus of Poliomyelitis, J. A. M. A. **60:** 201 (Jan. 18) 1913.

[22] Kling, C., and Pettersson, A.: Keimträger bei Kinderlähmung, Deutsche med. Wchnschr. **40:** 320 (Feb. 12) 1914.

[23] We have recently gone over the well known work of Kling, Pettersson and Wernstedt (*The Presence of the Microbe of Infantile Paralysis in Human Beings: Investigation on Epidemic Infantile Paralysis, Report from the State Medical Institute of Sweden to the Fifteenth International Congress on Hygiene and Demography, Washington, D. C. 5, 1912) who reported the detection of poliomyelitic virus from a rather high percentage of examples of minor illness and from healthy contacts.* The criteria which these authors used for the detection of the virus are so different from those in use to-day that it is difficult to evaluate their results.

[24] Amoss, H. L.: Virus Diseases of Man as Exemplified by Poliomyelitis. Filterable Viruses, edited by T. M. Rivers, Baltimore, Williams & Wilkins Company, 1928.

series were subsequently tested and found susceptible to infection with a known strain of poliomyelitic virus.[25]

Oral washings from twelve examples of minor illness, three cases of poliomyelitis and four contacts, were treated in the manner described. In all, twenty monkeys were inoculated. As already stated, one monkey that had been inoculated with material obtained from a supposed contact succumbed with a brain abscess on the sixth day and consequently has not been included in the series.

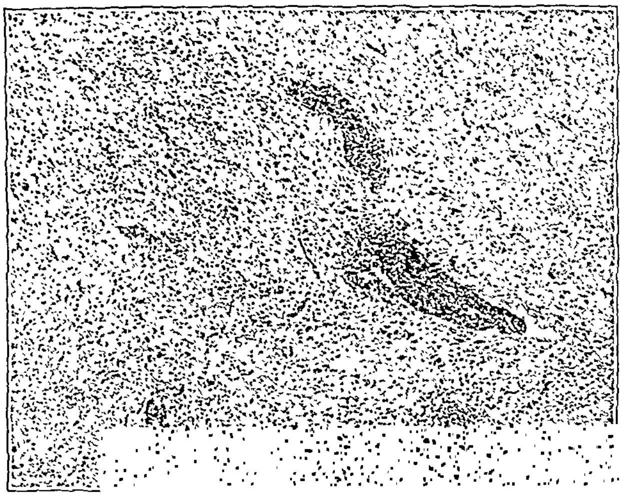

Fig. 8.—Section showing characteristic lesions of poliomyelitis in the spinal cord of monkey 22; × 55.

The results appear in table 2. Here it will be seen that from twelve tested cases of minor illness the virus was detected in two and that both of the positive results were obtained with washings taken on the first and second days of the disease, representing two successful attempts out of five trials during this early period. A further commentary which also seems important is that. as these minor illnesses are often very brief, two of the children were practically without symptoms on the second day and were up and playing at the time the irrigation was done. In neither of these cases was the virus detected. Therefore, of the three cases tested within forty-eight hours of the onset of the disease and in which symptoms still persisted, two furnished the virus by the methods employed.

Table 2.—*Summary of Results of Monkey Inoculations with Oral Washings*

| | Day of Illness or Contact on Which Washing Was Done | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6-10 | 11-15 | Total |
| Minor illness | | | | | | | | |
| Number of cases | 1 | 4 | 2 | 3 | 1 | 1 | .. | 12 |
| Number of positive results | 1 | 1 | 0 | 0 | 0 | 0 | .. | 2 |
| Contacts | | | | | | | | |
| Number of subjects | .. | 1* | 1* | 1* | .. | .. | .. | 3 |
| Number of positive results | .. | 0 | 0 | 0 | .. | .. | .. | 0 |
| Poliomyelitis | | | | | | | | |
| Number of cases | 1 | .. | .. | .. | .. | 1 | 1 | 3 |
| Number of positive results | 0 | .. | .. | .. | .. | 0 | 0 | 0 |
| Contacts | | | | | | | | |
| Number of subjects | 1* | .. | .. | .. | .. | .. | .. | 1 |
| Number of positive results | 0 | .. | .. | .. | .. | .. | .. | 0 |

* The day of contact represents the day numbered from the onset of the last case to which the subject was intimately exposed.

The two patients in whom the virus was detected have already figured in previous sections of this paper. One was Michael, aged 13 months, shown in figure 1. It will be recalled that he was suspected of having poliomyelitis but that this suspicion was allayed by the presence of a negative lumbar puncture and the rapid disappearance of symptoms after twenty-four hours. The second was a child, aged 5 years, who appears as the oldest juvenile member of family 16 in figure 6.

## EVIDENCES OF POLIOMYELITIS IN THE MONKEYS

Besides the development of characteristic paralysis, temperature readings have proved valuable in detecting the experimental disease in the monkey. It will be recalled that the normal temperature range of rhesus monkeys is about 102 to 103.

Kramer, Hendrie and Aycock[26] have recently described the characteristic temperature curve which appears in monkeys inoculated intracerebrally with the virus of poliomyelitis. They call attention to the fact that there may be an immediate brief rise in temperature, but this usually does not last beyond the first twenty-four hours. The incubation period or period of "normal" temperature prior to the onset of the true experimental disease generally lasts from four to eight days but at times as long as from eighteen to twenty-one days. With the onset of the disease there is an abrupt rise in temperature reaching 104 to 107. Fever may persist from one to three days before the onset of the usual recognizable symptoms, such as paralysis. With the appearance of these symptoms the temperature is already declining, and when paralysis is extensive there may be a pronounced drop to subnormal values.

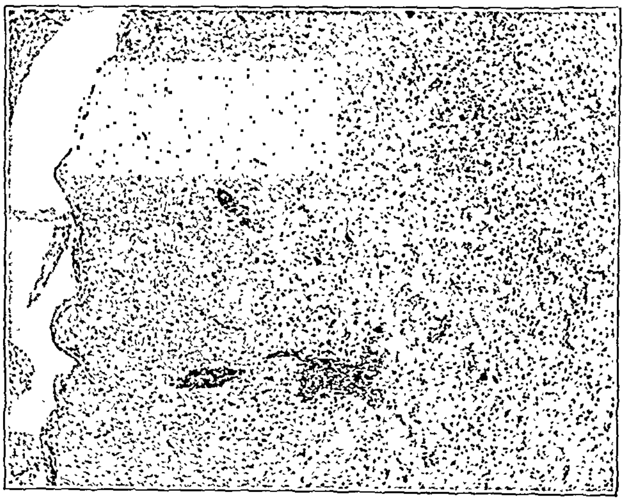

Fig. 9.—Section showing characteristic lesions of poliomyelitis in the spinal cord of monkey 29; × 55.

In figure 7 are shown the temperature curves of the two monkeys (22 and 29) in which the experimental disease was produced by inoculation of washings from two of our cases of minor illness. It will be seen that they conform to the picture that has just been described. In monkey 22 (patient We.) the incubation period was about twelve days and the development of paralysis was never particularly extensive. In monkey 29 (patient Rn.), the incubation period was six days, the febrile reaction brief, the temperature quite high, and paralysis of one leg marked. Both monkeys were killed five days after the development of definite paralysis. The autopsy revealed typical lesions in the spinal cord of each animal (figs. 8 and 9). Both of the strains of virus thus isolated were subsequently passed to other monkeys. A more detailed description of this aspect of our work will appear in another publication.[27]

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[25] We are indebted to Dr. E. R. Weyer and to Dr. W. H. Park of the Bureau of Laboratories, Department of Health, City of New York, for the standardized strain of poliomyelitic virus which we used in retesting these monkeys.

[26] Kramer, S. D., Hendrie, K. H., and Aycock, W. L.: Rise in Temperature Preceding the Appearance of Symptoms in Experimental Poliomyelitis, J. Exper. Med. 51:933 (June) 1930.

## COMMENT

Evidence has been brought forward in this paper, more or less corroborating the experiences of many previous observers, which shows that accompanying an epidemic of poliomyelitis there appear many examples of illness with symptoms not unlike those of incipient poliomyelitis. Emphasis has been laid on the surprisingly high percentage of exposed children who present these mild symptoms and the similarity that exists between the age distribution of this group and the age distribution of those who coincidentally develop recognizable poliomyelitis. Estimates with regard to the incidence or ratio of these minor illnesses to cases of poliomyelitis have been made in three communities and in each it was found that the former were approximately six times as frequent as the latter. From two children with these minor illnesses the virus of poliomyelitis has been detected in the throat, a finding which taken in conjunction with the other observations suggests that a common causal relationship exists between such illnesses and the usually accepted entity of poliomyelitis. We are aware, however, of the possibility that these individuals might have been mere carriers of the virus and, as such, not necessarily suffering from infection with it. The consistency with which negative results are encountered among contacts and also among those who had had a minor illness but were convalescent would, however, militate against this view.

The question naturally arises: Are all these instances of minor illness, however mild they be, actually examples of so-called abortive poliomyelitis? If such is the case, the previously unsuspected high incidence of the disease might explain the ease with which it spreads, as well as the mass immunization of most adult populations to the disease; an immunization which thus becomes clinical rather than subclinical in spite of recent evidence to the contrary.[6] It seems evident, however, that the reason that suspected variant forms of the disease, which have been so often described in conjunction with epidemics of poliomyelitis, have been so belittled is that there is practically nothing specific about them. There is no obviously apparent means of recognizing them, simulating as they do so many minor infections, and as a matter of fact we seem less able to recognize them today than did Wickman almost thirty years ago. The question is an old and difficult one and we have merely raised it without presenting a practical solution; but in the face of so much suggestive evidence the crux of the problem as to whether some or all of the minor illnesses which we have listed as characteristic of those seen in the epidemic period are, in actuality, poliomyelitis would seem to be one of definition. Certainly there seems little doubt that some of the minor illnesses we have described are related to orthodox poliomyelitis. If it could be shown that, accompanying or subsequent to the development of such an illness the patient actually became immune to poliomyelitis, one might justifiably assume that he had passed through an attack of the disease. The elucidation of this problem must rest on further observations and experiments on the nature of immunity in this and other diseases, together with an appreciation as to whether the tests now at our disposal are an adequate measure of immunity to poliomyelitis.

## SUMMARY

1. An epidemiologic study of poliomyelitis has been made in which particular emphasis is laid on the problem of so-called abortive poliomyelitis, in an effort to define this entity, to determine its relative frequency, and to uncover methods whereby it can be recognized.

2. Common usage of the term abortive poliomyelitis has proved so ambiguous that in order to define the issues in this disease we have employed the term characteristic minor illness in association with poliomyelitis, so that ground may be cleared for a critical, definitive study.

3. The symptomatology of some of these minor illnesses is more or less characteristic but not specific, being essentially that of an acute infection of short duration. Such symptoms as fever, sore throat, headache and vomiting dominate the clinical picture.

4. In a survey of 222 families in each of which one or more cases of poliomyelitis had occurred it was found that, coincidentally with the onset of the known case or cases of poliomyelitis, characteristic minor illnesses developed with a high degree of frequency in the other children of susceptible age. Thus in the age group 1 to 4 years, 39 per cent of children with familial exposure developed a minor illness and in the age group of 5 to 9, this incidence was 32 per cent. In sixty control families comparable data were obtained, showing that while the epidemic prevailed, the incidence of similar minor illnesses was about 9 per cent among local children under 10, who had not been exposed to a familial case of poliomyelitis.

5. In a survey of three communities the ratio of cases of poliomyelitis to these characteristic minor illnesses was the same in each; namely, 1 : 6.

6. Experiments were made in which the poliomyelitic virus was isolated from nasopharyngeal washings in two examples of these minor illnesses. Negative results were obtained in ten others.

7. In both the successful experiments of virus isolation, the nasopharyngeal washings were obtained on either the first or the second day of the disease; three other attempts to isolate the virus during this period proved negative.

8. Strong evidence is brought to bear that these minor illnesses, which are evidently more frequent than has hitherto been suspected, have a common causal *relationship with orthodox poliomyelitis.*

9. The question as to whether the term abortive poliomyelitis may be justifiably ascribed to these illnesses would seem to be one of definition.

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[27] Paul, J. R., and Trask, J. D.: The Detection of Poliomyelitis Virus in So-Called Abortive Types of the Disease, to be published.

# THE TOXICITY OF ALLYL ALCOHOL

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CINCINNATI

Allyl alcohol, $C_3H_5OH$, earlier came into prominence as a toxic substance through the belief that its presence in wood alcohol (methyl alcohol) as an impurity largely accounted for the toxicity of the latter substance. Allyl alcohol may be present in natural methyl alcohol in such quantities as 0.5 per cent. This attempt to shift the major responsibility for wood alcohol poisoning to its impurities proved to be unwarranted. It is now known that pure synthetic methyl alcohol possesses toxic properties essentially equal to those of the natural variety.

Genuine opportunities for injury from allyl alcohol may be found in the increasing use of this substance as an intermediate in the chemical and pharmaceutic industries. During the past year a number of workers have been damaged from exposure to allyl alcohol vapors, which fact prompted a limited experimental investigation, here reported. Earlier investigations have been reported by Miessner,[1] Carlier[2] and Atkinson.[3] The last mentioned investigator found that 0.5 cc. of allyl alcohol in 1 per cent solution, administered by mouth, produced death in dogs within about seven hours. Atkinson concludes that the toxicity based on the lethal dose is about 150 times that of methyl alcohol.

## INHALATION EXPERIMENTS

Six rabbits, one monkey and sixteen white rats were subjected to the action of known concentrations of allyl alcohol, in such quantities of the vapors as 50, 200 and 1,000 parts per million of air. The exposure period was seven hours daily, although some animals did not survive that long. The method of exposing these subjects to the vapor is described in other publications.[4]

Following exposure to 1,000 parts of vapor per million of air, the one rhesus monkey, long under preliminary observation, died within four hours. Prior to death there occurred profound vomiting and diarrhea, together with every indication of severe pain. At autopsy, subcutaneous hemorrhage was noted over the abdomen; the entire intestinal tract was markedly inflamed and injected, with petechial hemorrhage throughout. The gastro-intestinal tract was empty and greatly distended. The entire spleen presented diffuse hemorrhage. Similarly, hemorrhage existed in the kidneys, and throughout the lungs extensive edema with hemorrhagic exudate was noted. Additional evidence of inflammation, with or without hemorrhage, was noted in the brain, meninges and blood vessels. The blood was uncoagulated.

Two rabbits were subjected to the same concentration. One died after three and a half hours' exposure, the other after four hours and fifteen minutes. During exposure, breathing was labored and noisy. Fluid dripped from the nose and mouth. At autopsy much free hemorrhage was found in the lungs, with lesser inflammation and hemorrhage in the intestinal tract, kidneys and bladder. The urine contained blood. In one of these two rabbits, hemorrhage was noted in the eyes, the sclerae were opaque, and the genitalia were highly inflamed. Both animals presented a marked gaseous distention of the gastro-intestinal tract.

Six rats were exposed to this concentration of 1,000 parts of vapor per million of air and were dead within three hours. The postmortem observations in the lot were the same throughout and closely resembled those found in the rabbits and in the monkey.

In another group of three rabbits and four rats, the concentration was reduced to 200 parts of allyl alcohol vapors per million of air. After one hour's exposure there existed obvious discomfort and labored, noisy breathing, with discharge of fluid from the nose and mouth. One animal survived three days' exposure (seven hours each), dying in convulsions; another survived six days' exposure, and the third survived eighteen days' exposure. During this period the labored, noisy breathing persisted, together with marked nasal and oral discharge of secretion. The autopsies on these three rabbits disclosed conditions quite similar to those found in the higher concentration, with some variations attributable to the longer period of action.

The four rats in this group succumbed on either the first or second day of exposure and presented conditions at autopsy similar to those already described.

In a third group of two rabbits and five rats, the concentration produced was 50 parts of allyl alcohol per million of air. The first rabbit died on the fourteenth day of exposure; the second survived twenty-eight days' exposure and was then killed for examination. In the first animal the conditions found at autopsy were similar to those already mentioned. In the killed animal the changes were likewise similar, with chief evidence of hemorrhage in the gastro-intestinal tract and the lungs.

The rats in this series, with one exception, died as the result of the action of allyl alcohol, the exposure period averaging about thirty days.

In general, it appears that allyl alcohol is a highly irritating chemical, leading in life to pulmonary edema, hemorrhage, gastro-enteritis, profound vomiting, distention of the gastro-intestinal tract, diarrhea, nephritis and hematoma. At autopsy, practically all tissues are highly inflamed and present hemorrhage. The lungs and gastro-intestinal tract appear to be the most involved.

A suitable number of controls did not present any of the abnormalities observed before death and at autopsy in the animals exposed to the vapor.

Tissues from these experimental studies have been examined by Dr. Ernest Scott and his associates, of the Department of Pathology of Ohio State University. Histologic changes will be reported in a separate paper. The summary of this paper on pathology includes the following: "All lesions described have been of a very acute nature. The alcohol is apparently diffused quite rapidly throughout the system. The first evidence of the injurious agent is a general congestion of all the viscera. This is followed quickly by swelling and granular degeneration of the cytoplasm of the parenchymatous cells. The cells most affected are those lining the convoluted tubules of the kidney, the liver cord cells, myocardium, and the ganglion cells of the spinal cord and of the retina. This swelling and parenchymatous change is followed directly by cellular necrosis without any evidence of wandering cell infiltration. . . . The general congestion of the lungs is followed by edema and compensatory emphysema."

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[1] Miessner: Ueber die Wirkung des Allylalkohols: IV. Aus der Chemischen Abtheilung des Physiologischen Instituts zu Berlin, Berl. klin. Wchnschr. **28**: 819 (number 33) 1891.

[2] Carlier, E. W.: Notes on the Physiology of Some of the Allyl Compounds, Brit. M. J. **2**: 609, 1911.

[3] Atkinson, H. V.: Toxicity of Impurities in Wood Alcohol: I, Allyl Alcohol, J. Pharmacol. & Exper. Therap. (proceedings) **25**: 144, 1925.

[4] McCord, C. P.: A New Investigation of the Toxicity of Benzol and Its Impurities, Transactions of National Safety Council, 19th Annual Safety Congress (Chemical Section), 1930; Toxicity of Methyl Alcohol (Methanol) Following Skin Absorption and Inhalation, Indust. & Engin. Chem. **23**: 931 (Aug.) 1931.

### COMMENT AND SUMMARY

Among workers the damage from allyl alcohol has been limited to severe irritation of the mucous membranes, with edema and excessive secretion, together with conjunctivitis and lacrimation. The physical properties of this alcohol are such as to provide due warning of its presence. Since, under ordinary room conditions of temperature and air pressure, 1 cc. of the liquid allyl alcohol will produce about 362 cc. of vapors, it is obvious that dangerous concentrations may readily arise. The threshold of danger from inhalation is well below 50 parts of vapor per million of air, but it is improbable that allyl alcohol may be regarded as 150 times as toxic as methyl alcohol through this portal of entry. Concentrations below 5 parts per million will produce some irritation, and for practical purposes the atmosphere of work places should be kept below this point. Completely closed systems are highly desirable in the manipulation of this toxic industrial chemical.

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# PROPHYLAXIS OF THE ANEMIA OF PREMATURE INFANTS

## USE OF VARIOUS AGENTS IN ATTEMPT TO PREVENT DEVELOPMENT OF THE SO-CALLED PHYSIOLOGIC ANEMIA OF PREMATURE INFANTS: PRELIMINARY STUDY

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The anemia that regularly occurs in premature infants during the first quarter year of life has been known and recognized as a clinical entity since Gundobin [1] first reported his observations on this condition.

For the first days after birth the blood of the premature infant shows high values for hemoglobin content and number of erythrocytes, similar to the values found in the full term new-born infants. At this period fetal characteristics such as erythroblastosis and polychromia are present to a higher degree in the blood of the premature than of the full term infant.

Regularly during the first three months there is noted a marked drop in the hemoglobin and the red count, beginning from the fourth to the fifth week of life and reaching their lowest values between the eighth and the twelfth week. Thereafter, a gradual improvement in both the erythrocyte count and the hemoglobin content of the blood are noted, until values are reached at the sixth to the eighth month of life which compare normally with those of the full term infant.

The more premature the infant and the lower its birth weight, the more severe the anemia that is likely to develop.[2]

It must be clearly understood that all workers on this anemia have reported their observations from otherwise healthy premature infants, so that such factors as infection, hemorrhage or ailmentary or nutritional disturbances are *a priori* excluded. The anemias of congenital syphilis, or those developing after severe infections or nutritional disturbances in the new-born or premature infant in the first six months of life, have their definite etiology and must be recognized as entirely distinct types from those occurring in otherwise healthy premature infants.

While many of the earlier observations were made on infants from the lower social strata, in infant asylums and crèches, there have been enough observations on premature infants of the upper classes to prove that the anemia develops just as severely and regularly in infants from the latter social group.

It was early believed that the type of milk or feeding might have some influence on the development of the anemia, but whether the feeding is entirely breast milk or modifications of cow's milk makes not the slightest difference in the degree of anemia developed. The early addition of vitamins, orange juice, cod liver oil or viosterol does not prevent the development of the anemia.

### SYMPTOMATOLOGY

This anemia has been termed physiologic anemia [3] and also hypoplastic anemia [4] of premature infants.

The symptomatology of this anemia is often marked by intense pallor; the skin has a waxy or white sheet color. The ear lobes are pale and transparent and the mucous membranes and nailbeds are markedly pale. Enlargement of the spleen is uncommon; the liver is occasionally found slightly enlarged. Kunckel [5] reported that premature infants whom he was able to keep out in the fresh air showed a rosy skin color despite the anemia which they developed. The appetite and general well being of these infants is in no way impaired, and they show no elevations of temperature or constitutional derangements. No immunologic studies are available to show that this anemia renders them more subject to infection.

The blood of this anemia is characterized by an equally marked reduction in erythrocyte and hemoglobin values with disappearance of the erythroblastosis and polychromia. The latter finding is in marked contrast to the prevalence of these elements in the blood of premature infants during the first few days of life.

### EXPERIMENTAL DATA

The experimental work here reported was carried on in a special ward for premature infants, under ideal and exemplary conditions. After the infants were discharged from the hospital they were followed in the outpatient department, returning at intervals to a special premature clinic.

All infants selected were healthy premature infants; i. e., there was no history or sign of syphilis, hemorrhage, infection or other disorder that might be taken as a cause for anemia. In our work we have divided them into two distinct classes: those born after six to seven months' gestation and those born after eight months' gestation. This was necessary because it has

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Inaugural thesis, read before the Chicago Pediatric Society, Feb. 16, 1932.

From the Premature Infant Station, Sarah Morris Hospital for Children, and the Nelson Morris Institute for Medical Research, Michael Reese Hospital. Aided by grants from the Infants Aid Society and the Albert B. Kuppenheimer Fund.

[1] Gundobin, N. P.: Ueber die Morphologie und Pathologie des Blutes bei Kindern, Jahrb. f. Kinderh. **5**: 204, 1893.

[2] Landé, Lotte: Beitrag zur Haematologie, Aetiologie und Therapie der Frühgeburtenanämie, Ztschr. f. Kinderh. **22**: 295 (Nov.) 1919; Zur Eisentherapie der Frühgeburtenanämie, ibid. **42**: 349, 1926.

[3] Finkelstein, H.: Ueber die Anämien des frühen Kindesalters, Berl. klin. Wchnschr. **48**: 1829, 1911; Lehrbuch des Säuglingskrankheiten, ed. 3, Berlin, Julius Springer, 1924, p. 752.

[4] Lichtenstein, A.: Hämatologiska studies a för tidigt födda born, Svenska läk.-sällsk. handl. **43**: 1533 (Dec.) 1917; Der Eisenumstaz bei Frühgeborenen, Acta pædiat. **1**: 194, 1921.

[5] Kunckel, D.: Zur Kenntnis der Blutveränderungen bei Frühgeburten und debilen Kindern, Ztschr. f. Kinderh. **13**: 101 (July) 1915.

been shown that the more premature the infant and the less the birth weight, the more severe the anemia. This group differentiation was likewise made with the control series.

The infants in this station[6] are all placed in the Hess incubator bed for premature infants, and heat is maintained by this means. The routine feeding is breast milk obtained from tested wetnurses who live in the hospital and express their milk under direct control of the supervising nurse of the premature station.

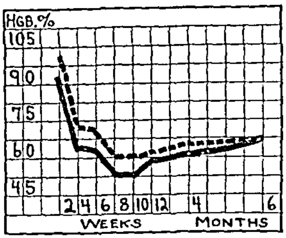

Chart 1.—Hemoglobin in control premature infants. In charts 1 and 2 the broken line indicates the infants of eight months' gestation and the solid line those of from six to seven months' gestation.

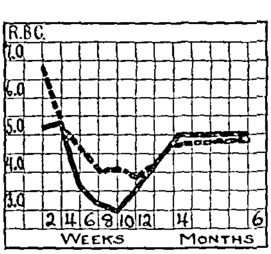

Chart 2.—Red blood cells in control premature infants.

After the infants are older and have attained sufficient weight, such substitute feedings as skimmed lactic acid milk (buttermilk), whole buttermilk, chymogen milk, evaporated milk and whole milk modifications are adopted, according to the need of the infants. Orange juice and cod liver oil are started early, from the second to the third week after birth; cereals from the fourth to the fifth month, and vegetables from the fifth to the sixth month. The infants were followed for from six to seven month periods, after which time the erythrocyte and hemoglobin values had returned to normal figures for this age group.

TABLE 1.—*Control Series*

| Control Infants | Birth Weight, Gm. | 1 Week: Red Blood Cells | 1 Week: Hemoglobin, per Cent | 2 Weeks: Red Blood Cells | 2 Weeks: Hemoglobin, per Cent | 4 Weeks: Red Blood Cells | 4 Weeks: Hemoglobin, per Cent | 6 Weeks: Red Blood Cells | 6 Weeks: Hemoglobin, per Cent | 8 Weeks: Red Blood Cells | 8 Weeks: Hemoglobin, per Cent | 10 weeks: Red Blood Cells | 10 weeks: Hemoglobin, per Cent | 12 Weeks: Red Blood Cells | 12 Weeks: Hemoglobin, per Cent | 4 Months: Red Blood Cells | 4 Months: Hemoglobin, per Cent | 6 Months: Red Blood Cells | 6 Months: Hemoglobin, per Cent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Premature Infants of from 6 to 7 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 1.......... | 1,505 | ... | ... | ... | ... | ... | ... | ... | ... | 3.6 | 55 | ... | ... | ... | ... | 5.0 | 63 | ... | ... |
| 2.......... | 2,225 | ... | ... | ... | ... | ... | ... | ... | ... | 3.0 | 54 | ... | ... | ... | ... | ... | ... | ... | ... |
| 3.......... | 1,460 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3.6 | 60 | ... | ... | ... | ... |
| 4.......... | 2,510 | ... | ... | ... | ... | 5.1 | 63 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 5....(2 days) | 1,110 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3.8 | 65 | ... | ... | ... | ... | ... | ... |
| 6.......... | 1,760 | 5.8 | 116 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7.......... | 1,590 | 6.5 | 103 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 8.......... | 2,330 | ... | ... | 5.2 | 95 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 9.......... | 2,340 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2.6 | 50 | ... | ... | ... | ... | ... | ... |
| 10.......... | 1,470 | ... | ... | ... | ... | ... | ... | 3.6 | 63 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 11.......... | 2,015 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4.9 | 68 |
| Average........... | | 6.1 | 109 | 5.2 | 95 | 5.4 | 63 | 3.6 | 63 | 3.3 | 54 | 3.2 | 55 | 3.6 | 60 | 5.0 | 63 | 4.9 | 68 |
| Premature Infants of 8 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 12.......... | 2,400 | 6.2 | 100 | 6 0 | 98 | 4.4 | 80 | 4.8 | 75 | 4.2 | 66 | ... | ... | 4.0 | 64 | ... | ... | 5.0 | 70 |
| 13 (girl).... | 1,870 | 8.0 | 100 | 7.6 | 104 | 6.6 | 90 | 5.9 | 85 | 4.0 | 45 | 3.9 | 60 | 4.1 | 60 | 4.8 | 70 | 4.9 | 70 |
| 14.......... | 2,400 | ... | ... | ... | ... | 5.1 | 68 | 4.4 | 65 | 4.4 | 65 | 4.5 | 65 | ... | ... | 5.7 | 65 | 5.6 | 65 |
| 15.......... | 2,000 | 4.8 | 88 | ... | ... | 4.7 | 70 | ... | ... | 3.7 | 64 | ... | ... | 3.7 | 65 | 4.6 | 60 | 4.8 | 70 |
| 16....(9 days) | 1,420 | ... | ... | ... | ... | ... | ... | 4.2 | 75 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 17.......... | 2,230 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4.3 | 65 |
| 18...(34 days) | 2,240 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3.9 | 65 | ... | ... | 4.8 | 75 |
| 19.......... | 2,230 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5.0 | 71 |
| 20.......... | 1,920 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3.6 | 60 | ... | ... | ... | ... |
| 21 (girl).... | 1,920 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4.0 | 70 | ... | ... |
| Average........... | | 6.3 | 96 | 6.8 | 101 | 5.2 | 74 | 4.8 | 75 | 4.0 | 60 | 4.2 | 63 | 3.8 | 63 | 4.7 | 66 | 4.9 | 69 |

*Prophylactic Agents Used and Dosages.*—The first group of premature infants was started on a dried liver extract fraction suitable for secondary anemia, made according to the formula of Whipple and Robscheit-Robbins.[7] Two complete blood determinations were made during the first week of life, and then the dried liver extract was administered at the beginning of the second week of life and kept up continuously, with daily dosages throughout the experiment. The initial dosage of liver extract was 0.5 Gm. twice daily, increased with age to 1 Gm. twice daily and up to 3 Gm. twice daily as the infant gained and grew older.

In another series a preparation of desiccated hog stomach, prepared under the direction of Isaacs and Sturgis[8] and purchased on the open market, was employed in similar dosages and started after the first week of life.

In the largest series a preparation of dried liver fraction with iron was employed. The liver in this preparation was in the form of the dried liver fraction suitable for secondary anemia, made according to the formula of Whipple and Robscheit-Robbins.[7] The iron in this preparation was in the form of ferrous ammonium citrate. Each level teaspoonful of this empiric formula contains approximately 3.75 Gm. of liver fraction and 0.65 Gm. (10 grains) of ferrous ammonium citrate. The initial dosages started with from 1 to 2 Gm. twice daily and were increased up to 4 Gm. twice daily as the infants grew older. This preparation, which was started after the first week of life, was easily and well tolerated in these doses and caused no disturbance in the infants' digestion, feedings or stools. The amount fed twice daily was mixed with 1 drachm (4 cc.) of the milk mixture and was given at the end of a feeding. As the infants' grew older the liver-iron preparation was given in from one-half to one ounce of milk formula.

The control group of infants was in the same ward under identical conditions of nursing, maintenance of heat, diet and hygienic care. Whenever possible, premature twins were used, one as a control and one as an experimental subject.

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6. Hess, J. H.: Premature Infants, General Hygiene and Environment, in Abt, I. A.: Pediatrics, Philadelphia, W. B. Saunders Company **2:** 456, 1923.

7. Whipple, G. H.; Robscheit-Robbins, F. S., and Walden, G. B.: Am. J. M. Sc. **179:** 628 (May) 1930.

8. Isaacs, Raphael; and Sturgis, C. C.: Some Newer Remedies in the Treatment of Pernicious Anemia: Desiccated Stomach, J. A. M. A. **95:** 585 (Aug. 23) 1930.

### HEMATOLOGIC METHODS

Erythrocyte and leukocyte counts, hemoglobin determinations, platelet counts, reticulocyte percentages and differential counts were taken on the premature infants at weekly intervals while they were in the hospital and at biweekly intervals after the infants were discharged. United States standard pipets and a Thoma Levy hemocytometer were used for all erythrocyte and leukocyte counts. Physiologic solution of sodium chloride was used to dilute the erythrocytes and 3 per cent solution of acetic acid for the leukocytes. William's improved Newcomer hemoglobinometer was used for hemoglobin determinations, and platelet counts were made by the direct method. The estimation of the reticulocyte percentages were made from counts of 1,000 erythrocytes on blood films, vitally stained with brilliant cresyl blue and counterstained with Wright's stain. Differential counts were made on cover glass, evenly spread blood films stained with May-Greenwold Giesma stain. The blood was obtained by pricking the heel, finger or ear lobe of the infant, so that a free flow was obtained.

The complete protocol record for each infant may be seen in table 5. The effect of prematurity on the red cell count and hemoglobin content is illustrated in table 1 and in charts 1 and 2 for the control series. The shorter the intra-uterine life or the more premature the infant, the more severe was the anemia that developed.

The red blood cells were of normal shape and size at birth, and in those infants who developed anemia with erythrocyte and hemoglobin values under 3 million and 45 per cent, respectively, anisocytosis and poikilocytosis were noted. These changes were most marked, the more severe the anemia.

Nucleated red blood cells and polychromia of the erythrocytes were present and both were in normal numbers for premature infants. This is more pronounced in the premature than in the full term infant.

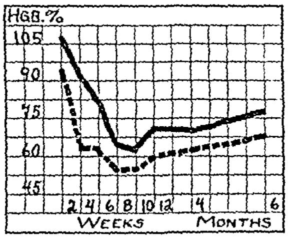

Chart 3.—Hemoglobin in premature infants of from six to seven months' gestation given liver fraction and iron. In charts 3, 4, 5 and 6 the solid line indicates infants given liver fraction and iron and the broken line indicates the control.

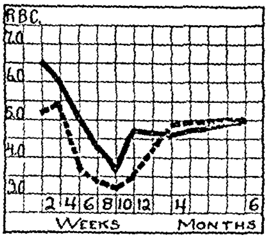

Chart 4.—Red blood cells in premature infants of from six to seven months' gestation given liver fraction and iron.

By the fourth week of life these elements have disappeared, and they do not again reappear during the course of the anemia.

The reticulated red blood cells are highest in number at birth and in the first few weeks of life and thereafter retain a more or less constant level, regardless of the administration of liver fraction, desiccated hog stomach or liver fraction and iron in combination. We were unable to confirm the observations of Frank,[9] who found an increase in reticulocytes with the administration of ferrum reductum. Yang and Keefer[10] have recently reported on the response of reticulocytes in secondary anemia following administration of liver and of liver and iron to adults suffering with malaria, hookworm anemia, and other conditions. Evidently physiologic anemia of prematurity does not show the reticulocyte response that the administration of these substances can produce in certain anemias of the adult.

The hematologic studies of the white blood corpuscles in the premature infants here investigated showed no deviation from the normal age-for-age values noted in the comprehensive studies of other observers.[11]

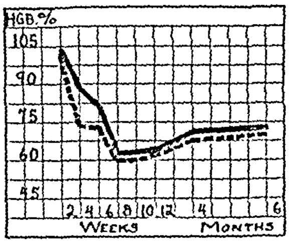

Chart 5.—Hemoglobin in premature infants of eight months' gestation given liver fraction and iron.

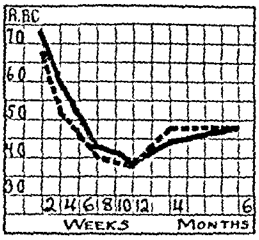

Chart 6.—Red blood cells in premature infants of eight months' gestation given liver fraction and iron.

Unlike the disappearance of normoblasts and polychromia in the red cells, there is no sign of hematopoietic insufficiency in the leukocytic cells.

### RESULTS

The prophylactic value of liver fraction alone and desiccated hog stomach alone in the small series of cases in which they were tried gave average results which compare so closely with our control figures that we cannot claim beneficial results for them. Their early and continuous administration did not seem to prevent the development of physiologic anemia of the premature infant (tables 2 and 3). The premature infants of from six to seven months' gestation in these series developed as severe an anemia as our control groups, and those of eight months' gestation, who were larger premature infants, also averaged as comparatively severe anemias as were found in the control series.

The results of the administration of liver fraction and iron in combination, in the series here reported, show a definitely less severe anemia when the averages are compared with control groups for premature infants of from six to seven months' and eight months' gestation (table 4, charts 3, 4, 5 and 6).

The most beneficial results seem to have been obtained in the six to seven month groups, in which there can be no doubt that high averages have been maintained for both red blood cells and hemoglobin values.

### COMMENT

The use of various therapeutic agents in attempts to cure the anemia of prematurity has led to considerable controversy in the reports of various observers. Few, if any, adequate prophylactic attempts have been made to prevent the development of this anemia. This is easily understood when it is realized that such a procedure must be commenced very shortly after birth, as the anemia is so rapid in development. These infants must be started with prophylactic medication within the first ten days to two weeks after birth if the anemia which becomes evident at the sixth to the eighth week is to be prevented.

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[9] Frank, Max: Studien ueber die Frühgeburtenanämie, Monatschr. f. Kinderh. **37**: 468 (Dec.) 1927.

[10] Yang, C. S., and Keefer, C. S.: The Response of the Reticulocytes in Secondary Anemia Following Various Forms of Treatment, Arch. Int. Med. **45**: 456 (March) 1930.

[11] Landé (footnote 2). Lichtenstein (footnote 4). Herz, Oskar: Hämatologische Untersuchungen an Frühgeburten, Monatschr. f. Kinderh. **40**: 1 (Aug.) 1928.

*Iron Therapy.*—There is a disagreement among various observers on the prophylactic and therapeutic use of iron and its effect on this anemia.[12] Lichtenstein[4] (1917) stated that iron therapy in large doses has a curative effect on the anemias of premature infants. The same author[4] (1921) concludes that his prophylactic attempts at prevention of premature anemia with iron medication were unsuccessful. Lotte Landé[2] (1919) did not consider and disapproved of alimentary medication, using intramuscular blood therapeutically. In a second article[2] (1926) she states that by feeding large doses of ferrum reductum, from 1 to 2.5 Gm. daily, she was able to prevent, to some extent, the development of as severe an anemia as usually occurs. Her conclusions are drawn from a series of eight cases.

*Iron.*—Besides the lack of clinical agreement on the therapeutic effect of iron in premature anemia, there is a general lack of agreement on the benefits of the oral administration of iron in any type of secondary anemia.[13]

It has been shown experimentally, in anemia due to hemorrhage in dogs, that above a certain optimal intake level a large excess of iron gives no further rise in the production of hemoglobin. In these experiments the type of iron salt given seemed to make no difference, whether it was fed as ferrous chloride, ferric citrate, ferrous carbonate, ferrous ammonium sulphate or other iron salts.

The exact mechanism of the action of iron in blood regeneration in secondary anemias is still unknown. It may simply supply the needed lack of iron; it may

Table 2.—*Desiccated Hog Stomach Administered Prophylactically*

| Infants Given Desiccated Hog Stomach | Birth Weight, Gm. | 1 Week | | 2 Weeks | | 4 Weeks | | 6 Weeks | | 8 Weeks | | 10 weeks | | 12 Weeks | | 4 Months | | 6 Months | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent |
| Premature Infants of from 6 to 7 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 22.......... | 1,990 | 6.8 | 130 | 6.8 | 124 | 6.7 | 95 | ... | ... | ... | ... | ... | ... | 4.4 | 56 | 5.2 | 53 | 5.4 | 60 |
| 23.......... | 1,575 | 6.4 | 98 | 6.1 | 96 | 5.0 | 70 | 4.2 | 60 | 3.8 | 50 | 3.7 | 50 | 4.1 | 62 | 4.9 | 68 | 5.3 | 75 |
| Average........... | | 6.6 | 114 | 6.4 | 110 | 5.8 | 82 | 4.2 | 60 | 3.8 | 50 | 3.7 | 50 | 4.2 | 59 | 5.0 | 60 | 5.3 | 67 |
| Premature Infants of 8 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 24.......... | 1,870 | 7.9 | 124 | 9.4 | 106 | 7.6 | 106 | 7.0 | 80 | ... | ... | 5.4 | 65 | 5.2 | 65 | 5.8 | 65 | 5.6 | 71 |

Table 3.—*Liver Fraction Alone Administered Prophylactically*

| Infants Given Liver | Birth Weight, Gm. | 1 Week | | 2 Weeks | | 4 Weeks | | 6 Weeks | | 8 Weeks | | 10 weeks | | 12 Weeks | | 4 Months | | 6 Months | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent |
| Premature Infants of from 6 to 7 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 25....(6 days) | 940 | ... | ... | ... | ... | ... | ... | ... | ... | 2.1 | 41 | 3.4 | 45 | ... | ... | ... | ... | 5.4 | 45 |
| Premature Infants of 8 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 26....(5 days) | 2,115 | 6.6 | 111 | 6.4 | 100 | 5.5 | 100 | 4.7 | 71 | ... | ... | 4.0 | 60 | 4.5 | 68 | 5.3 | 85 | 5.4 | 85 |
| 27.......... | 1,800 | 10.0 | 116 | ... | ... | 6.7 | 95 | 6.6 | 95 | 4.8 | 75 | 5.2 | 68 | 5.2 | 78 | 5.2 | 70 | 5.2 | 80 |
| Average........... | | 8.3 | 113 | 6.4 | 100 | 6.1 | 97 | 5.6 | 83 | 4.8 | 75 | 4.6 | 64 | 4.8 | 73 | 5.2 | 77 | 5.3 | 82 |

Table 4.—*Liver Fraction with Ferrous Ammonium Citrate Administered Prophylactically*

| Infants Given Liver and Iron | Birth Weight, Gm. | 1 Week | | 2 Weeks | | 4 Weeks | | 6 Weeks | | 8 Weeks | | 10 weeks | | 12 Weeks | | 4 Months | | 6 Months | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent | Red Blood Cells | Hemoglobin, per Cent |
| Premature Infants of from 6 to 7 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 28.......... | 1,610 | 7.8 | 140 | 7.8 | 120 | 7.2 | 88 | ... | ... | 5.4 | 62 | ... | ... | ... | ... | 4.3 | 65 | 4.6 | 78 |
| 29.......... | 1,690 | 6.0 | 116 | 6.2 | 102 | 6.3 | 100 | 5.9 | 71 | 5.4 | 75 | 4.2 | 70 | 4.3 | 70 | 5.1 | 71 | ... | ... |
| 30....(4 days) | 1,385 | ... | ... | 5.4 | 88 | 5.3 | 88 | 5.0 | 88 | 3.6 | 63 | 3.6 | 55 | 4.4 | 59 | ... | ... | ... | ... |
| 31.......... | 1,690 | 7.2 | 120 | ... | ... | 5.7 | 108 | ... | ... | 4.1 | 60 | 3.8 | 60 | ... | ... | 4.5 | 78 | 5.7 | 71 |
| 32.......... | 1,315 | ... | ... | ... | ... | ... | ... | 4.2 | 70 | 3.7 | 80 | 3.6 | 53 | 4.4 | 69 | 4.6 | 80 | ... | ... |
| 33.......... | 1,665 | ... | ... | ... | ... | ... | ... | 4.9 | 88 | 3.8 | 73 | 3.6 | 53 | 5.7 | 83 | 4.8 | 80 | ... | ... |
| Average........... | | 7.0 | 128 | 6.4 | 103 | 6.0 | 96 | 5.0 | 79 | 4.3 | 68 | 3.6 | 58 | 4.7 | 70 | 4.6 | 74 | 5.0 | 74 |
| Premature Infants of 8 Months' Gestation | | | | | | | | | | | | | | | | | | | |
| 34.......... | 2,580 | 8.0 | 100 | 8.0 | 102 | 6.2 | 88 | 5.2 | 75 | ... | ... | 5.2 | 68 | ... | ... | 5.2 | 83 | 5.5 | 78 |
| 35 (boy).... | 2,000 | 8.0 | 100 | 7.9 | 95 | 7.8 | 95 | 5.3 | 80 | 4.5 | 65 | 4.5 | 70 | 4.4 | 75 | 4.2 | 72 | 4.4 | 75 |
| 36.......... | 2,165 | ... | ... | ... | ... | 6.1 | 84 | ... | ... | 5.5 | 60 | 5.1 | 73 | 4.4 | 70 | 5.0 | 73 | ... | ... |
| 37.......... | 2,500 | 7.4 | 110 | 6.8 | 108 | 6.2 | 88 | ... | ... | 3.9 | 50 | 3.2 | 53 | 3.4 | 59 | 4.4 | 71 | 5.0 | 71 |
| 38.......... | 2,135 | 6.6 | 92 | ... | ... | 5.4 | 70 | 4.1 | 68 | 3.9 | 68 | 3.5 | 70 | ... | ... | 4.7 | 71 | 5.1 | 73 |
| 39.......... | 2,100 | 6.6 | 103 | 6.2 | 98 | 4.8 | 70 | 5.6 | 75 | 3.9 | 70 | 3.3 | 55 | 3.9 | 60 | 4.0 | 60 | 4.4 | 53 |
| 40 (girl).... | 1,730 | 7.0 | 118 | ... | ... | 5.8 | 110 | 5.6 | 103 | 4.5 | 72 | ... | ... | 3.5 | 66 | 3.7 | 60 | 4.6 | 75 |
| Average........... | | 7.2 | 103 | 7.2 | 100 | 6.0 | 86 | 5.1 | 80 | 4.3 | 64 | 4.1 | 64 | 3.9 | 66 | 4.4 | 70 | 4.9 | 70 |

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[12] Baar, Heinrich; and Stransky, Eugen: Die klinische Hamatologie des Kindesalters, Leipzig, Franz Deuticke, 1928, pp. 46-49.

[13] Iron in Anemia, editorial, Intern. M. Digest **18**: 252 (April) 1931.

stimulate hematopoietic function either directly or by indirect stimulation of internal body metabolism; or it may act as a catalyzing or oxidizing agent, either in the blood itself or on hematopoietic organs.

Frank[9] stated that, by the administration of ferrum reductum, he was able to some extent to prevent the development of physiologic anemia of premature infants, and also, by vital staining, he demonstrated considerable increase in reticulated erythrocytes. The latter observation has not been substantiated by other observers and was not noted in the series of cases here reported.

Other observers have been unable to substantiate the results of Lotte Landé and Frank[9] and have found that the prophylactic feeding of iron starting in the first few weeks of life will not prevent or alter the development of physiologic anemia.[14]

Langstein and Edelstein[15] and others measured the iron metabolic balance for full term infants and found a small positive surplus. Lichtenstein,[4] on the contrary, found a small negative iron balance for premature infants. The exact iron resorption is difficult to measure, and so far remains undetermined, and may be a factor in the etiology of the anemia. Lichtenstein concludes that of large doses of administered iron only a very minute quantity is resorbed and retained, though the possibility exists of changing the negative to a positive balance by feeding massive doses of iron.

TABLE 5.—*Complete Protocol Used for All Premature Infants**

| | Williams I | | | | | | | | Williams II | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medication | 1 to 4 Gm. b.i.d. liver fraction with iron (ammonium citrate) | | | | | | | | Control: no medication | | | | | | | |
| Age | 4 days | 4 wks. | 5 wks. | 8 wks. | 12 wks. | 4 mos. | 5 mos. | 6 mos. | 4 days | 4 wks. | 5 wks. | 8 wks. | 12 wks. | 4 mos. | 5 mos. | 6 mos. |
| Date | 3/23/31 | 4/15/31 | 4/20/31 | 5/13/31 | 5/11/31 | 7/9/31 | 7/30/31 | 9/3/31 | 3/23/31 | 4/15/31 | 4/20/31 | 5/13/31 | 6/11/31 | 7/9/31 | 7/30/31 | 9/3/31 |
| Red blood cells | 7.0 | 5.8 | 5.6 | 4.5 | 3.5 | 3.7 | 4.0 | 4.6 | 4.8 | 4.7 | 4.5 | 3.7 | 3.7 | 4.6 | 4.4 | 4.8 |
| *Hemoglobin, per cent* | 118 | 110 | 103 | 72 | 66 | 60 | 74 | 75 | 88 | 70 | 75 | 64 | 65 | 60 | 53 | 70 |
| White blood cells | 10,700 | 24,000 | 21,600 | 24,400 | 16,100 | 18,800 | 17,000 | 18,000 | 8,400 | 16,000 | 12,000 | 13,300 | ...... | 10,500 | 10,000 | 11,000 |
| Platelets | 320,000 | 320,000 | 400,000 | 400,000 | 400,000 | 320,000 | 250,000 | 400,000 | 280,000 | 320,000 | 360,000 | 320,000 | 240,000 | 330,000 | 310,000 | 300,000 |
| Polymorphonuclears, per cent | 46 | 34 | 50 | 23 | 35 | 40 | 33 | 32 | 56 | 42 | 48 | 33 | 16 | 25 | 32 | 46 |
| *Lymphocytes, per cent* | 48 | 57 | 36 | 69 | 55 | 55 | 62 | 59 | 35 | 40 | 43 | 57 | 77 | 69 | 66 | 47 |
| Basophils, per cent | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| Eosinophils, per cent | 1 | 1 | 3 | 1 | 3 | 0 | 3 | 1 | 4 | 7 | 3 | 1 | 0 | 2 | 2 | 1 |
| Large mononuclears, per cent | 4 | 8 | 9 | 7 | 7 | 5 | 1 | 7 | 4 | 10 | 5 | 6 | 7 | 3 | 0 | 6 |
| *Premature white blood cells* | Myl. 1 | Myl. 0 | Myl. 0 | Myl. 0 | Myl. 0 | Myl. 0 | Myl. 1 | Myl. 1 | Myl. 1 | Myl. 1 | Myl. 1 | Myl. 1 | 0 | Myl. 1 | 0 | 0 |
| Nucleated red | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reticulocytes, per cent | 3 | 0.25 | 0.25 | 1 | 0.5 | 0 | 0 | 0 | 4 | 0.25 | 0.25 | 0.05 | 1.2 | 0 | 0 | 2 |
| Birth weight | 1,730 | .... | .. | ... | ..... | .. | ..... | ....* | 2,000 | | | | | | | |
| Infant's weight, Gm. | 1,635 | 1,885 | 1,990 | 2,270 | 2,530 | 3,180 | 3,660 | 4,570 | 1,780 | 2,025 | 2,145 | 2,425 | 2,935 | 3,515 | 4,120 | 5,255 |
| Feedings | Breast milk, tea | Breast milk, Slam | Breast milk, Slam | Chy. breast milk, Dm. | Chy. Dm. Wlam | Chy. Dm. Wlam | Chy. Dm. Wlam | Chy. Dm. Wlam | Tea, breast milk | Breast milk, Slam | Breast milk, Slam | Chy. breast milk, Dm. | Chy. Dm. Wlam | Chy. Dm. Wlam | | |

* *These infants were white twins of eight months' gestation. The control twin was slightly heavier and larger.*

*Effect of Heliotherapy on Anemia.*—It has been mentioned that Kunckel[5] showed that those infants whom he was able to keep outdoors developed anemia although they had a more rosy color than those kept indoors. Pfaundler[16] and others have believed that restriction and lack of sunlight might be a causatvie factor in the development of anemia. Sanford[17] in working on the effects of irradiation of new-born infants with ultraviolet rays was able to show a transient rise in erythrocyte and hemoglobin values.

In reviewing the literature, Hoeffel and Lyons[18] conclude that there is no justification for the belief that light rays, including ultraviolet rays, have any lasting specific effect on the hemoglobin and erythrocyte values of the blood. They have pointed out a slight seasonal variation in the values, but Landé[2] (1919) and others have shown that the anemia develops with equal severity in premature infants at all seasons of the year.

Furthermore, it has been shown by numerous authors[19] that cod liver oil and irradiated ergosterol have no effect on prevention of anemia in full term infants. Wundt's[20] claims for the proprietary preparation Ferronovin (which contains dried fish liver, iron and irradiated ergosterol) as having a preventive value in prophylaxis and therapeutic effect of physiologic anemia have been conclusively refuted by Ulmer.[21] Similarly the use of small doses of egg yolk,[22] even though added to the diet early, has never been successful in preventing the development of this anemia.

*Liver and Iron.*—The recent work of Whipple and Robscheit-Robbins[23] has demonstrated that a liver fraction which contains from 65 to 70 per cent of the potency of whole liver and probably a number of active substances, and which represents only 3 per cent of the weight of whole liver, is an effective therapeutic agent

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[illegible] Wirkt Eisen bei der Frühanämie der Früge- [illegible] 129: 63 (Sept.) 1930. Hottinger, A.: Ueber [illegible] Kinder im Basler Kinderspitat, Jahrb. f. Kinderh., supplement 20, 1928, p. 32. Peiper, Albrecht: Erfahrungen bei der Aufzucht von Frühgeburten, Deutsche med. Wchnschr. **55:** 310 (Feb. 22) 1929.

15. Langstein, L., and Edelstein, E.: Der Eisenhaushalt im Säugling, Verhandl. d. XXX Versamml. d. Ges. f. Kinderh., 1913, p. 3.

16. Pfaundler, M.: Pathologie des Blutes und der Blutungsbereitschaft, Lehrbuch der Kinderheilkunde, ed. 10, Jena, E. Feer, Gustav Fischer, 1930, p. 130.

17. Sanford, H. N.: Effect of Ultraviolet Light on the Blood of New-Born Infants: II. Erythrocytes and Hemoglobin, Am. J. Dis. Child. **35:** 9 (Jan.) 1928; Changes Occurring in the Blood of the New-Born Following Ultraviolet Therapy, Arch. Physical Therapy **11:** 101 (March) 1930.

18. *Hoeffel, Gerald; and Lyons, Dorothy: Heliotherapy and the* Peripheral Blood, Am. J. Dis. Child. **40:** 484 (Sept.) 1930.

19. Lichtenstein (footnote 4). Hess, J. H.; Poncher, H. G.; Dale, M. L., and Klein, R. I.: Viosterol (Irradiated Ergosterol): Prophylactic and Therapeutic Dosage, J. A. M. A. **95:** 316 (Aug. 2) 1930.

20. Wundt, Nora: Die Anämieprophylaxe bei Unreifgeborenen, Deutsche med. Wchnschr. **55:** 1512 (Sept. 6) 1929.

21. *Ulmer, O.: Die Anämieprophylaxe bei Unreifgeborenen,* Arch. f. Kinderh. **89:** 272 (Feb. 28) 1930.

22. From the Sarah Morris Premature Department.

[illegible] S.: The Regeneration of Hemoglobin and [illegible] 9: 688 (Oct.) 1929. Whipple, Robscheit- [illegible] in cases of secondary anemia. Furthermore, they were able to demonstrate experimentally in dogs that it was obvious that the effect from oral administration of iron was more than a mere replacement in the lost or worn out hemoglobin molecule. They further state that "iron in excess of hemoglobin iron requirements obviously exerts some influence upon internal body metabolism," by producing more hemoglobin. This phenomenon they have termed a "salt effect," and it may occur similarly in the feeding of salt mixtures of copper and other metals and ash from liver and kidney.

Finally it has been found that by feeding liver and iron in combination a "summation effect"[24] was produced, the resulting increase in production of hemoglobin and red cells being the total effect of the organ feeding plus the original value due to iron administration alone.

Keefer and Yang[25] have reported that iron and liver given in combination to patients suffering with secondary anemia, especially in anemia due to hookworm infestation, showed improvement more effectively than when either liver or iron was given alone.

Hugh Josephs[26] has recently reported on the effect of feeding a number of premature infants iron alone, iron and copper and iron and liver in combination. He concludes that liver and iron in combination have apparently the most successful effect when used therapeutically after the physiologic premature anemia has developed.

*Iron and Copper.*—In the most recent literature there have been some experimental and clinical reports[27] on the use of iron in combination with copper employed therapeutically in secondary anemia. However, these results might be considered as the "salt effect" previously described. We have assumed that the "summation effect" of the liver-iron combination, plus the unknown influence of iron on internal metabolism, would be, theoretically at least, the most suitable for the prevention of physiologic premature anemia. Schiff and Joffe,[28] in a recent report of twelve cases, have demonstrated the failure of copper and copper and iron in combination to give prophylactic or therapeutic results in premature anemia.

In these experiments, therefore, we have not attempted the prophylactic use of the iron-copper combination, though it may still be tried out in a continuation of this work.

## SUMMARY

In the prophylaxis of premature anemia it may be concluded that iron therapy alone is of doubtful value. Further, neither the use of desiccated hog's stomach (ventriculin) nor the use of liver fraction alone proved of value in the prevention of the anemia.

Favorable results seem to have been obtained in the prophylaxis of the anemia of premature infants through the use of a dried liver fraction combined with ferrous ammonium citrate.

The most marked results in this series of experiments were obtained in the group of premature infants, of from six to seven months' gestation, in which the development of the anemia was most severe. No definite conclusions as to the etiologic factors causing this anemia may be formulated from the experimental data which we obtained. In reviewing the literature, the following theories[29] for the cause of anemia of premature infants are most tenable: (*a*) the lack of an adequate iron reserve depot, and its early depletion; (*b*) a functional insufficiency of an imperfectly developed hematopoietic system.

The chief objection to the depleted iron reserve depot for explaining physiologic anemia of prematurity has been the fact that the prophylactic feeding of iron has not prevented the development of the anemia. Possibly the iron even though administered in large doses has been resorbed and retained only in minute quantities.

The functional incapacity of the hematopoietic system may be analogous to the incomplete and imperfect development of the gastro-intestinal, cardiovascular and heat regulating systems of the premature infant. At the sixth to the eighth month of intra-uterine life, the hematopoietic system is probably still somewhat imperfectly developed, and, therefore, functionally incapable of adequately responding to the additional demands of extra-uterine life.

This theory would help to explain the lower erythrocyte and hemoglobin values found in the premature infants of from six to seven months' gestation as compared to the premature infants of eight months' gestation. The exact mechanism of the development of this anemia still remains unexplained.

This is a preliminary report of an experimental attempt to prevent the development of the physiologic anemia of premature infants. The data obtained indicate that a combination of liver fraction and ferrous ammonium citrate, started within the first fourteen days after birth with initial dosages of from 1 to 2 Gm. twice daily, and increased up to 4 Gm. twice daily, was the most efficient of the prophylactic agents investigated. There was a definite response to this prophylactic agent, which was most marked in the series of premature infants of from six to seven months' gestation, in which group the anemia is most severely developed.

It is hoped that a continuation of this investigation with other mineral combinations or organic and mineral material in various percentages and dosages may yield further data on the prophylaxis of the anemia of prematurity.

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[24] Robscheit-Robbins (footnote 23).

[25] Keefer, C. S., and Yang, C. S.: The Value of Liver and Iron in the Treatment of Secondary Anemia, J. A. M. A. **93**:575 (Aug. 24) 1929. Keefer, C. S.; Huang, K. K., and Yang, C. S.: Liver Extract, Liver Ash and Iron in the Treatment of Anemia, J. Clin. Investigation **9**:533 (Dec.) 1930.

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[28] Schiff, E., and Joffe, N.: Kupferbehandlung des Frühgeburtenanämie, Klin. Wchnschr. **10**:1946 (Oct. 17) 1931.

[29] In a recent article, G. Sanpaolesi (Jahrb. f. Kinderh. **132**:277 [Aug.] 1931) advances theoretical and experimental evidence in support of the theory that an increase in the fluid volume of the blood causes this premature anemia through dilution. According to the author, this hydremia mechanically lowers the erythrocyte count and the hemoglobin value.

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**Myasthenia Gravis.**—Myasthenia gravis was first described by Wilkes in 1877. Since then about 300 cases have been reported and several excellent reviews have appeared. . . . The condition can probably be most briefly defined as a symptom complex characterized by sudden, intermittent and progressive clinical weakness of a muscle or muscle group, often terminating in death and leaving almost no pathologic changes despite the marked symptoms during life. No race is immune to this condition. According to Campbell and Bramwell, no case is on record in which more than one member of a family has been affected. Noyes, however, reported a sister and father of one patient to be similarly afflicted.—Abraham, S. V.: *Arch. Ophth.* **7**:700 (May) 1932.

# THE SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT OF STRONGYLOIDES INFECTION

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The relatively frequent occurrence of Strongyloides infection throughout the southern part of the United States and the appearance of patients harboring this infection in clinics in the North call for more careful attention than has been given to this disease in the past. The larvae of the etiologic agent, Strongyloides stercoralis, were discovered in 1876 by Normand[1] in the stools of French soldiers who had contracted an uncontrollable diarrhea in Cochin China. At necropsy of five of these patients who succumbed to the diarrhea, delicate parasitic nematodes were recovered from the wall of the ileum and from the biliary and pancreatic ducts. Cases were soon diagnosed and studied by Grassi[2] and by Perroncito[3] in Italy. Leuckart[4] demonstrated that the parasitic and stercoral types in this infection belonged to alternate phases in the life cycle of the same organism, while Durme,[5] Ransom[6] and Fülleborn[7] proved that the filariform larvae of the worm invades man by the same route (i. e., by the skin) and migrates through the same organs and channels as the hookworm.

## BIOLOGIC BACKGROUND

The female parasitic worms live in the mucosa of the small intestine, especially the duodenum and upper jejunum. In heavy infections the pyloric stomach wall, the common duct, the proximal biliary and pancreatic passages, the ileum, and even the cecum and colon may be involved. Aberrantly, adult worms and larvae may be recovered from practically all the organs and cavities of the body. Usually the eggs of the worm are laid in the intestinal mucosa, work their way out into the lumen, and are carried down the intestine, meanwhile maturing, so that they ordinarily hatch before being passed in the feces. Since the days of Leuckart, two types of development have been known, the direct and the indirect mode. In the former type, the hatched larvae (rhabditiform stage) are passed in the feces, feed ravenously on the excrement and metamorphose into filariform larvae, which, after casting their sheaths, are infective by way of the skin or the mucous membranes. Under favorable conditions of moisture and temperature the infective stage is able to survive for many weeks outside the body, although these larvae are much more sensitive to unfavorable conditions than is the similar stage of the hookworm. In the indirect type, which is much more common in the tropics than in cooler zones, the rhabditiform larvae, which are passed in the feces, feed and become transformed into "free-living" males and females, which mate and give rise to a daughter progeny of rhabditiform larvae. The latter feed and are changed into filariform larvae, which then and only then are infective for man. In the indirect type the development of the complete extrahuman phase of the life cycle takes place very rapidly (from two to five days) and the infective filariform larvae seldom live beyond the twelfth day following evacuation of the first-stage rhabditiform larvae in the stool.

While I was working in Panama during the summer of 1930, I[8] studied several cases of Strongyloides infection with symptoms of uncontrollable diarrhea and severe dehydration. The stools of these patients were teeming with dwarf filariform larvae. A study of the larvae showed that they had metamorphosed without feeding and that they developed no further. For a period of nine to twelve days they were infective through the skin and mucous membranes; otherwise they perished. Further investigation revealed the fact that in passing out of the intestine the infective filariform stage came in contact with the rectal mucosa and was able to penetrate through this membrane into the tissues, later passing through the blood stream into the lungs and out through the air passages into the pharynx and down into the intestine. This discovery explains the pathologic study of Ophüls[9] on a human necropsy and certain experimental observations of Fülleborn[10] and Nishigori.[11] This shortened mode of development to the infective stage I have designated the hyperinfective type.

## PATHOLOGIC AND CLINICAL OBSERVATIONS

At the site of invasion through the skin there may develop in twenty-four hours a profound erythema, which becomes progressively more intense up to the fourth day, when lupous patches are observed. This is comparable to the "ground itch" of hookworm infection. From twenty-four to forty-eight hours after exposure to the infection, an acute local inflammatory reaction may take place in the lungs as the result of the migration of the larvae from the capillaries into the bronchioles. This condition has not been reported for hookworm infestation but parallels the bronchial pneumonitis observed in ascariasis when Ascaris larvae are migrating through the lungs. Later on, when the larvae have worked their way into the intestinal mucosa (frequently into Lieberkühn's glands) and have developed into the delicate coiled adult worms, they feed on the tissues and lay their eggs, which break through into the intestinal lumen. They provoke a catarrhal inflammation of the invaded mucosa, with round cell and eosinophil infiltration. The degree of these lesions is dependent on the number of embedded worms and the length of their activity. In severe cases there is extensive erosion of considerable areas of the pyloric, duodenal, jejunal and ileac mucosa, so that it has a raw beefsteak appearance. Where the large bowel is also involved, similar lesions occur. Usually there is no marked generalized eosinophilia but occasionally this is pronounced.

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[1] Normand, A.: Sur la maladie dite diarrhée de Cochinchine, Compt. rend. Acad. d. sc. **5**: *316-318, 1876.*

[2] Grassi, G. B.: Sovra l'anguillula intestinale, R. Inst. lomb. di sc. et lett., Rendic., Milan, series 2, **12**: 228-233, 1879.

[3] Perroncito, E.: Die Krankheit der Bergmaenner (Kohlen und Minen-Arbeiter) von St. Gotthard zum Simplon, Centralbl. f. med. Wissensch. **24**: 1-31, 1881.

[4] Leuckart, R.: Ueber die Lebensgeschichte der Anguillula stercoralis und deren Beziehungen zu der sog. Ang. intestinalis, Verhandl. k. Saechs. Ges. Wissensch., Leipzig **85**: 107, 1883.

[5] van Durme, P.: Quelques notes sur les embryons de "Strongyloides intestinalis" et leur pénétration par la peau, Thompson Yates Lab., Liverpool **4**: 471-474, 1902.

[6] Ransom, B. H.: The Nematode Parasites in the Alimentary Tract of Cattle, Sheep and Other Ruminants, U. S. Bur. Animal Industry **127**: 1-132, 1911.

[7] Fülleborn, I.: Untersuchungen über den Infektionsweg bei Strongyloides und Ankylostoma und die Biologie dieser Parasiten, Arch. f. Schiffs- u. Tropen.-Hyg., supp. **5**: 26-80, 1914.

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[10] Fülleborn, F.: Hautquaddeln [illegible] Strongyloides-Traeggern, Arch. f. Schiffs- und T [illegible] (Dec.) 1926.

[11] Nishigori, M.: The Facto [illegible] the External Development of Strongyloides Stercoralis and on Autoinfection with This Parasite, Taiwan Igakkai Zasshi, 1928, number 276, pp. 1-56 (Japanese text with English abstract).

In very light infections with Strongyloides there are frequently no demonstrable symptoms; in moderately heavy infections or those of long duration there is commonly a diarrhea following epigastric distress after meals, alternating at times with constipation; in severe infections (usually of the hyperinfective type) there is an intractable diarrhea, with macroscopic or occult blood, and undigested food. The faulty digestion and severe drain of liquids from the system produce emaciation of the most advanced type. Occasionally there is sufficient toxic absorption to induce profound toxic edema. Fortunately for physicians practicing in the United States, the latter type is not commonly observed except in cases from the tropics.

Diagnosis is based on finding the typical motile rhabditiform larvae in the stools. These can be most readily obtained by centrifugating a small sample of the stool previously comminuted in water and strained through cheese cloth. Strongyloides larvae require differentiation from the similar stage of the hookworm, which have a much longer pre-esophageal (premuscular) mouth cavity. Furthermore, in freshly passed stools the hookworm embryos are almost always within the unhatched eggs. In cases of severe diarrhea, unhatched eggs of Strongyloides occasionally are found. These should be left in the stools until they hatch, in order to obtain a satisfactory diagnosis, since the egg is very similar to that of the hookworm.

In the hyperinfective type the filariform larvae may be identified by their diminutive size and the minute terminal notch in their tail. Occasionally parasitic females and males are passed in diarrheic stools. The former are delicate threads just visible to the naked eye and contain eggs in a bicornate uterus. The rare parasitic males are practically indistinguishable from the "free-living" males of the indirect cycle.

### THERAPEUSIS

Until 1928 there was no specific treatment for strongyloidosis. In that year DeLangen[12] in Java indicated the efficacy of gentian violet in reducing the toxic effect of the parasite in severe cases and in some instances causing eradication of the worms. In 1929 I[13] used this agent for the first time in the United States. At least 200 cases (about 6 per cent infection in the New Orleans Charity and Welfare clinics) have on my recommendation been treated by New Orleans physicians with gentian violet. Of this number I have made follow-up examinations of forty-seven patients and all but two have been freed of the infection. In most cases a single course of treatment was sufficient to eradicate the worms. This consisted of two one-half grain (0.03 Gm.) enteric coated tablets of the dye (National Aniline and Chemical Company product) administered by mouth three times a day before meals for a period of from seven to ten days. In four cases, two courses of treatment were needed. There is no contraindication to administering the drug but patients have been cautioned to report if the urine was ever violet colored. Up till now no such report has been received. Two patients reported mild nausea, but there was no similar complaint from the others. The dye operates by staining the mucosa of the intestine a brilliant violet (undoubtedly a vital cytoplasmic reaction). The adult parasitic worms living in the mucosa absorb the dye and are very susceptible to its toxic effect, become free from the mucosa, and may be passed in the feces. Any portion of the dye that is absorbed beyond the intestinal mucosa is soon reduced to a colorless substance. Strangely enough the eggs and young larvae are not readily killed. Furthermore, small amounts of the dye modify the indirect and hyperinfective type into the direct type, thus minimizing the danger of the infection before the parasites are actually killed.

### CONCLUSIONS

Physicians in the South are more or less familiar with Strongyloides infection. Owing to previous inability to eradicate the worms, the patients treated have returned time after time or have gone to other physicians for help. It is recognized that Strongyloides infection is not always the cause of intestinal symptoms which have been referred to it, but in many cases eradication greatly improves the condition and at least allows the physician to eliminate the organisms as a possible causative factor in the symptomatic complex. In severe infections the clinical picture is so clear that, once the relationship is known, there is no difficulty in associating cause and effect. It is believed that the time is ripe for a more intensive study of Strongyloides infection on the part of both the internist and the laboratorian.

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# TREATMENT OF AGRANULOCYTIC ANGINA WITH CALCIUM GLUCONATE

## REPORT OF CASE, WITH AUTOPSY

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AND
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Cases of agranulocytic angina are of interest because of its unknown etiology, its high mortality rate and the lack of knowledge of any specific treatment. It is even doubted whether the condition is a syndrome or a distinct clinical entity. The following fatal case was interesting because the patient was an allergic individual, and because an improvement in the blood picture was noted following the administration of calcium gluconate:

### REPORT OF CASE

A woman, aged 44, married, was treated at the Santa Barbara Cottage Hospital between Sept. 7 and Oct. 10, 1931, for obesity and hypertension, both of which had been present for fourteen years. She also complained of symptoms referable to the menopause, of several months' duration.

During the preceding twelve years she had undergone a cesarean operation, cholecystectomy and appendectomy, and a pad of fat had been removed from the abdomen. For four years she had experienced allergic symptoms whenever she ate pineapple. Red and white blood examinations with differential counts were normal in August, 1917, and in February, 1930, the red and white blood counts were again normal. The family history was negative except that the patient's mother had diabetes.

Physical examination disclosed an enlarged heart, myocardial degeneration and marked obesity. Varicose veins were present on both lower extremities. Roentgenograms of the skull showed a thick, irregular, very dense calcified deposit on the inner aspect of the frontal bones and on each side of the sagittal

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[12] DeLangen, C. D.: Anguillulosis and the Syndrome of the "Idiopathic Hypereosinophilia," Neded. van d. Dienst d. Volksgezondheid in Ned.-Indie, Batavia, 1928.

[13] Faust, E. C.: Gentian Violet Therapy for Strongyloides Infection, editorial, Internat. M. Digest 17: 57-58, 1930.

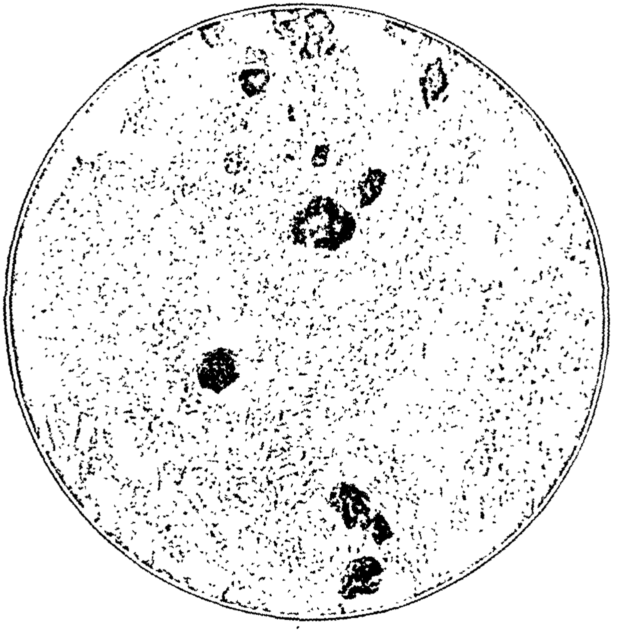
From the Sansum Clinic

suture. In the mouth, situated in the midline of the hard palate, was an exostosis measuring 1 by 1.5 by 2.5 cm. Several teeth were devitalized. The tonsils had been removed.

*Gastric analysis, red and white blood counts, and examination* of the stool revealed nothing noteworthy. The blood Wassermann reaction was negative. Traces of albumin and sugar were found in the urine; the excretion of phenolsulphonphthalein was 57 per cent in two hours.

The patient was hospitalized on an alkaline 800 calory reducing diet. During the ensuing month the blood pressure fluctuated between 152/100 and 224/136. By October 8 she had lost 10 pounds (4.5 Kg.), the headache was less severe, and the heart diameter had decreased 1 cm. by orthodiagram measurement. She was able to be up and her gait had improved.

October 10, she was discharged. Following an automobile drive that afternoon her throat became sore and the next morning when she planned to leave for her home the temperature was 101.4 F. She was kept in bed and treated for an infection of the upper respiratory tract. The next day the temperature was 103.6 and a blood count showed 1,200 leukocytes and only 43 cells on a smear, all of which were lymphocytes. The agranulocytosis persisted during the next eight days, as shown in the accompanying table. There was septic temperature, the highest point each day varying between 103.6 and 105.2. October 13 she complained of headache, soreness of the throat and neck, pain through all the teeth, soreness and stuffiness of the ears, and aching in the joints. The blood pressure had fallen to 140 systolic and 90 diastolic. On the posterior wall of the nasopharynx and in the hypopharynx at the left margin of the tongue were several small white ulcers, varying from 1 to 2 mm. in diameter. In the middle of the left tonsil fossa was another. The mucous membrane of the pharynx and of the gums on the right was moderately reddened. In the neck a few enlarged very tender lymph nodes were palpated.



Necrotic tissue from mouth, removed October 15, reduced from a photomicrograph with a magnification of 100 diameters There is marked vacuolization. An occasional round cell is visible. No polymorphonuclear leukocytes are present. A number of circumscribed oval or circular areas may be noted, up to 100 microns in diameter, consisting of finely granular blue material as if from deposits of calcium.

October 15 the throat, teeth and gums were very sore, but the generalized aching had subsided. The icteric index was 11. There was moderate edema of the mucous membrane of the pharynx and gums. The ulcers were twice as large, and several new ones had appeared on the gums and pillars of the palate.

October 16, the patient complained of soreness about the urinary meatus, but vaginal and rectal examinations were negative. There was a sensitive area in the upper right chest over the third rib. In the mouth there was considerable membrane formation over all the gingival surfaces. This was white, was of a soft though tough consistency, and was raised above the surface level of the surrounding mucosa. It peeled off readily, leaving a nonbleeding surface with very little evidence of inflammatory reaction. There was moderate edema of the arytenoids, and the white membrane of the left pillar of the palate had begun to peel off. The cervical lymph nodes were smaller and less tender. The skin had a dull icteric tint; the breath was fetid, and in the mouth the necrotic areas and superficial sloughing were more extensive, involving almost all the gum surfaces, the whole left posterior pillar of the palate and an area on the mucous membrane of the right hard palate which measured 1.5 by 2 cm. Treatment with calcium gluconate was started October 16, 1 Gm. in 10 cc. of solution being given intravenously each day for four doses.

*Differential Count*

| | Oct. 12-19, Inclusive | Oct. 20 | Oct. 21 |
|---|---|---|---|
| Leukocytes, per cubic millimeter | 736-1,300 | 1,700 | 7,500 |
| | | Percentage | |
| Lymphocytes (small) | 100 | 73 | 41 |
| Lymphocytes (large) | ... | 18 | 1 |
| Lymphoblasts | ... | .. | 4 |
| Monocytes | ... | 3 | 2 |
| Monocytes (large) | ... | 2 | 0 |
| Megakaryocytes | ... | 2 | 0 |
| Neutrophilic myelocytes | ... | 0 | 45 |
| Polymorphonuclear neutrophils | ... | 2 | 7 |

October 19, a mild degree of stupor was noticeable. The respiratory rate was 40 per minute. Numerous râles were audible over the lower right chest, but there was no evidence of consolidation. October 20, five days after treatment with calcium gluconate had been started, the first improvement in the blood picture was noted and the temperature was lower (102). The change in the condition of the blood suggested that, if death could be postponed a few days more, recovery might take place. On the following day the blood picture had improved still more, but the patient was moribund. The pulse was thready and the rate was 108 per minute. Blood pressure was 110 systolic and 86 diastolic. Examination of the chest suggested hypostatic pneumonia and bronchopneumonia. The abdomen was moderately distended and the test of the stool was strongly positive for blood. Death occurred early on October 22.

At autopsy the cranial contents were not examined. The ribs were found to be very brittle and porous; there was a moderate hypostatic hyperemia of the lungs, a subacute bronchitis and tracheitis, marked fatty change of the liver and kidneys, moderate hyperplasia of the spleen, moderate fatty changes of the lining of the aorta, and moderate ascites. A section from the sternum was decalcified, fixed and examined. There was almost a complete absence of pregranulocytic elements. The centers for red cell formation seemed normal.

In smears from the lesions in the mouth, October 13 and October 15, gram-negative and gram-positive cocci and gram-negative rods were found. In cultures from the throat, October 13, gram-positive diplococci were grown. Cultures of the blood, October 13, yielded staphylococci; October 15, long chained streptococci; October 16 and October 19, Bacillus coli. The patient's blood, October 15, was injected intraperitoneally into two guinea-pigs but after a month's time had had no bad effect on them.

## COMMENT

This was evidently a true agranulocytic angina. Cultures from the blood yielded a variety of organisms. The sensitivity to pineapple suggests that, as has been noted by Pepper,[1] allergy may be of etiologic significance. Of interest were the calcified deposits on the frontal bones, an exostosis of the hard palate and calcium-like deposits in the sloughs from the mouth, all of which suggested disturbance of the calcium metabolism. The appearance in the blood of granulocytes on the fifth day following the administration of calcium gluconate suggests that this agent may be of therapeutic value. Its use was suggested by the work of Tunnicliff,[2] who has demonstrated, following its administration to rabbits and to a man, an increased phagocytosis by leukocytes in the blood.

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[1] Pepper, O. H. P.: Leukopenia: A Review with Special Reference to Agranulocytic Angina: Part II, California & West. Med. 35:173-177 (Sept.) 1931.

## Clinical Notes, Suggestions and New Instruments

### HEALING OF COCCIDIOIDAL GRANULOMA LESION FOLLOWING MEDICINAL THERAPY

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The reports of results of medicinal therapy in cases of coccidioidal granuloma have been disappointing. Because of the effect of iodides in other fungous diseases, probably the method most extensively used in the earlier cases was the internal administration of iodides. The results were not striking. Recently Chipman and Templeton[1] reported improvement under oral and intravenous iodide therapy but failed to obtain healing. Their results with antimony and potassium tartrate (tartar emetic) were disappointing, although its use seemed wise following the reports of Guy and Jacob[2] and of Tomlinson and Bancroft.[3] The latter investivators use local roentgen therapy as well as antimony and potassium tartrate intravenously, so that it is entirely impossible to assign therapeutic values properly, particularly since x-rays have been accorded beneficial effects by earlier workers. Chemotherapy in the form of copper, arsenic or thymol has been disappointing in its results.[4] Coccidioidin has not been proved to possess merit.

A goodly percentage of the few cured cases on record must be attributed to radical surgical removal of the offending lesion or lesions. Unfortunately, the majority of cases are not suitable for this method of treatment. The disease is ordinarily so disseminated that curative medicinal means must be sought, or the disease will continue to present a rather hopeless outlook.

Perhaps it would be well to establish an arbitrary time period within which no case can reasonably be considered cured, at the same time recognizing that cases may exceed such a period and then exhibit a recurrence or extension of the process. That such a time period has been of considerable help in evaluating forms of therapy, in cases of malignant disease, will scarcely be denied. In twenty-seven of the fifty cases of coccidioidal granuloma studied by Evans and Ball,[5] in which the total duration of the disease was known, an average duration of nine and one fourth months was obtained, the longest time being sixty-two and one half months. Beck[6] records a case of generalized infection lasting seven years and terminating fatally. It would seem that a period of two years should elapse during which time no clinical manifestations of the disease are evident, before a case can reasonably be considered cured.

The case to be reported was submitted to a method of attack previously untried. Fortunately, we were dealing with a single lesion, but in a situation not amenable to surgical eradication. Surgical procedures were carried out on two occasions with no apparent benefit, with the possible exception that they prepared the lesion for a more direct attack with medicinal agents.

That many fungous diseases are cured by iodide therapy is a well known fact. That coccidioidal granuloma has not so responded to iodide therapy does not mean that the organisms may not be susceptible to iodides, but only that they are not susceptible to the concentrations attained by the forms of administration ordinarily employed, chiefly oral.

It was decided in the present case to attempt to secure a higher concentration of iodine and iodides in the vicinity of the lesion. Because of the relative insolubility of iodine in water, and the irritating nature of an alcoholic solution to an open wound, it was decided to prepare a solution of 5 per cent potassium iodide, which was then saturated with iodide crystals. On assay, this solution was found to contain 39.6 Gm. of free molecular iodine per hundred cubic centimeters of solution at room temperature. This falls just short of being a 40 per cent solution of iodine.

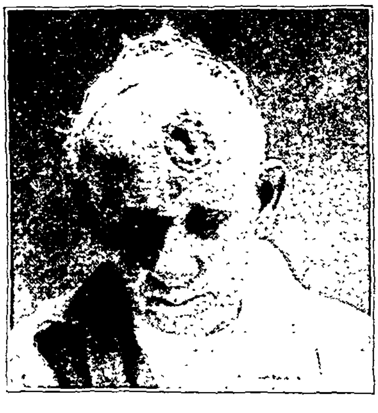
Fig. 1.—Appearance of lesion, July 11, 1931, before applications of iodine. Culture was positive at this time.

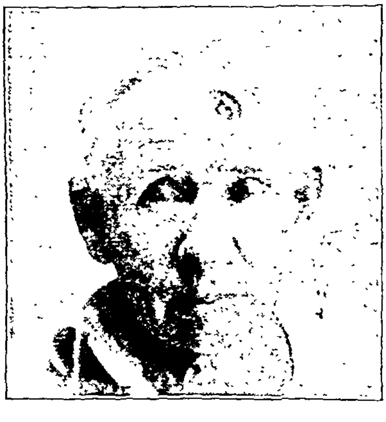
Fig. 2.—Appearance, Nov. 3, 1931, after three and one-half months of iodine application.

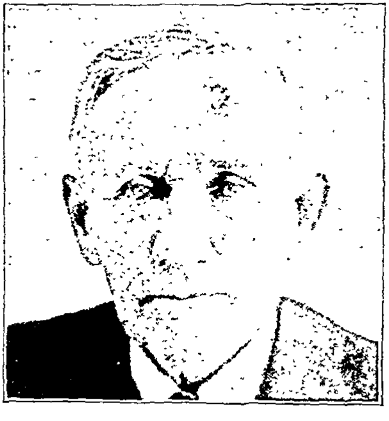
Fig. 3.—Complete healing, Jan. 15, 1932. Note depression due to absence of frontal bone in this area.

This was applied in the form of continuous or intermittent wet dressings, with surprisingly little irritation, and sodium iodide was administered by mouth in doses of 25 minims (1.5 cc.) three times daily.

The rapidity with which the granulations melted away was remarkable. Roentgen examination revealed a filling in of bone in an area previously shown to be partially destroyed. The skin showed a wide zone of erythema, which was assumed to indicate the extent of the iodine absorption. From this point healing was slow, and this was later attributed to the strength of the iodine solution because, after withdrawal of the local applications, healing occurred more rapidly. The time consumed in this form of treatment was approximately six months, when complete healing of the lesion occurred.

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[2] Tunnicliff, Ruth: Promotion of Phagocytosis by Calcium Gluconate, Sodium Iodide, Dextrose and Other Substances, J. Infect. Dis. **48**: 161-166 (Feb.) 1931.

From the Department of Pathology, College of Medical Evangelists and the Pathology Laboratory of the San Diego County General Hospital.

[1] Chipman, E. D., and Templeton, H. J.: Coccidioidal Granuloma, Arch. Dermat. & Syph. **21**: 259 (Feb.) 1930.

[2] Guy, W. H., and Jacob, F. M.: Granuloma Coccidioides, Arch. Dermat. & Syph. **16**: 308 (Sept.) 1927.

[3] Tomlinson, C. C., and Bancroft, Paul: Granuloma Coccidioides, J. A. M. A. **91**: 947 (Sept. 29) 1928.

[4] Dickson, E. L.: California Dept. of Pub. Health, special bull. 57, 1931, p. 8. Stockton, A. B.: California & West. Med. **31**: 278, 1929.

[5] Evans, Newton; and Ball, H. A.: Coccidioidal Granuloma, J. A. M. A. **93**: 1881 (Dec. 14) 1929.

[6] Beck, D.: California Dept. of Pub. Health, Special bull. 57, 1931, p. 19.

The apparent success attending the treatment of this case would seem to warrant its trial in other cases. The incision of cold abscesses and irrigation of the cavities with such a solution are suggested, though, with such a strong solution of iodine, toxic effects must be anticipated. Other methods of application will suggest themselves.

### REPORT OF CASE

J. F., a white man, aged 66, an elevator operator, was ill with "pneumonia" in December, 1930. In January, 1931, he noticed what he thought was going to be "a pimple" high on his forehead within the hair line. This was painless and very gradually increased in size during the next few months, when he consulted a physician because it interferred with the satisfactory wearing of a hat. A roentgenogram of the skull showed a destructive lesion in the frontal bone.

Incision of the swelling and curetting of the bone were done, May 10, by Dr. W. J. Ryan. Dr. E. H. Ruediger of the Mercy Hospital rendered a diagnosis of coccidioidal granuloma, from histologic examination of tissue removed at operation.

The lesion drained considerably, and a roentgenogram of the area taken early in June showed an extension of the process in the frontal bone. The bone was again curetted, June 14, and a rubber drainage tube placed. Five days following the second operation, the patient entered the San Diego County General Hospital.

The tube was removed and the wound rapidly filled with granulation tissue. A positive culture of Coccidioides immitis was obtained from the exudate. The appearance, July 11, 1931, is shown in figure 1. The method of attack as outlined was decided on and was actively begun on this date. Saturated solution of sodium iodide was given by mouth in 15 minim (1 cc.) doses three times a day. This was increased to 25 minims and was administered throughout his stay in the hospital (four months). Local applications of potassium iodide (5 per cent) saturated with iodine were used as continuous wet dressings at first and, later, applications three and two times a day until November 3, when it was first discontinued.

Figure 2 exhibits the appearance of the wound at this time. Healing of the wound occurred more rapidly after the discontinuance of the iodine applications. When the size of the ulcer was reduced to a diameter of 2 cm. and while 1 per cent copper sulphate dressings were being applied, several small ulcers occurred in the new skin over the healed area, suggestive enough in appearance to cause the resumption of the external iodine treatment. A prompt healing of the ulcers occurred. Intermittent iodine applications were continued and the lesion was finally healed completely, Jan. 15, 1932 (fig. 3) and has remained so since that time.

The patient has returned to work and feels perfectly well. At no time was his general physical condition impaired. Roentgenograms of the chest have never demonstrated an active pathologic process.

### COMMENT

It would seem justifiable to conclude that Coccidioides immitis is probably sensitive to iodide therapy provided the concentration of iodine is sufficiently great in the vicinity of the organisms, and in this respect it is only quantitatively different from other pathogenic fungi.

The recurrence, while under copper sulphate dressings, of ulcerating lesions in areas previously healed, would tend to throw some doubt on the efficacy of copper or its sulphate in the control of this condition. This is in harmony with unpublished observations I have made on the effects of copper treatment in these cases.

The results in this case would seem to warrant a therapeutic trial in other suitable cases.

A period of two years must elapse, free from evidence of active disease, before I shall consider this case as probably cured.

The unified method of treatment with iodine and iodides makes no other conclusion possible than that they are therapeutically potent agents in this disease.

North Front Street.

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# ASTHMA FROM FOOD ODORS

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The ingestion of various foods as a frequent specific cause of asthma has been well known for many years. It is less known, however, that some of these foods give off volatile substances, especially during the process of cooking, that are capable of arousing attacks of asthma. The literature contains rather meager references to this subject. In Coca's recent book the following statement is pertinent: "Although fish usually acts as an ingestant, it is not uncommon to find that the mere odor of it in the room, particularly when it is being cooked, may induce asthma in the markedly sensitive child."

The following cases are illustrative:

Case 1.—E. W., a white woman, aged 43, seen by us, Dec. 4, 1928, complained of attacks of cough and dyspnea occurring during the past six months. These spells usually came on about 1 : 30 p. m. on Tuesdays and Fridays. The patient worked at a cafeteria and thought that the odor of scalding shrimps was responsible for the attacks. On further inquiry it was found that it is the custom at this cafeteria to cook shrimps on the days mentioned. The presence of shrimps after they were cooked did not upset her. She had never eaten shrimps. She had a sister who had asthma.

The patient was well nourished. Examination of the chest gave results that were within normal. The blood showed: hemoglobin, 85 per cent; erythrocytes, 3,770,000; leukocytes, 4,500, and no eosinophils. Roentgen examination of the chest was essentially negative. The urine and sputum were normal. The basal metabolic rate was —6 per cent. Cutaneous tests with all available protein extracts were negative, except with the extract of shrimp. The latter gave a + + reaction (moderate size wheal with erythema and itching) on three different trials.

Feb. 9, 1929, the patient reported that shrimps were being cooked in the basement and that she had no trouble. A follow-up report, Feb. 7, 1932, showed that she had had no asthma in over three years, since she was careful to keep away from the room where shrimps were prepared.

Case 2.—C. F., a girl, aged 6 years, seen by us in September, 1930, had suffered frequently from asthma attacks since the age of 2. Many attacks were of a severe nature, lasting from seven to ten days. A cough persisted between these attacks. At times asthma was associated with an infection of the upper respiratory tract. The family history was negative for allergy. During infancy the child had had eczema and chickenpox. The tonsils were removed at the age of 5, after which the attacks of asthma and the respiratory infections were less frequent.

Examination showed slight underweight, and the presence of wheezing râles and dyspnea during an attack. No other abnormalities were noted. The urine and stool were normal. The Pirquet and Schick tests were negative. Cutaneous tests gave strongly positive reactions to pea, bean, lentil, almond and cocoa. There were moderate reactions to string bean, kidney bean, squash, oyster, butternut, peanut, fig, plum and cottonseed.

By elimination it was soon found that peas, beans and lentils were the foods responsible for the attacks. Paroxysms of asthma and urticaria followed the deliberate ingestion of these foods. After they had been eliminated from the diet the parents observed that the child would get an attack of asthma whenever peas, beans or lentils were being cooked in the home. Further cooking of these vegetables was stopped and care was taken to keep the child away from other homes where there was a possibility of exposure to these odors. Under this management there have been no attacks in the last seventeen months.

Case 3.—S. L., an Italian woman, aged 46, seen by us in February, 1930, had had asthma for eight years. The attacks, which had at first lasted only two or three hours, now were a few days in length. She thought that the attacks were precipitated by colds. The past history was insignificant and there was no family history of allergy.

The patient was well nourished. There were wheezing and sonorous râles. No other noteworthy physical observations were obtained. A roentgenogram of the chest showed no

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From the Allergy Clinic of the Northwestern University Medical School Department of Medicine.

changes. The electrocardiogram showed a slurring of the QRS deflections and some left axis deviation. Skin tests resulted in very marked positive reactions to bean, kidney bean, string bean, pea, black-eyed pea and lentil. There was less marked reaction to hazelnut, fig and wheat globulin.

Following the skin tests the patient gave the information that she could distinctly associate the eating of beans and peas with attacks of asthma. These seizures come on about half an hour after ingestion. She also stated that if she cooked any peas or beans the odor from these gave her an attack within half an hour. If she visited her mother-in-law when any of these vegetables were being cooked, an attack ensued. Lately she had persuaded her mother-in-law to cease cooking peas and beans.

Intradermal tests with extract of peas gave a definite reaction with as high a dilution as 1 : 10,000,000 but failed to react with 1 : 100,000,000. A passive transfer with the patient's serum to the skin of a nonsensitive individual was made. Two days later the sensitized site gave a positive reaction with intradermal injection of pea extract up to 1 : 10,000 dilution. To demonstrate further the volatile nature of the reacting substance, the following experiment was made: A flat dish containing 15 cc. of Coca solution was exposed for half an hour at a distance of 30 inches from dried peas cooking in a pot. Another dish of Coca solution was exposed at a distance of 5 feet from the cooking peas. Both solutions were filtered through Berkefeld filters and tested intradermally on the patient. The first gave a definite reaction, the second a faint reaction. Controls with Coca solution and a solution exposed to other cooking vegetables to which the patient was not sensitive gave negative reactions.

### COMMENT

The cases reported are instances of sensitiveness to volatile substances given off by food (cooking). We have similar cases in which the reaction consists of a rhinitis. It is suggested that this etiologic factor in asthma and other allergic conditions may be more frequent than we realize since in the majority of instances the association of the attack with a specific substance is not apparent to the patient. We realize that the rather common complaint of many individuals that certain odors produce certain undesirable reactions may be in the main psychogenic. We contend, however, that in some it may be actually on an allergic basis. It will be advisable in the future in the case of sensitiveness to food substances not to be entirely content with the elimination of the food from the patient's diet. It is possible that attention to the likelihood of food odors as factors in sensitization may clear up some of the food-sensitive cases that have not responded to ordinary food elimination.

185 North Wabash Avenue.

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## BULLETS IN THE EAR: REPORT OF THREE CASES

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Judging from reports in the literature, one observer seldom has the opportunity to compare the effects, in different patients, of bullets in the middle ear. Three such cases are reported, and briefly compared, in this paper.

### REPORT OF CASES

Case 1.—A woman, aged 36, came to the Mayo Clinic because of obesity and discharging ears. When the patient was 16 years old and living in Italy, she became infatuated with a youth of 18 years. They decided to get married, but the parents of both objected strenuously. The young people, much disheartened, went into the woods, where they spent the day. Evening came, but home was an undesirable place, and the young woman did not deem it proper to remain in the woods all night with a young man to whom she was not married.

After much consultation, they decided to shoot themselves, reasoning that the most vulnerable spot was the ear. The young man had a small, 0.22 caliber revolver, and two cartridges. He shot the young woman in the right ear, holding the revolver close to the head. She dropped to her knees, but was soon on her feet again, maintaining that she was far from dead. They had not foreseen this, and the question arose as to who was to get the second bullet. The young man decided this easily and shot the young lady in the other ear. Again she dropped to the ground. When he saw she was bleeding from both ears and yet very much alive he became frantic, and rushed back to town, where he drank large drafts of kerosene. Thinking that he was about to die, he told of the experience in the woods. A stomach tube was used and the kerosene removed. The young woman was brought in from the woods. The man was put in jail. When the parents saw that six months' incarceration did not lessen the infatuation of the young people, they relented and had the young man released from prison on the promise that he would marry the young woman and that both would go to the United States. They did this.

The patient was first seen in the Section on Otolaryngology in June, 1927, twenty years after the shooting. She gave the stated history and said that she had had a discharge from the left ear continuously, and from the right ear almost continuously. On seven or eight occasions, the discharge from the right side stopped. This was accompanied by much pain and fever. Hot packs were used. After the discharge had been reestablished, the pain and fever subsided.

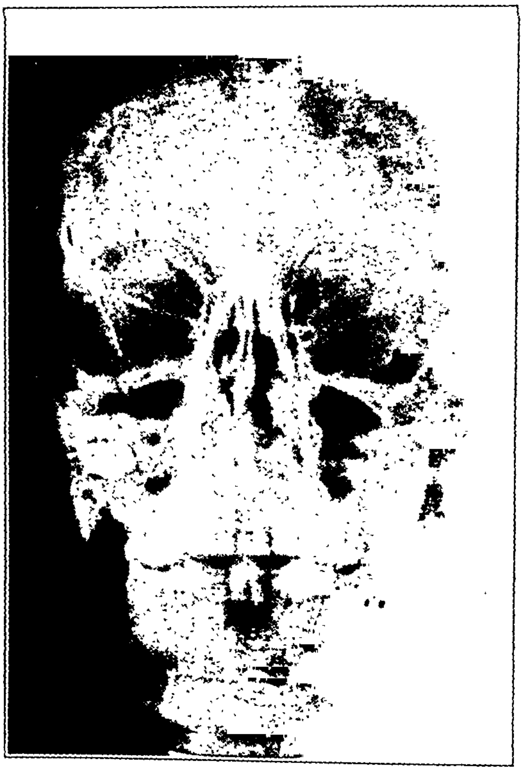

Fig. 1.—Bullets in the right middle ear and in the left upper cervical portion of the spine.

Examination disclosed that the drum of the left ear was destroyed and that there was a thick, mucopurulent discharge. The patient could hear a medium whisper in this ear. Examination of the right ear disclosed that the drum was destroyed and that there was granulation tissue and foul pus in the middle ear. The patient could hear a loud voice ad concham in this ear. The stereoroentgenograms gave evidence that the bullet was in the middle ear on the right side and in the region of the cervical portion of the spinal column on the left. A radical mastoid operation on the right ear was advised and consented to. At the operation, the bullet was found in the middle ear and was removed with some difficulty. The anterior wall of the canal was deficient. There was apparently no injury to the inner wall of the middle ear, and at no time either before or after the operation was there facial weakness or labyrinthine irritation. The typical radical mastoid operation was done.

Convalescence was uneventful. A good cavity was obtained, and hearing improved until a medium whisper could be heard ad concham. The condition of the left ear cleared up under treatment.

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From the Section on Otolaryngology, the Mayo Clinic.

CASE 2.—A man, aged 29 years, presented himself because of right facial paralysis and deafness in the right ear. Three months before he came to the clinic, he had been shot with a 0.22 caliber bullet, fired at a distance of 40 feet. The bullet entered his head at a point 1 inch in front of the right ear. He did not lose consciousness. The injury was immediately followed by right facial paralysis and profound deafness in the right ear. He had been operated on elsewhere shortly after the accident, in an effort to remove the bullet, but this operation had been unsuccessful.

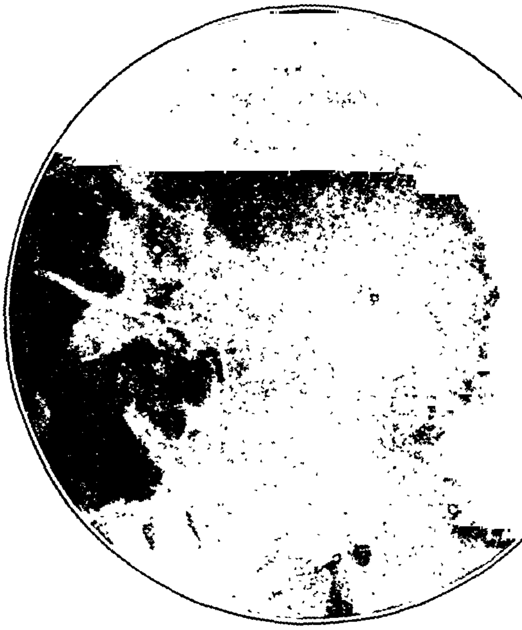

Fig. 2.—Bullet in the right middle ear.

On examination of the right ear when he came to the clinic, landmarks were obliterated, and a note was made that there was something hard behind the drum, or something crowding the drum from above. A roentgenogram gave evidence that the bullet was in the middle ear. The mere presence of the bullet was giving no symptoms, and it was deemed advisable to disregard it for the time being. However, in an attempt to correct the facial paralysis, end-to-end anastomosis between the proximal portion of the spinal accessory and the distal end of the facial nerves was made. The final results of this operation were determined later, as will be explained.

Five years after the accident, the patient began to have pain in the right ear and a foul discharge from it. The condition did not respond to the treatment given it, so he returned to the clinic and a radical mastoid operation was performed. The bullet was found in the posterior inferior portion of the middle ear. Because of the erosion, it was thought best to open the labyrinth after the method of Hinsburg. Convalescence was uneventful. Function of the facial nerve had returned to a considerable extent.

Fig. 3.—Deformed bullet removed from mastoid. The illustration is about one-fourth larger than the bullet, which weighed 76 grains.

CASE 3.—A woman, aged 26, came to the clinic because of pain in the right ear and mastoid. She gave a history of having been shot nine years previously, just below the right nostril. There had been bleeding from the right ear, but with irrigations this had cleared up in one month. No effort had been made to find the bullet.

There had been no further symptoms until six months before the patient presented herself for examination. At that time she complained of sharp pains in the head and neck. Her dentist had removed some teeth, but only a few days' relief had been afforded. The ear then had commenced to discharge and the pain had increased. On her arrival at the clinic, her temperature was 101 F. and codeine was necessary to relieve the pain.

Examination revealed a very narrow canal, a thin discharge, under pressure, and tenderness present. Roentgenograms indicated that the bullet was in the middle ear.

A radical mastoidectomy was performed. The bullet was found at the inner end of the external canal and partly in the middle ear. The inferior wall of the canal was eroded. There was a large cholesteatoma in the middle ear and attic. The bullet, together with the cholesteatoma, was removed. There had been no injury to the facial nerve or semicircular canals. The patient still retained some hearing. Convalescence was uneventful.

### COMMENT

In case 1, the foreign body caused a discharge almost immediately and gave more or less trouble all the time. In case 2, the middle ear tolerated the bullet five years before a discharge was set up. In case 3, more than eight years elapsed before the foreign body commenced to give trouble.

## *Special Article*

# VITAMIN $B_1$ IN RELATION TO THE CLINIC

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[EDITORIAL NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

When considering the application in the clinic of the experimental work of physiologists concerning the antineuritic vitamin, it is advantageous to distinguish between the state of extreme deficiency of this accessory food factor as contrasted with that in which there is only a moderate shortage of this vitamin. Beriberi may be taken as the prime illustration of the former condition; its syndrome is quite well defined, a fact that is of great aid to an accurate diagnosis. Quite a different state of affairs characterizes a moderate lack of antineuritic vitamin. In such cases the picture is not clear-cut but rather confused, and in consequence of this there may be considerable difference of opinion regarding the significance or even the existence of various alleged features of the syndrome. Obviously, then, progress in this field must necessarily be slow, and every step forward must be taken with proper scientific caution; the need for preservation of an open-minded attitude with respect to developments in this field of activity is very great.

Many of the efforts now being directed toward clinical application of the facts discovered concerning vitamin $B_1$ are essentially preventive in nature rather than curative. It is not an exaggeration to say that the greatest advance that can now be made with respect to conquering beriberi lies not in the treatment and cure of this condition, for these problems have really been solved, but in the development of some plan by which governmental and social forces can be brought to bear on the prevention of beriberi in those parts of the world where this disease is a veritable scourge. From time to time, students of this problem have suggested measures aimed chiefly at reducing the consumption of polished rice in the Far East, where beriberi is endemic.[1] Numerous animal tests have been made in an endeavor to arrive at some fairly simple standard of rice composition that might be useful in framing laws aimed at curbing the traffic in too highly polished rice.[2] If any really satisfactory plan could be devised that would accomplish a marked reduction in the use of white rice and an increased consumption of certain other foods in the face of the poverty and ignorance that prevail among the masses of the Far East, this discovery would, in my opinion, be one of the first order in its value to mankind.

Similarly, the problem presented by a moderate shortage of antineuritic vitamin is to a considerable extent one of preventive medicine. Two schools of thought have contributed to the discussion of this problem. Some clinicians[3] maintain that the possibility of vitamin $B_1$ deficiency occurring to any appreciable extent under the conditions of dietary habits and regimens prevailing in the United States has been greatly exaggerated; these clinicians insist that mere regulation of the diet, substitution of vegetables and fruits for much of the highly milled components of the American dietary, suffices as a therapeutic measure and that it is not necessary to use special concentrates of vitamin B in the clinic except perhaps in manifest beriberi. This attitude toward the problem is easily understood when one appreciates the paucity, until recently, of suitable clear-cut clinical evidences of the need for antineuritic vitamin, except in cases of obviously extreme deficiency, such as is seen in beriberi.

In contrast to this view, one may cite the position of the clinician who realizes that (1) the law of the minimum is involved in the preservation of the healthy nutritive state, (2) because of faulty gastro-enteric function there may be a failure to utilize a large enough fraction of the vitamin ingested, (3) because of obstructive conditions there may be great difficulty in taking sufficient nourishment by mouth and a condition of vitamin deficiency may result, (4) the period of vitamin shortage which an individual may safely endure is variable, being influenced by several factors, and (5) in cases of doubt with respect to a shortage of vitamin B playing a rôle the test is simple and harmless and consists not merely in regulating the diet—a therapeutic measure that exerts its beneficial effect slowly—but in administering large amounts of the missing factor immediately and thus securing a prompt answer to the question.

Much of the disagreement among clinicians with respect to the importance of vitamin B is doubtless due to failure to appreciate the fact that many of the studies conducted on animals are not quite comparable to those made on man. The investigator working with animals endeavors as far as possible to limit the variables operating in his experiments. The success which attends his efforts in this regard determines to a very large extent how precisely he may state his conclusions and how convincingly he may demonstrate cause and effect relations. In the case of observations to be made on human beings, however, the problem of suitable experimentation is a much more difficult one. A dietary deficiency in a human being is much more likely to be a complicated condition. It is not to be presumed that many persons live on precisely the same diet as, for example, a group of rats used in a nutritional investigation. In all probability the "wet" and the "dry" types of beriberi represent essentially the same deficiency disease with different complications. It is well known that a nutritional edema may be produced experimentally by feeding diets low in protein over extended periods until the concentration of blood plasma proteins falls to an abnormally low level. It is quite possible, although by no means proved as yet, that the edema of "wet" beriberi is due to a shortage of protein and is therefore evidence of a multiple deficiency.

It is obvious that when clear-cut results are obtained in suitably controlled animal experiments, they deserve very careful consideration. Each suggestion from this field of endeavor should be given suitable clinical trial, and final judgment as to the significance of animal experiments to the clinic should be reserved until the results of clinical tests are at hand. For the correct evaluation of the researches there should be cooperation of the physiologist with the clinician.

### BERIBERI: A CONDITION OF EXTREME VITAMIN $B_1$ DEFICIENCY

*Definition and Etiology.*—"Beriberi is an acute or chronic disease characterized by changes in the nervous system and particularly by a multiple peripheral neuritis with an especial tendency to attack the nerves of the limbs, the pneumogastrics and phrenics. Ordinarily the clinical picture of a peripheral neuritis is combined in varying degrees with cardiac disturbances, edema, serous effusions and gastro-intestinal derangements. Exceptional cases occur in which cardiac dilatation and sudden death are the first symptoms observed."[4] The early work and ideas concerning the etiology of this disease are admirably presented in Vedder's monograph. The points of view that have been expressed with respect to the origin of beriberi may be summarized briefly as follows: (1) The disease is essentially an intoxication, (2) it is an infection, and (3) it is due to lack of an essential dietary factor, namely, the substance now called vitamin B (or $B_1$). In the light of the developments in the field of the science of nutrition, especially since 1913, when the word vitamin was introduced, and the application of these observations to clinical medicine, there seems to be little doubt as to the validity of the deficiency disease hypothesis in relation to beriberi. It should be stated, however, that some clinicians, notably among the Japanese, still favor the view that beriberi is an infection.[5] Matsumura and his associates have recently claimed the isolation of a "beriberi bacillus" believed to be responsible for this disease, but Swineford[6] was not able to confirm this in his experience. Many of the arguments advanced by Ogata, by Matsumura and by Nagayo are not essentially different from those discussed by Vedder, who championed the deficiency disease theory. Concerning the thesis that the administration of vitamin B does not always bring about a complete cure of human beriberi and that therefore this disease cannot be essentially a vitamin B deficiency, attention should be called once more to the following points: (1) A complicated rather than a single deficiency may be in part responsible for this result, and (2) even in experimental beriberi in animals this may occur through failure of the vitamin given by mouth to reach the most vitally situated lesions soon enough, because of gastro-enteric disturbances. Observations in animals show that the time required for the vitamin to exert its curative effect depends to a considerable extent on the way the remedial agent is administered. Absorption from the gastro-intestinal tract is rapid enough in moderately advanced cases but too slow when the deficiency is of the most advanced type, in which case parenteral injections must be employed in order to save the animal. More extensive trials of parenteral administration of vitamin B in cases of human beriberi should contribute much toward the solution of this controversy.

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[1] Vedder, E. B.: Beriberi, New York, William Wood & Co., 1913. A good discussion of the practical aspects of this matter will be found in chapter XVII.

[2] Vedder, E. B., and Feliciano, R. T.: An Investigation to Determine a Satisfactory Standard for Beriberi-Preventing Rices, Philippine J. Sc. **35**: 351-389 (April) 1928.

[3] Alvarez, W. C.: Opinions of Four Hundred and Seventy Physicians in Regard to the Advantages and Disadvantages of Using Bran and Roughage, Minnesota Med. **14**: 296-300 (April) 1931.

[4] Vedder: Beriberi, p. viii.

[5] Ogata, T.; Kauakita, S.; Suzuki, T.; Kagoshima, S., and Oka, C.: Pathogenesis of Beriberi, Japan M. World **3**: 106, 1923; Chem. Abstr. **19**: 1728, 1925; abstr. Chem. Abstr. **17**: 2744, 1923. Matsumura, S.; Kakinuma, G.; Kawashima, K.; Tanikawa, K.; Ochiai, S.; Miyata, R.; Fujisaki, K.; Kanao, R.; Noguchi, K.; Aoki, K.; Sato, F.; Ito, K., and Suzuki, M.: The Etiology of Beriberi, J. A. M. A. **92**: 1325-1327 (April 20) 1929. Nagayo, Mataro: Beriberi and Rice Neuritis, ibid. **81**: 1435-1437 (Oct. 27) 1923.

[6] Swineford, Oscar, Jr.: Beriberi in Virginia with Report of Case, Virginia M. Monthly **56**: 814-820 (March) 1930.

*Incidence in the United States.*—Although the incidence of beriberi is very high in the Far East, this disease is of comparatively rare occurrence in the United States. Discussion of the prevalence of beriberi will be limited to its occurrence in North America. Because of its rarity, relatively few clinicians in the United States ever have the opportunity for observing beriberi. Most of the cases in adults that have been reported in the medical literature of this country have occurred among immigrants from the Far East [7] and individuals who have subsisted on definitely restricted diets either voluntarily,[8] or because they were inmates of institutions,[9] or because of economic and other factors.[10]

*Pathology and Diagnosis.*—According to Vedder's review of the pathology of beriberi in man, the chief finding is a multiple peripheral neuritis. The most recent contributions to this subject from the field of animal experimentation [11] confirm this and give further support to the view that human beriberi is essentially a vitamin $B_1$ deficiency. These observations indicate the important points that must be considered when making a differential diagnosis. The condition must be distinguished from other types of peripheral neuritis, notably those due to poisoning with alcohol and with metals. The history is of assistance here. When examining the patient with the view to determining whether the diet has been adequate, it is important to find out not only whether the individual partakes of those foods known to contain appreciable amounts of vitamin $B_1$ but how much he eats, because recent studies on animals indicate the great importance of the quantitative as well as the qualitative aspect of this matter. The experience of Goldberger in his study of the diet factor in relation to pellagra illustrates this point. Minot [12] also has called attention to this fact, and my experience with a recent case of beriberi in the New Haven Hospital impressed on me the importance of care in this regard.

Recent animal studies [13] have shown that what was formerly called vitamin B really consists of at least two physiologically active factors, the antineuritic substance (also called vitamin B, or $B_1$, or "antiberiberi" vitamin) and the heat-stable "antidermatitis" vitamin $B_2$ (or G, or "antipellagra" factor). It is interesting, therefore, to find that clinical cases of pellagra combined with beriberi have been reported.[14] The fact that such a condition is not encountered oftener probably finds its explanation in the diets used. The common beriberi-producing ration of the Far East is chiefly polished rice and fish. The rice is deficient with respect to both of the vitamin B factors, namely, the antineuritic substance and the pellagra-preventive factor, but the fish muscle contains fair amounts of the "antipellagra" substance. Corn meal, which is the staple food of the pellagrins in the Southern states, is low in its content of the pellagra-preventive vitamin but, when eaten in large amounts, supplies adequate quantities of the antineuritic substance.

It is an interesting fact that beriberi occurs much more frequently in men than in women.[15] If the results of recent studies on animals [16] can be legitimately applied to human beriberi, then this difference in incidence related to sex is to be attributed to the greater metabolic rate, activity and food consumption characteristic of most males.

*Beriberi in Relation to Fevers and Gastro-Intestinal Disturbances.*—There are reports in the literature of the occurrence of beriberi following prolonged fevers and gastro-intestinal disturbances. Of the fifty-two cases described by Bentley,[15] twenty-eight appear to have been the sequel of recurring malaria or dysentery and allied conditions. Bentley's observations were made in Java on persons who, in the light of my recent studies aimed at evaluation of human dietaries with respect to content of vitamin $B_1$, were subsisting on rations barely sufficient or "borderline" in character, and in whom, therefore, there was only a small factor of safety against the development of beriberi. Yacoub [17] reported three cases that followed relapsing fever, and in these instances there was a prolonged feeding of condensed milk, a food which, according to recent animal tests, contains appreciable amounts of the heat-stable "pellagra-preventive" substance but relatively small quantities of antineuritic vitamin. Nineteen per cent of Walshe's cases,[18] observed in Egypt, showed a previous history of malaria. The association of malaria with beriberi occurs so frequently in Brazil that the physicians of that country[19] have been led to favor the view that beriberi is to a considerable extent an infection. The same attitude was taken by Cannon,[15] who, in reporting his cases in Hong Kong, stated that "the dry and dysenteric beriberis are really camouflaged forms of malaria, as proved by the invariable findings of the specific malarial parasites on careful examination." On the other hand, the observations of Lovelace[20] and Walcott[21] made in Brazil clearly support the view that the beriberi occurring in this region is a dietary deficiency disease as elsewhere. In the absence of vitamin B studies in animals, these conflicting reports would prove rather difficult of interpretation; when viewed in the light of the experiments that my associates and I[22] have conducted, they find a reasonable explanation. The experiments just referred to were performed on four different species of animals. The results support the view that the amount of vitamin B required by the organism is related to the amount of food consumed, or the total metabolism; when the animal is restricted to a diet deficient in vitamin B, and its metabolism is increased by forced exercise[23] or by the administration of thyroid tissue,[24] signs of vitamin B deficiency appear much sooner than otherwise. The indications from such studies are that more vitamin B is required whenever the metabolic rate is raised. It is reasonable to expect, therefore, that individuals subsisting on diets the vitamin B contents of which are too small or just barely sufficient should be brought to a condition of extreme vitamin B deficiency when subjected to a prolonged regimen of fever or of heightened metabolism.

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[7] Holmes, B., and Retinger, J.: An Apparent Recovery of a Chicago Chinaman from Beriberi After Three Doses of Vitamin Containing Extract of Rice Polishings, Illinois M. J. **29:** 178-180, 1916; Reed, A. C.: Beriberi: Report of Cases, J. A. M. A. **68:** 116-118 (Jan. 13) 1917. Abdou, N. T.: Descriptive Picture of Beriberi, ibid. **71:** 1298-1299 (Oct. 19) 1918.

[8] Kepler, E. J.: Beriberi from a Diet of Raw Starch, J. A. M. A. **85:** 409-412 (Aug. 8) 1925.

[9] Parker, H. B.: Beriberi: A Report on Beriberi in the County Jail at Elizabeth, N. J., Pub. Health Rep. **29:** 339-341, 1914.

[10] Little, J. M., Jr.: Beriberi, J. A. M. A. **63:** 1287-1290 (Oct. 10) 1914. Scott, L. C., and Herrmann, G. R.: *Beriberi* ("Maladie des Jambes") in Louisiana, with Special Reference to Cardiac Manifestations, ibid. **90:** 2083-2090 (June 30) 1928.

[11] Zimmerman, H. M., and Burack, Ethel: Lesions of the Nervous System Resulting from a Deficiency of the Vitamin B Complex, Proc. Soc. Exper. Biol. & Med. **28:** 645 (March) 1931.

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[15] Bentley, A. J. M.: Beriberi, Its Etiology, Symptoms, Treatment and Patholog [illegible] d, 1893. Mitteilungen der Japanischen [illegible] okyo, 1911. Cannon, Alexander: Some [illegible] M. J. **2:** 852-854 (Nov. 9) 1929.

[16] Cowgill, G. R., and his associates (footnotes 23, 24 and 25).

[17] Yacoub, K.: Notes on Three Cases of Beriberi Following Relapsing Fever and Due to Prolonged Feeding on Condensed Milk, Practitioner **100:** 290-291 (March) 1918.

[18] Walshe, F. M. R.: On the Deficiency Theory of the Origin of Beriberi in the Light of Clinical and Experimental Observations on the Disease, with an Account of a Series of Forty Cases, Quart. J. Med. **11:** 320-338 (July) 1918.

In the same way one may explain the frequency with which beriberi has been shown to follow a prolonged siege of gastro-intestinal disturbance, such as is represented by dysentery. Observations on animals[25] have shown that the feces contain appreciable amounts of vitamin B. This fact is so important that coprophagy on the part of the experimental animals must be prevented whenever foods are being assayed for their content of the antineuritic vitamin, if the results are to be at all quantitative. Much of the vitamin present in the intestinal excreta is doubtless the result of the activity of certain strains of bacteria,[26] but some of it may have originated in the food ingested and have escaped absorption in its passage through the alimentary tract. At the present time, practically nothing is known concerning the locus of absorption of this vitamin in the intestine. Cowgill, Rosenberg and Rogoff[27] were able to show that in dogs given large volumes of water daily, signs of lack of vitamin B appear much sooner than when the animals are allowed water ad libitum. It is not unreasonable to attribute the development of beriberi in cases of prolonged diarrheas of whatever cause to failure of the individual to absorb a sufficient fraction of the ingested vitamin to meet the needs of the organism; this failure of absorption becomes more important as a contributory cause of beriberi when the amount of vitamin B in the diet is low or only barely sufficient; in such cases the factor of safety against beriberi is small.

To what extent gastric achlorhydria is a factor favorable to the development of beriberi or is the result of this disease, it is impossible to say at the present time. This condition occurs often in beriberi, but not invariably, and has been reported to develop in animals fed diets lacking vitamin B.[28] Wohl[29] has described a case as "avitaminosis in the course of diabetes . . . with symptoms and lesions of beriberi predominating." Minot[12] reported having seen two cases of diabetes associated with peripheral neuritis and achylia gastrica, "whose symptoms slowly improved upon taking large amounts of a concentrate of yeast," and states that "one must wonder if achylia gastrica is not a factor that can inhibit the utilization of both the P. P. (pellagra-preventive) and antineuritic factor of vitamin B." Gastric ulcer would seem to be another type of gastric disturbance likely to lead to beriberi or to a milder form of vitamin B deficiency because the treatment involves essentially a marked restriction of diet; prolonged subsistence on a ration of cream and other foods valuable because they do not stimulate gastric secretory processes certainly operates to favor the development of a condition of vitamin B shortage. The duration of this dietary treatment is obviously an important factor here.

Beriberi has also been reported as related in some way to jaundice. In a study of forty cases of beriberi, Walshe[18] noted such an association but after due consideration of his data decided against the jaundice being related etiologically to beriberi. It is possible to take the view that the jaundice in such cases represents a complication in no way related to beriberi. One may also consider the jaundice as evidence that the alimentary functions are not normal and that the development of beriberi is favored by the gastro-intestinal disturbance, especially when the diet is only barely adequate with respect to its content of vitamin B.

To the careful clinician the numerous conditions predisposing to the development of vitamin B deficiency that have just been discussed will suggest others as worthy of attention. Obstructive states, in which intake of sufficient nourishment is difficult, may be mentioned. Chronic wasting diseases constitute another category of interest.

*The Heart in Beriberi.*—Students of beriberi have long recognized cardiac manifestations as important elements of the syndrome of this disease. There is a definite hypertrophy, chiefly of the right side of the heart. Irregularity, extrasystole, flutter and fibrillation do not occur. The usual heart remedies are without effect. According to Vedder, "exceptionally, cases occur in which cardiac dilatation and sudden death are the first symptoms noted." Sudden death has also been observed in dogs subsisting on vitamin B-deficient diets.[30] The older explanation of this sudden fatality has been that it is due to an extensive degeneration of the vagus nerves. The recent studies of Aalsmeer and Wenckebach[31] support another explanation. These authors believe that the fundamental process in beriberi is water retention and consequent swelling of certain vital tissues, especially the heart and striated muscle. They make the point that the cardiac dilatation may be detected long before the first manifestations of polyneuritis. This observation should be of great significance to clinicians, particularly those specializing in cardiac disorders. The effect of the administration of vitamin B on the beriberi heart is striking. There is a rapid return of the heart to normal size, this being accompanied by a marked secretion of urine. Wenckebach[32] cites the work of Rigler, seeming to show that the highly purified vitamin B preparation of Jansen and Donath[33] acts as a heart hormone or "automatin." Further research along this line will be awaited with interest.

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[25] Steenbock, Harry; Sell, M. T., and Nelson, E. M.: Vitamin B: I. A Modified Technic in the Use of the Rat for Determinations of Vitamin B, J. Biol. Chem. **55**: 399-410 (March) 1923. Salmon, W. D.: Vitamin B in the Excreta of Rats on a Diet Low in This Factor, ibid. **65**: 457-462 (Sept.) 1925. Smith, A. H.; Cowgill, G. R., and Croll, H. M.: A Note on the Technic for Studying Vitamin B., ibid. **66**: 15-21 (Nov.) 1925.

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[28] Gilman, A.: Chemical and Physiological Investigations on Canine Gastric Secretion, Dissertation, Yale University, 1931.

[29] Wohl, M. G.: Avitaminosis in the Course of Diabetes: Occurrence in a Case with Symptoms and Lesions of Beriberi Predominating, J. A. M. A. **87**: 901-906 (Sept. 18) 1926.

*Infantile Beriberi.*—In the Far East the incidence of infantile beriberi is very high. The great prevalence of this disease among rice-eating people is doubtless due to at least three important facts: 1. During the first six months of its life the human infant subsists almost entirely on milk and is therefore in the category of individuals who live on a restricted dietary. 2. The amount of antineuritic vitamin B present in the milk has been shown to be dependent primarily on the quantity ingested by the mother.[34] 3. Most of the diets consumed by those who use white rice as the staple food are deficient or just barely adequate with respect to content of antineuritic vitamin; under such dietary conditions the amount of vitamin ingested by the mother above her own immediate requirement and thus available for transfer to her milk is small, and as a consequence the milk is deficient with respect to the vitamin.

Moore and Brodie[35] have reported an instance of hemorrhage in a new-born infant, which presented pathologic evidences of beriberi. The mother's diet during the prenatal period was markedly deficient in antineuritic vitamin. In commenting on this case the authors stated that "diets restricted by poverty, pernicious vomiting, diabetes or other causes need careful scrutiny from the standpoint of vitamins." In order to elucidate more fully the relationship of vitamin B in the maternal diet to infantile beriberi, experiments were also performed on rats,[36] with results abundantly confirming the clinical observations. Additional confirmatory evidence may be cited in the work of Sure[34] and of others.[37] The implications of these observations to the clinician are obvious. Vitamin B should be administered to the mother during the gestation period as a protective measure and to both the mother and the infant after parturition. Careful regulation of the diet may be a sufficient therapeutic measure to adopt during the prenatal period in most cases, but when complications are present it may be advisable to administer concentrates of the antineuritic vitamin. When severe symptoms of beriberi have already developed in the infant, they may be obviated almost miraculously by administration of suitable amounts of a concentrated form of vitamin B.

### OTHER POSSIBLE (?) CONDITIONS OF EXTREME VITAMIN B DEFICIENCY WORTHY OF CONSIDERATION

There are many conditions besides beriberi in which injury to the nervous system is a prominent feature of the disorder. Spinal cord lesions are found in advanced cases of pernicious anemia. Lesions in the brain have been described as characteristic of human pellagra. Gildea and his associates[38] reported the appearance of lesions described as "disseminate sclerosis" in the spinal cords of dogs fed diets deficient chiefly in antineuritic vitamin B. Zimmerman and Burack[11] disagree with Gildea and his collaborators as to the interpretation of the histologic preparations obtained by the latter. It would be generalizing too widely and on too uncertain data to say that in all these nervous disorders lack of antineuritic vitamin is an etiologic factor. On the other hand, in the face of the uncertainty as to what part is played by this vitamin in the nutrition of the nervous system, it seems justifiable to advocate administration of the vitamin in such cases, especially when this therapeutic measure is so easy to carry out and cannot do any harm. It is of interest to learn that one clinician is experimenting with vitamin B therapy in cases of delirium tremens. In this connection it is pertinent to cite the claim of both Kimura[39] and Lhermitte[40] that, so far as the central nervous system is concerned, their histologic pictures obtained from cases of human beriberi are indistinguishable from those of toxic polyneuritis. This is a field of investigation worthy of careful cultivation by the clinician.

### CONDITIONS OF SLIGHT AND MODERATE SHORTAGE OF VITAMIN B

*Anorexia.*—In the introductory remarks I called attention to the lack of agreement among clinicians as [illegible] of vitamin B in conditions other than [illegible] which represents essentially an extreme deficiency of this accessory food factor. Evidence showing the importance of an adequate intake of this vitamin not only in preventing beriberi but in the maintenance of a normal voluntary intake of food has come from researches on animals. Karr[41] and Cowgill[30] have been able to demonstrate in dogs a relation between vitamin B and the urge to eat. A description of a representative experiment follows:

> The animal is fed an artificial diet adequate in all known respects except for vitamin B. Over a variable period, depend-

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[30] Cowgill, G. R.: A Contribution to the Study of the Relation Between Vitamin B and the Nutrition of the Dog, Am. J. Physiol. **57:** 420-436 (Oct.) 1921.

[31] Aalsmeer, W. C., and Wenckebach, K. F.: Herz und Kreislauf bei der Beriberi-Krankheit, Berlin, Urban & Schwarzenberg, 1929.

[32] Wenckebach, K. F.: The Heart and Circulation in Tropical Avitaminosis (Beriberi), Lancet **215:** 265-268 (Aug. 11) 1928.

[33] Jansen, B. C. P., and Donath, W. F.: Isolation of Antiberiberi Vitamin, Mededeel. v. d. dienst d. volksgez-ondh. in Nederl.-Indië, part I, 1927.

[34] Sure, Barnett: Dietary Requirements for Fertility and Lactation: XV. The Inefficiency of the Lactating Mother (Mus Norvegicus-Albinus) in Secreting Vitamin B in the Milk, and the Relation of This Phenomenon to Infant Mortality (Detailed Report), J. Biol. Chem. **76:** 685-700 (March) 1928.

[35] Moore, C. U., and Brodie, J. L.: The Relation of Maternal Diet to Hemorrhage in the New-Born, Am. J. Dis. Child. **34:** 53-60 (July) 1927.

[36] Moore, C. U.; Brodie, J. L., and Hope, R. B.: Some Effects on the Young of Inadequate Maternal Diets: I. Polyneuritis and Hemorrhage, Am. J. Physiol. **82:** 350-357 (Oct.) 1927.

[37] Guest, A. E.; Nelson, V. E.; Parks, T. B., and Fulmer, E. I.: Diet in Relation to Reproduction and Rearing of Young, Am. J. Physiol. **76:** 339-348 (April) 1926. Macy, Icie G.; Outhouse, Julia; Graham, Alice, and Long, M. Louisa: Human Milk Studies: III. The Quantitative Estimation of Vitamin B, J. Biol. Chem. **73:** 189-201 (May) 1927. Evans, H. M., and Burr, G. O.: The Amount of Vitamin B Required During Lactation, ibid. **76:** 263-272 (Jan.) 1928.

[38] Gildea, E. F.; Kattwinkel, E. E., and Castle, W. B.: Experimental Combined System Disease, New England J. Med. **202:** 523-527 (March 13) 1930.

[39] Kimura, O.: Histologische Degenerations- und Regenerationsvorgänge im peripherischen Nervensystem, Mitt. path. Institut Univ. zu Sendai, Japan **1:** 1, 1919; abstr., Med. Sc. Abstr. and Reviews **2:** 41, 1920.

[40] Lhermitte, J.: Les lésions cérébrales de la polynévrite avitaminique, Rev. neurol. **2:** 6, 1916.

[41] Karr, W. G.: Some Effects of Water-Soluble Vitamin on Nutrition, J. Biol. Chem. **44:** 255-276 (Nov.) 1920.

ing on the previous nutritive history of the animal, the dog consumes all the food offered within a few minutes. Then anorexia appears; the dog may eat part of the food in the course of a few hours and repeat this behavior for several days. The anorexia may be partial or may become fairly complete. If at any time after the anorexia first appears, a sufficient amount of vitamin-containing material is given, the appetite is restored and the animal eats ravenously the same food that was previously refused.

In the earlier experiments the test substances were placed in the stomach of the animal rather than in the food mixture in order to avoid the possible effect of mere change in the taste of the ration. Later it was found that if the test material was mixed with the food the animal might be induced to eat a small amount. If, however, by eating this small amount vitamin B was not obtained, the anorexia continued. It has even proved possible to restore the urge to eat to vitamin-deficient dogs by intravenous injection of the missing dietary essential.[42] What is most important to remember in this connection is the fact that other dogs, given precisely the same experimental diet plus a daily small but sufficient amount of a vitamin B concentrate, have been maintained in excellent nutritive condition with perfect appetite for the food offered for about a year and a half (540 days).[43]

This anorexia, whatever its complete explanation may be, should be of interest to the clinician. Loss of the urge to eat is generally regarded not as a disease in itself but as a symptom, and this is doubtless the correct attitude to take. It is obvious, also, that loss of interest in food may be the result of the operation of many factors, some psychic and others associated with manifest disease quite unrelated to vitamin B deficiency; it is not logical to assume that administration of vitamin B in such cases will restore the urge to eat. The true significance to the clinician of the results of these animal experiments, however, should be clear. In any case presenting anorexia as an important feature of the syndrome, shortage of vitamin B as an etiologic factor may be readily ruled out by administration of liberal amounts of this dietary essential.

Clinical evidence has already been obtained showing that this condition of moderate shortage of vitamin B does occur in the human species. It has been shown that many marasmic babies have their interest in food and the urge to eat restored by the administration of vitamin B.[44] Newburgh[45] succeeded in increasing the voluntary food intake of a mentally incompetent young woman from about 400 to approximately 2,000 calories a day by the simple expedient of administration of vitamin B. Swineford[6] has described a case diagnosed as mild beriberi resulting from a prolonged siege of typhoid and inadequate nutrition during convalescence. Administration of vitamin B brought about prompt correction of the anorexia and disappearance of the neuromuscular symptoms suggestive of beriberi. It is not unlikely that certain instances of anorexia noticed in convalescents who have subsisted on hospital fare for long periods and who have an unrecognized poor utilization of the vitamin ingested really represent a moderate shortage of vitamin B. This is a field of investigation and clinical trial that presents interesting possibilities.

In this connection it is of interest to cite the observations of Stucky and Rose,[46] who made blood studies in dogs subsisting on vitamin B-deficient diets. Anhydremia was one finding of note. When the vitamin-deficient dogs were given the missing factor they promptly and voluntarily consumed large volumes of water and voided much urine. These observations may have a bearing on the question of the origin of the edema and the anhydremia in "wet" and in "dry" beriberi, respectively. They also suggest that the anhydremia in certain marasmic infants owes its origin in the last analysis to a shortage of vitamin B. The observation of Cowgill, Rosenberg and Rogoff,[27] that this anorexia appears much sooner in dogs given forced administration of large amounts of water daily, suggests, also, that when fluid is given to marasmic babies, vitamin B should be administered at the same time. These are possibilities that must await clinical trial before being accepted in toto.

Hoobler[44] has studied in infants a syndrome described as indicative of lack of antineuritic vitamin. Features of the symptom complex are anorexia, a strange plaintive cry and a certain type of stiffness of the arms, legs and neck believed to be similar to the spastic condition noted in animals suffering from vitamin B deficiency. This condition is readily alleviated by ingestion of sufficient amounts of antineuritic vitamin.

It is obvious that all the conditions that I have cited as favorable to the development of beriberi, i. e., heightened metabolism, faulty gastro-enteric functions, and the like, also operate to bring about a condition of moderate shortage of vitamin B and therefore should be of special interest to American clinicians.

*Restriction of Growth.*—Several investigators[47] have commented on the prevalence of faulty nutrition among children both in this country and in Europe. Until recently it has been difficult to say to what extent a deficiency of antineuritic vitamin is a factor here in limiting growth. Inadequate amounts of calcium and of vitamin A may be playing a greater part. The studies of Morgan and Barry,[48] however, show conclusively that shortage of vitamin B can be a factor in limiting the growth of American school children. When one considers the types of diet that many of the poorer classes are undoubtedly restricted to, especially in such a period as the present world-wide economic depression, the observations of Morgan and Barry become even more significant. Insufficient intake of antineuritic vitamin is probably more serious in children than in adults on account of the child's lower capacity for tissue storage of vitamin reserve and a relatively greater need for this factor to meet the requirements of growth as well as of maintenance. It is especially important to realize that vitamin B is a dietary essential, and therefore care should be taken to see that more than enough of this factor is being supplied at all times both to the growing child and to the adult.

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[42] Cowgill, G. R.: Studies in the Physiology of Vitamins: II. Parenteral Administration of Vitamin B—Mammalian Experiments, Am. J. Physiol. **66**: 164-175 (Sept.) 1923.

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[45] Newburgh: Personal communication to the author.

[46] Stucky, C. J., and Rose, W. B.: Studies in the Physiology of Vitamins: VII. Hemoglobin, Solids, Sugar and Chloride Changes in the Blood of Vitamin B-Deficient Dogs, Am. J. Physiol. **89**: 1-17 (June) 1929.

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[48] Morgan, Agnes F., and Barry, Margaret M.: Underweight Children, Am. J. Dis. Child. **39**: 935-947 (May) 1930.

### SOURCES OF VITAMIN B FOR CLINICAL USE

*Foods.*—Alterations in the diet designed to increase the amount of vitamin B furnished to the patient constitute one very important and simple therapeutic measure. Tables showing relative amounts of vitamin B in common foods are available elsewhere[49] and need not be presented here. A few general remarks may be helpful. Yeast and wheat germ are two excellent sources of this vitamin and furnish the starting point for the preparation of many special products that are essentially concentrates of this dietary factor. Among the body tissues containing relatively large amounts are the glandular organs, notably the liver, kidney and brain, all of these being much richer than muscle. The whole grains because of their content of germ contain appreciable amounts, in contrast to the highly milled products such as white flour and degerminated corn meal. Among the fruits and vegetables, tomatoes, raw cabbage, fresh spinach and legumes have been found to contain more than orange or lemon juices, onions, lettuce or cauliflower. In the egg the vitamin is located in the yolk. Milk, although a good source of the pellagra-preventive substance, cannot be rated as containing a large amount of vitamin $B_1$. For this reason it is a valuable therapeutic measure to supplement the infant's formula-milk with some source of the antineuritic vitamin.

*Special Concentrates of Vitamin $B_1$.*—In many cases it is important to combine dietary regulation with administration of special concentrates rich in vitamin $B_1$, in order to secure prompt alleviation of symptoms. Numerous products are now available for this purpose. It is my opinion that whenever any product of this nature is offered for use by the clinician there should be evidence that the material really contains an appreciable amount of the antineuritic vitamin; this evidence may be obtained by animal tests. The wise clinician will insist that such proof be obtained.

At the present time there do not appear to be available in any reasonable quantity concentrates of vitamin B that may with impunity be administered parenterally to human beings. The recent appearance of a case of beriberi in New York City, in which administration of the vitamin by mouth was practically impossible, indicates the importance of having on hand preparations suited for therapy in such contingencies.

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[49] Sherman, H. C.: The Chemistry of Food and Nutrition, ed. 3, New York, Macmillan Company, 1926, p. 598. Rose, Mary S.: Laboratory Handbook for Dietetics, ed. 3, New York, Macmillan Company, 1929.

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**Lissauer's Dementia Paralytica.**—The usual case of dementia paralytica shows at autopsy diffuse atrophy of the cerebral cortex, which is most intense in the frontal lobes and progressively decreases in intensity toward the posterior poles of the hemisphere. Such a distribution of the atrophy is expected from the character of the clinical course, which offers no symptoms or signs of a focal nature. In contrast to these usual cases are the cases which during life show focal signs and at autopsy striking atrophy of certain convolutions. . . . Heretofore, dementia paralytica has been considered only a disease of the cortex, and all lesions found in the white matter have usually been thought to be secondary.—Merritt, H. H., and Springlova, M.: *Arch. Neurol. & Psychiat.* **27:**987 (May) 1932.

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# Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

## RECOLAC

A food for infants, containing soluble casein, lactalbumin, lactose, milk salts (all derived from fresh cow's milk), dextrins, maltose, salts, extracts of yeast and wheat embryo, animal and vegetable fats and cod liver oil; the whole so proportioned as to satisfy almost all nutritional requirements of infants; contains vitamins A, B, D and G.

*Manufacturer.*—Mead Johnson and Company, Evansville, Ind.

*Description.*—A food for infants, containing soluble casein (potassium caseinate), lactalbumin, lactose, milk salts, dextrins, maltose, salts, extracts of yeast and wheat embryo, oleo, coconut and cod liver oils; contains vitamins A, B, D and G.

*Manufacture.*—All milk used in the preparation of this product comes under inspection of the Chicago Board of Health and complies with its requirements. On receipt at the factory it is pasteurized by the usual standard "holding" process. The pasteurized milk, almost completely defatted by centrifugalization, is acidified with sufficient dilute phosphoric acid solution to precipitate the casein in small flocks. The casein is permitted to settle and the whey is removed by decantation.

The precipitated casein is washed with water by decantation and made neutral to phenolphthalein with potassium hydroxide solution, whereby the casein is converted to potassium caseinate. Recolac therefore contains potassium caseinate in place of calcium caseinate of ordinary milk.

The separated whey is treated with calcium hydroxide to precipitate the added phosphoric acid and soluble calcium salts of the milk; the precipitate is removed by filtration and centrifugalization.

The decalcified whey and calculated quantities of potassium caseinate, di-calcium phosphate, oleo, coconut and cod liver oils and Dextri-Maltose with vitamin B (essentially maltose, dextrins, extracts of yeast and wheat germ and mineral salts) are combined and homogenized under high pressure to disperse the fat in very fine globules. The homogenized mixture is concentrated under "vacuum" (2 inches of mercury) and dried by a "vacuum" (2 inches of mercury) drum drier method. Recolac, the final dry powder, is packed in tins and hermetically sealed in an atmosphere of nitrogen.

Glass-enamel tanks are used in the preparation of the whey and the potassium caseinate. Great care is exercised in the sanitation of all equipment.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 1.4 |
| Ash | 3.3 |
| Protein (N × 6.25) | 16.0 |
| Fat (ether extract) | 27.0 |
| Lactose (copper reduction method)* | 18.7 |
| Reducing sugars as maltose* | 17.4 |
| Dextrins (by difference)* | 16.2 |
| (proximate analysis of normal dilution—1 oz. + 7 oz. water) | |
| Ash | 0.4 |
| Protein (N × 6.25) | 2.0 |
| Fat (ether extract) | 3.4 |
| Carbohydrates | 6.5 |
| *p*H | 7.2 |
| *Analysis of Mineral Content* | |
| Calcium (Ca) | 0.25 |
| Magnesium (Mg) | 0.04 |
| Sodium (Na) | 0.30 |
| Potassium (K) | 1.03 |
| Iron (Fe) | 0.002 |
| Copper (Cu) | 0.00046 |
| Phosphorus (P) | 0.41 |
| Sulphur (S) | 0.04 |
| Chlorine (Cl) | 0.45 |

Reichert-Meissl number of Recolac fat, 2.8

* Calculated from analyses of component ingredients.

*Calorics.*—5.2 per gram; 148 per ounce.

*Micro-Organisms.*—The manufacturer guarantees the absence of pathogenic organisms.

*Claims of Manufacturer.*—Recolac reliquefied to normal dilution of 1 ounce of powder + 7 ounces of water forms a well balanced food for infants who are deprived of breast milk. It may be used as a complemental or supplemental feeding and is particularly desirable for the traveling mother. Recolac keeps well in the sealed can, is readily miscible in water, and is simple to use. The necessary accessory food factors, such as orange juice and cod liver oil, should be used when feeding Recolac.

## PURITY 2 LOAVES IN 1 BREAD

*Manufacturer.*—Purity Baking Company, Decatur and Pana, Ill.

*Description.*—A white bread made by the sponge dough method.

*Manufacture.*—The sponge dough ingredients, patent flour of southwest wheat, water, yeast, malt syrup, lard and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, dry skim milk and lard to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 34.8 |
| Ash | 0.8 |
| Fat | 1.4 |
| Protein (N × 6.25) | 9.4 |
| Crude fiber | 0.3 |
| Carbohydrates other than crude fiber (by difference) | 53.3 |

*Calories.*—2.6 per gram; 74 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## NICOLET BRAND GOLDEN SYRUP

(85 per cent corn syrup, 15 per cent refiners' syrup)

*Packer.*—D. B. Scully Syrup Company, Chicago.

*Distributor.*—Frank C. Schilling Company, Green Bay, Wis.

*Description.*—A table syrup; a corn syrup base (85 per cent) with refiners' syrup (15 per cent).

*Manufacture, Analysis, Calories and Claims of Manufacturer.*—See these sections for Banner Blue Golden Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

## LOUDON BRAND TOMATO JUICE

*Manufacturer.*—The Loudon Packing Company, Terre Haute, Ind.

*Description.*—Canned tomato juice; retains in large measure the vitamin content of the raw juice used; contains a small amount of added salt.

*Manufacture.*—The tomatoes are obtained from neighboring territory and are graded and inspected on sorting tables. Only the ripe better quality tomatoes are used for the juice. Most of the tomatoes are canned within eight to twelve hours after picking, the maximum time being eighteen hours.

The tomatoes are conveyed in sluices to squirrel cage washers and subjected to high pressure sprays which break up overripe or defective tomatoes, enabling their removal on the sorting belt. The washed tomatoes are carefully inspected, sorted and trimmed on conveyor belts, and bad tomatoes are discarded. The selected tomatoes are lightly scalded in a steam box and macerated in a water vapor atmosphere in cyclones which express the juice. The juice flows to holding tanks and is pumped in enamel lined pipes to "finishers," where it is forced through fine screens to eliminate coarse pulp. The juice outlet line from the holding tank extends to the bottom of the tank to avoid foaming and introduction of air, the tank never being emptied to a point at which the outlet line is exposed to the air. From the "finishers" the juice is pumped through enamel lined pipes to a "vacuum" tank, into which it is sprayed to expose a maximum surface to the "vacuum" of three inches mercury pressure. The juice is homogenized to prevent separation of insoluble matter, is conveyed into the bottoms of preheating tanks to avoid foaming and introduction of air, is quickly heated to 87 C., and, after salt is added, is automatically filled into cans at about 85 C. After sealing, the product is pasteurized (final temperature, 85 C.), quickly cooled and stored.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 95.1 |
| Total solids | 4.9 |
| Ash | 0.9 |
| Chlorides as NaCl | 0.7 |
| Fat (ether extract) | 0.1 |
| Protein (N × 6.25) | 1.0 |
| Reducing sugars as invert | 2.3 |
| Sucrose | none |
| Crude fiber | 0.2 |
| Carbohydrates other than crude fiber (by difference) | 2.4 |
| Acidity as citric acid | 0.3 |

*Calories.*—0.2 per gram; 6 per ounce.

*Vitamins.*—The use of mature tomatoes, the careful factory control, the continuous method of manufacture, the exposure of the fruit juice to an atmosphere of steam only in the factory equipment, and the withdrawal in the "vacuum" treatment of air naturally occurring in the juice assure maximum retention of the natural vitamin content.

*Claims of Manufacturer.*—This tomato juice is a good source of vitamins A and B and an excellent source of vitamin C; for infant feeding and general table use.

## HELMS OLYMPIC WHITE BREAD AND HELMS HOME LIKE BREAD

*Manufacturer.*—Helms Bakeries, Ltd., Los Angeles.

*Description.*—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, page 817); prepared from patent flour, water, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, sweetened condensed skim milk, salt, lard, sucrose, invert sugar and tartaric acid.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture (entire loaf) | 34.2 |
| Ash | 1.9 |
| Fat (Polenske-Grujic method, Leach "Food Inspection and Analysis," ed. 4, p. 343) | 2.4 |
| Protein (N. × 6.25) | 9.5 |
| Crude fiber | 0.2 |
| Carbohydrates other than crude fiber (by difference) | 51.8 |

*Calories.*—2.7 per gram; 77 per ounce.

*Claims of Manufacturer.*—A bread of good quality.

## SMACO (204) CONCENTRATED LIQUID HALF-SKIMMED MILK (STERILIZED)

*Manufacturer.*—S. M. A. Corporation, Cleveland.

*Description.*—Evaporated half-skimmed milk containing half as much milk fat as ordinary evaporated milk.

*Manufacture.*—See this section for SMACO (203) Concentrated Liquid Whole Milk (Sterilized) (THE JOURNAL, July 25, 1931, p. 248); half-skimmed milk is used instead of whole milk.

*Analysis* (submitted by manufacturer).—

| | per cent |
|---|---|
| Moisture | 77.2 |
| Total solids | 22.8 |
| Ash | 1.5 |
| Fat | 4.0 |
| Prote | 6.9 |
| Lactose (by difference) | 10.0 |
| pH | 6.4 |

*Calories.*—1.0 per gram; 28 per ounce.

*Micro-Organisms.*—See this section for SMACO (203) Concentrated Liquid Whole Milk (Sterilized).

*Claims of Manufacturer.*—This product is intended especially for infant feeding for use wherever an evaporated partially skimmed milk is indicated.

## PORTAGE BRAND GOLDEN CORN SYRUP

(85 per cent corn syrup, 15 per cent refiners' syrup)

*Packer.*—D. B. Scully Syrup Company, Chicago.

*Distributor.*—Portage Wholesale Company, Portage, Wis.

*Description.*—A table syrup; a corn syrup base (85 per cent) with refiners' syrup (15 per cent).

*Manufacture, Analysis, Calories and Claims of Manufacturer.*—See these sections for Banner Blue Golden Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

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SATURDAY, JUNE 25, 1932

## EARLY STAGES OF VITAMIN A DEFICIENCY

Early in the study of the effects of a lack of vitamin A in the diet, several striking and serious symptoms of this form of avitaminosis were brought to notice. The decline in weight, in the case of growing animals deprived entirely of this vitamin, established the belief that it is essential to nutritive welfare. When Osborne and Mendel, in 1913, described eye disease, now identified as xerophthalmia, as a frequent consequence of deprivation of vitamin A, and McCollum, in 1917, called attention to respiratory disturbances under the same conditions of an inadequate dietary regimen, the consideration of the possibility that shortage of vitamin A in the diet is of serious moment in human well being rapidly began to develop. Meanwhile the pathology of experimental avitaminosis, related to lack of vitamin A, began to be elucidated further. The keratinization of certain tissues was noted, culminating in the extensive observations of Wolbach and Howe at Harvard University showing widespread metaplasia of the cylindric, cuboidal or transitional type of epithelium to the squamous, keratinizing type. This is not due merely to inanition, which may bring about atrophy of tissues but not metaplasia. Infection has also been injected into the pathologic picture by several of the investigators. Furthermore, when there is vitamin A shortage in the diet of laboratory animals there are alterations in the desquamative changes in the vaginal epithelium so characteristic of the estrual rhythm.

It seems to be generally agreed that by the time the body's reserves of vitamin A have been depleted and growth ceases in the young, the experimental animals become more susceptible to bacterial infection. It is not easy, however, to demonstrate cogently in what way, if any, there is an actual lowering of resistance to the effects of micro-organisms. At a stage when the protective epitheliums are no longer normal, it is readily conceivable that the exposed defective membranes may fail to offer the usual protection against bacterial invasion. Some students of the subject have suggested that there may also be a humoral protective effect attributable to adequate provision of vitamin A. On such grounds, some writers have ventured without hesitation to describe vitamin A as an antiinfective agent. It would be of great importance if there were convincing evidence of such a property. Unfortunately, our knowledge of avitaminosis is still largely limited to observations on laboratory animals, although extreme situations, such as are represented by xerophthalmia, are gradually being discovered in the study of human disorders. For the moment, some of the most critical reviewers have restricted their enthusiasms to the tentative somewhat indefinite conclusion "that vitamin A is an even more important factor in the chemistry of food and nutrition than has previously been appreciated, for it must be supplied in liberal proportion not only during growth but in the food of the adult as well, if a good condition of nutrition and a high degree of health and vigor are to be maintained."[1]

Among the difficulties encountered is the circumstance that the incipient stages of avitaminosis are not at all well defined. McLester[2] has recently asserted that the interest which vitamins hold for the physician is not alone in their relation to certain well defined diseases such as scurvy, beriberi and rickets but rather in the fact that chronic vitamin deficiency produces numerous vague, borderline states of ill health which often puzzle the physician and disable the patient. These last are of far greater importance to the physician of today than the more clearly defined deficiency diseases. From this standpoint there is added interest in studies by Thatcher and Sure[3] at the University of Arkansas. They have become interested in the early stages and the incipient signs of vitamin A deficiency. Their animal experiments lead them to conclude that pathologic changes may take place in tissues before any definite signs of external symptoms are apparent. For example, metaplastic changes in the posterior part of the tongue, in the salivary glands, and in the respiratory and urinary tracts were found during early stages of vitamin A deficiency in a large proportion of animals that made normal growth, some of which showed incipient ophthalmia or persistence of the cornified stage of estrus as the only sign of vitamin A deficiency, and others of which showed no external signs of A avitaminosis. Bronchitis and pneumonia were also found in several animals that still made slight gains in weight before the termination of the experiment. Thatcher and Sure therefore suggest that metaplasia of epithelial structures in the respiratory tract of man possibly begins before definite external symptoms are evident, which later may be responsible for the respiratory disturbances, such as are found associated with the A avitaminosis—the common cold, bronchitis and bronchopneumonia. This is, let it be vigorously emphasized, a tentative hypothesis. It does not warrant the exploitation of common dietary sources or concentrates of vitamins as cures of colds or influenza; but these experiments represent a step in the direction of progress in elucidating what resistance and immunity may involve.

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[1] Sherman, H. C., and Smith, S. L.: The Vitamins, ed. 2, New York, Chemical Catalog Company, 1931.

[2] McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 2, Philadelphia, W. B. Saunders Company, 1931.

[3] Thatcher, H. S., and Sure, Barnett: Avitaminosis: III. Pathologic Changes in Tissues of the Albino Rat During Early Stages of Vitamin A Deficiency, Arch. Path. 13: 756 (May) 1932.

## THE ALLEGED DISTRIBUTION OF INSULIN

Not long after the discovery of insulin was announced, a widespread search was begun in many laboratories to ascertain the possible distribution of this potent and remarkable hormone of the pancreas. The upshot of these investigations was the publication of numerous claims of the rather widespread distribution of substances having insulin-like action. They were reported not only for animal tissues but also for plant products of varied sorts, ranging from oatmeal to onions. These records naturally led to an intensive search for easily obtainable substitutes for pancreatic insulin, since the preparation of the latter offered difficulties and involved considerable expense. The testing of insulin calls at present for experiments on animals; in comparison with many familiar chemical test reactions, it is a more laborious and less specific procedure. The current method depends primarily on the effects of insulin in producing a prompt hypoglycemia and, if the dose is adequate, characteristic hypoglycemic convulsions. It should be noted that the reports of the insulin-like products from plant tissues indicate some difference from the insulin of animal sources in that the action of the plant substances in lowering the content of blood sugar is often not immediate but delayed for a considerable period—sometimes twelve hours or more. The occasional reports of the presence of insulin in tissues of diabetic patients have been particularly confusing.

One difficulty in all investigations in this field lies in the intricacy of the extraction methods. In summarizing the confusing situation, competent critics[1] have pointed to a number of reasons why the results of the early work on the distribution of insulin and insulin-like substances are of no significance from the quantitative point of view. It was not then fully appreciated that some test animals may show a definite fall in blood sugar over the experimental period, and for this reason the results based on one animal are not satisfactory. A standard of comparison was not used in the assaying of insulin in most of the early work. In a number of the later papers that have appeared on the subject of the distribution of insulin, convincing evidence is not found that any hypoglycemia-producing substance was present in the extracts which were reported to yield positive results. When we add to these factors the possibility of the presence of a living agent which may cause hypoglycemia, the possibility that nonspecific toxic materials, which may produce liver damage and delayed hypoglycemia, may have been present, and the possibility of contamination of solutions by pancreatic insulin, it becomes apparent, the critics conclude, that the whole question of the distribution of insulin and insulin-like substances must be reopened, and that many if not all of the results obtained up to now, discarded.

Such a reinvestigation has been undertaken by one of the discoverers of insulin, Dr. C. H. Best, and his co-workers[1] at the University of Toronto. The intricate details need not be rehearsed here. Using a method of extraction which yields maximal amounts of insulin from pancreas, the Toronto physiologists have been unable to demonstrate the presence of an antidiabetic substance in other normal tissues from the dog or ox or in the tissues of diabetic dogs. After a critical appraisal of the evidence on record, Best and his associates believe that there is no evidence that any tissue other than pancreatic either produces or stores insulin.

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[1] Best, C. H.; Jephcott, C. M., and Scott, D. A.: Insulin in Tissues Other Than the Pancreas, Am. J. Physiol. **100**: 285 (April) 1932.

## SLEEP AND THE BRAIN CORTEX

In an exhaustive review of sleep, a subject that concerns the physician as well as the layman in many ways, Kleitman[1] of the University of Chicago remarked that the problem has yet to be solved. There is no authority but that of facts, and until isolated observations have been repeatedly confirmed they cannot be classed as established facts. We are so commonly accustomed to think of sleep as part of the physiology of the brain that we may fail to consider to what extent other parts of the body or their functions may be responsible for, or involved in, the more or less complete unconsciousness under discussion. Is the cerebral cortex an essential factor in sleep? In attempting to answer this important query, physiologists have been reminded of the published records indicating that decorticated animals can sleep. This was true, for example, in the classic observations of Goltz in 1892. He reported that dogs deprived of their cerebral cortex exhibited phenomena of sleep.

In this connection the distinctions that have been stressed by Szymanski[2] in interpreting the phenomena of unconsciousness may be recalled. He demonstrated conclusively that some animals have one long period of rest in twenty-four hours and that others have several such periods. He termed them monophasic and polyphasic animals. The polyphasic are the "lower" animals, which make little use of their distance receptors for obtaining information about what is going on around them. Szymanski points out, however, that even among the monophasic animals, including man, the young are polyphasic. In the case of adult man, interest centers in the monophasic manifestation often referred to as diurnal sleep, represented by the characteristic prolonged periods of unconsciousness and comparative inactivity. Dogs exhibit the same phenomena.

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[1] Kleitman, Nathaniel: Sleep, Physiol. Rev. **9**: 624 (Oct.) 1929.

[2] Szymanski: Arch. f. d. ges. Physiol. **171**: 324, **172**: 424, 430, 1918; Ztschr. f. allg. Physiol. **18**: 105, 1920.

In a reinvestigation of the possible existence and localization of a sleep center, Kleitman and Camille[3] of the University of Chicago Department of Physiology have observed that decorticated dogs have several periods of sleep alternating with periods of activity each twenty-four hours. Their activity consists of almost incessant walking in circles. The most constantly occurring period of sleep follows shortly on feeding. The conclusion is made that diurnal sleep in dogs depends on the presence of the cerebral cortex for its establishment and persistence. In other words, normal dogs can stay up all day and then sleep through the night, whereas decorticated dogs have half a dozen periods of sleep in twenty-four hours.

The Chicago physiologists accordingly believe that there is no conflict between the subcortical and the cortical theories of sleep. The first account for sleep in general, the second for the special diurnal type of sleep seen only in higher animals and in man. As Kleitman and Camille point out, diurnal sleep, developed around the twenty-four hour cycle of day and night, is thus a definitely cortical phenomenon, has its center or is localized in the cerebral cortex, and disappears when the cortex is removed. That explains, they add, why all those who study the sleep of higher animals and man cannot help but see the tremendous influence of cortical processes, habits and conditioned reflexes on the onset of sleep. In man the habit of going to bed at certain hours, and of waking up at a definite time each morning, is not inborn but acquired by experience. That the subcortical sleep tendencies are ever ready to exert their action is demonstrated by the fact that most people can fall asleep not only at their habitual bedtime but at almost any time, if a condition is brought about wherein the number of afferent impulses reaching the cerebral cortex is greatly reduced. After a meal the primordial tendency to sleep is especially powerful and asserts itself with great ease, if permitted to do so. As Kleitman has elsewhere pointed out, practically we are born into a social organization in which diurnal sleep is the universally accepted mode of sleeping. The new-born baby is a truly polyphasic creature, to use Szymanski's classification. The first habit the mother tries to develop in a baby is that of an unbroken night's sleep. As he gets older, other functions develop a periodicity that coincides with the enforced sleep periodicity. For instance, a temperature curve develops, with a minimum at night, and produces a disinclination to night activity. Even the modest tear apparatus stops its function at bedtime, producing dry eyes and favoring their closure. Attempts to influence or induce sleep may well be based on some of the fundamental facts now on record.

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[3] Kleitman, N., and Camille, N.: Studies on the Physiology of Sleep: VI. The Behavior of Decorticated Dogs, Am. J. Physiol. **100**: 474 (May) 1932.

## *Current Comment*

### INCREASING RATES OF GROWTH

The rapid development of the science of nutrition during the past three decades has been due, in no small measure, to the ready adaptability of the white rat to the experimental conditions required in investigations in this field. The details of its reproduction and life history, the physical measurements of the organs and systems, the rate of development and the nutritive requirements of this animal, have been studied intensively; the completeness of the pertinent data render the white rat a surprisingly well standardized piece of "apparatus" available for studies in nutrition. It has been observed during the past twenty-five years that the rate of growth of the species has increased considerably. Whereas the average weight of males at 100 days of age was 165 Gm. in 1906, the value for a large number of individuals of the same sex and age was 315 Gm. in 1928. An account of the most rapid rate of growth thus far observed in this species has recently been reported by Anderson and Smith.[1] With a group of twenty-one animals the average time required for increase in body weight from 60 to 200 Gm. was 23.3 days and from 60 to 300 Gm. 41.1 days. It is emphasized by the Yale investigators that there is nothing unique about their animals from the point of view of heredity but that the rapid growth was brought about by providing a favorable diet. The food given was a mixed ration containing liberal allowances of protein, vitamins and inorganic salts. These studies indicate that thus far the growth-limiting factor in the development of the laboratory white rat has been the nutritive environment rather than the growth impulse that is presumably characteristic of the species. The animals that have shown this extremely rapid growth are not abnormal; this is indicated by previous studies[2] in which it was shown that mature individuals of the same size have identical body measurements and proportions, regardless of the rate at which they grew. That this phenomenon of increasing rate of growth is being observed in certain groups of human subjects is evident from the literature on the subject during the past twenty-five years. One of the most striking accounts of increased size is that of Gray,[3] who described a group of private school boys which showed a rate of growth consistently greater than is found in the average individual of the same age. It would appear possible, therefore, to accelerate still further the rate of development in certain species. The question as to whether or not maximum growth is also optimal has been raised by Smith,[4] who points out that "the law of diminishing returns undoubtedly is operative in animal and plant economy, as well as elsewhere." Certainly the study of geology and of biology emphasizes the futility of mere great size. However, it cannot be disputed that the race has been greatly benefited by the application of just such nutritive principles as have first been shown to be of advantage in the development of experimental animals.

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[1] Anderson, W. E., and Smith, A. H.: Am. J. Physiol. **100**: 511, 1932.

[2] Outhouse, J. P., and Mendel, L. B.: Abstr. Div. Biol. Chem., Am. Chem. Soc., eighty-second meeting, 1931.

[3] Gray, Horace; and Nicholson, S. T.: The Tallest American Boys, J. A. M. A. **88**: 2022 (June 25) 1927.

[4] Smith, A. H.: Yale J. Biol. & Med. **4**: 551 (March) 1932.

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# Association News

## MEDICAL BROADCAST FOR THE WEEK

### American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 1:30 to 1:35 p. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The program for the week is as follows:

June 27. Hot Weather.
June 29. Independence Day Indiscretions.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 11:15 to 11:30 over Station WBBM.

The program for the week is as follows:

July 2. July Fourth Follies.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time, and is subject to change during the summer.

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# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

## COLORADO

**Society News.**—The Crowley County Medical Society was addressed in Ordway, May 10, by Dr. Earnest O. McCleary on "Puerperal Eclampsia." Dr. William M. Desmond reported a case of "Carcinoma of the Tongue."——At the meeting of the Las Animas County Medical Society, May 6, Dr. Walter L. Newburn, Trinidad, read a paper on "Cholecystitis and Cholelithiasis."——Dr. Johnson E. Naugle addressed the Northeast Colorado Medical Society in Sterling, April 14, on "The Böhler Treatment of Fractures." The society was addressed, May 12, by Drs. John S. Chase, Jr., and Arnold Minnig, Denver, on "Diagnosis and Treatment of Squint" and "Nonsurgical Treatment of Goiter," respectively.——"Spinal Anesthesia" was the topic discussed by Dr. George E. Rice, Pueblo, before the Otero County Medical Society, April 14.——The Pueblo County Medical Society was addressed, May 17, by Drs. Clarence E. Earnest and Harvey S. Rusk on sinus disease.

## CONNECTICUT

**Hospital News.**—The Arnold Pavilion for Children at St. Luke's Convalescent Hospital, Greenwich, was dedicated, May 21. The pavilion is two stories high and will provide for about fifty children. It was the gift of Mrs. Harriet M. Arnold, in memory of her husband, Hicks Arnold.

**New Health Officers.** — Connecticut *Health Bulletin* announces the following recent changes among health officers: Dr. John R. Tarrant as health officer of Portland, succeeding Dr. Donald J. MacGillivray; Dr. Theodore F. Foster, health officer of West Hartford, and James J. Charron, health officer of Putnam. West Hartford recently voted to operate its health department on a full time basis.

**Regulation for Bathing Establishments.** — The Public Health Council, state department of health, at its meeting, April 21, approved the adoption of a new sanitary code regulation for bathing establishments, effective June 1. The regulation will govern management of the grounds and appurtenances of any bathing establishment on or near any stream, natural or artificial pond, or tidal water where bath houses for the use of the public are maintained either free or for hire.

**Memorial Pavilion Opened.**—The Sarah Wey Tompkins Memorial Pavilion, with 139 beds for surgical and obstetric patients, was officially opened, June 18, at the New Haven Hospital. Funds for the pavilion were provided in a bequest to Yale University, by Mrs. Sarah Wey Tompkins, whose father, Dr. William C. Wey, practiced for half a century in Elmira, N. Y. Completion of the memorial increases the capacity of New Haven Hospital to 514 beds and 42 bassinets. The new six-story wing conforms in style to the architecture of the other buildings. Half of the beds are in single rooms, and the largest ward has eight beds. With the completion of the Tompkins Memorial, all of the outpatient and inpatient service of the New Haven Hospital will be concentrated in the same set of buildings adjoining the Yale University School of Medicine. In the gradual replacement of old buildings at the New Haven Hospital, the completed structures have cost more than $4,000,000.

## DISTRICT OF COLUMBIA

**Personal.**—Capt. William H. Bell, medical officer in command of the Naval Medical School, Washington, D. C., was an official delegate to the second session of lectures of the International Bureau of Documentation on Military Medicine, Liége, Belgium, June 23-25.——Dr. Arthur C. Christie, Washington, past president of the Medical Society of the District of Columbia, was elected president of the Washington Rotary Club at its annual meeting, May 25.

**District Bills in Congress.**—S. 1307 has been reported to the House, without amendment, authorizing an appropriation for the alteration and repair of the buildings of Eastern Dispensary and Casualty Hospital. H. R. 11638 has been passed by the House, amending the license fees law of the District of Columbia. Paragraph 8 of the bill provides: "Apothecaries or druggists shall pay a license fee of $12 per annum. Every person who sells patent medicines, or manufactures, compounds, sells or dispenses medicines by prescription or otherwise from a located place of business shall be regarded as an apothecary or druggist."

**Honorary Degrees Conferred.**—The honorary degree of doctor of science was conferred by George Washington University on Dr. Frederick Parker Gay, professor of bacteriology, Columbia University College of Physicians and Surgeons, June 15, at the commencement exercises. Similar degrees were conferred on Dr. G. Canby Robinson, dean, New York-Cornell Medical Center, and Dr. Alan Mason Chesney, dean and associate professor of medicine, Johns Hopkins University School of Medicine. Because of the emphasis which the university has placed on the further upbuilding of its school of medicine in the past year, the commencement exercises centered about medical education. Dr. Gay delivered the commencement address, on "Significance of Science in Medicine."

## ILLINOIS

**Typhoid Fever in Springfield.**—Four typhoid carriers were detected recently, when the development of sixteen cases of typhoid in Springfield led to a search for carriers among milk handlers and certain food handlers of the city. Two of the carriers were employed by the same milk dealer, one being a butter wrapper and the other an ice cream dispenser. Another made ice cream, which he sold from his own stand, while the fourth carrier delivered milk from a wagon. The state health department believes that the discovery of these carriers solves the outbreak, as no new cases have developed.

### Chicago

**Society News.**—Dr. Austin A. Hayden became president-elect of the Chicago Medical Society at a meeting, June 14, and Dr. Charles H. Phifer was reelected secretary. At the annual dinner, June 15, Dr. Herman L. Kretschmer was installed as president of the society, succeeding Dr. John R. Harger.

**Personal.**—The Cross of a Chevalier of the Order of the Crown of Italy was conferred on Dr. Louis D. Moorhead, dean and professor of surgery, Loyola University School of Medicine, June 13. The decoration was conferred by Giuseppe Castruccio, Italian consul general in Chicago.——Dr. Earl B. Ritchie has resigned as assistant professor of dermatology at the Graduate School of Medicine of the Division of Biological Sciences, University of Chicago.

**The Annual Rush Banquet.**—Seven members of the class of 1882 were guests of honor at the annual alumni banquet of Rush Medical College, June 14. They were Drs. Malcolm L. Harris, Chicago, Past President, American Medical Association; John M. Dodson, formerly Director, Bureau of Public Health and Instruction, American Medical Association; Frederick G. Stueber, Lima, Ohio; John C. Wright, Antigo, Wis.; Elmore S. Pettyjohn, Chicago; Zalmon E. Funk, Santa Rosa, N. M., and John P. Lord, professor of orthopedic surgery, University of Nebraska College of Medicine, Omaha. Replies were received from nineteen other members of the class who were unable to attend. Of the 181 members of the class of 1882, 49 are known to be living; 85 are dead, and the remainder are at addresses unknown. Dr. Dodson gave the Alumni Memorial Address, on "Delaskie Miller." This was a eulogy of Dr. Miller, who was professor of obstetrics at Rush from 1859 to 1899. He was also a member of the board of trustees. He established the Delaskie Miller Prize, consisting of a fitted obstetric bag, which is awarded to the student doing the best work in obstetrics and gynecology. The toastmaster at the banquet was Dr. Clifford G. Grulee. Dr. Edwin M. Miller, class of 1913, president of the association, spoke. Responses were given by Drs. Morris Fishbein, class of 1912, editor of THE JOURNAL, and Donald R. Laing, class of 1932. Speakers for Rush and for the University of Chicago were Dr. Ernest E. Irons, dean, Rush Medical College, and Frank R. Lillie, Sc.D., dean of the Division of the Biological Sciences of the university. Dr. Charles A. Parker, class of 1891, was elected president of the alumni association.

## INDIANA

**Society News.**—Dr. Charles Kenneth Riddle, Cincinnati, addressed the Dearborn-Ohio County Medical Society, May 26, in Lawrenceburg, on diabetes.——At the May 25 meeting of the Ripley-Decatur County Medical Society in Osgood, Dr. Vincent A. La Penta, Indianapolis, spoke on "Gastric and Duodenal Ulcer."——"Skull Fracture and Brain Injuries" was the subject discussed by Drs. Jewett V. Reed and Charles F. Thompson, Indianapolis, before the Lawrence County Medical Society, Bedford, May 4.

**Well Baby Clinic.**—An anonymous gift of $5,500 to provide for the establishment of a well baby clinic at the University of Indiana School of Medicine, Indianapolis, was announced in newspapers, June 1. The clinic, which will be equipped and maintained at the Coleman Hospital for three years through this gift, will be connected with the department of pediatrics, of which Dr. Matthew Winters is the head. It will be open on Wednesday of each week for the examination of babies and will be available to mothers unable to pay. The purposes of the clinic are to instruct the medical school students in the care and development of normal children and to educate mothers in the care and feeding of infants. Dr. Lyman T. Meiks will be in direct charge.

## IOWA

**Summer Round-Up Clinics.**—Immunization against diphtheria was the theme during the summer round-up of preschool children at fifteen centers, conducted by the Des Moines Parent-Teachers Association. The first injection of diphtheria toxoid was offered at each clinic with the announcement that the second dose might be obtained from the family physician or from the city health officer at a specified time. This activity is the first step in the program of a committee recently appointed by the president of the Polk County Medical Society, Dr. Simon E. Lincoln, Des Moines, to promote the plan for immunization of children against diphtheria. This committee is composed of Drs. Fred Moore, Addison C. Page and Harry E. Ransom. The second step in the immunization program will be the protection of babies in attendance at feeding clinics conducted by the Public Health Nursing Association. The bulletin of the Des Moines Academy of Medicine and the Polk County Medical Society states that diphtheria has been increasing in Polk County during the past two years.

## KANSAS

**Society News.**—The Sedgwick County Medical Society was addressed, May 17, by Dr. Ray A. West on "Biological Tests for Pregnancy—Review of Literature and Presentation of New Technic."——The Wyandotte County Medical Society was addressed, May 17, by Drs. Tony G. Dillon and Oscar W. Davidson on hematuria and pyuria, respectively.——The May issue of the bulletin of the Sedgwick County Medical Society is called the Dorsey Honor Number in memory of the late Dr. Jacob G. Dorsey.——The Decatur-Norton Counties Medical Society was addressed, April 14, by Drs. E. F. Steichen, Lenora, on "Use of Local Anesthesia in the Reduction of Fractures"; Frank Wayne Brewster, Oberlin, "Duodenal Stasis," and Jesse S. Potekin, Hoxie, "Arthritis." Dr. Brewster presented a film on "Infections of the Hand."——Dr. Clifford L. Hooper, Dodge City, addressed the Ford County Medical Society, April 8, on "State Medicine."

## MARYLAND

**Personal.**—Dr. William H. Welch, director emeritus of the Institute of the History of Medicine, Johns Hopkins University, Baltimore, received the honorary degree of doctor of science from New York University at its commencement, June 8.——Dr. Valcoulon L. Ellicott has been appointed deputy state health officer and full time health officer of Montgomery County, succeeding the late Dr. William T. Pratt, Rockville, effective April 15.

**Investigation of Food Poisoning.**—The Baltimore City Health Department recently organized a "team" to investigate cases of food poisoning. R. S. Craig, director, bureau of chemistry and food, is in charge of this group. Others on the "team" are Ferdinand A. Korf, assistant director of the bureau of chemistry and food and in charge of the food division; Dr. Ferdinand O. W. Reinhard, director, bureau of communicable diseases; Dr. William H. F. Warthen, director, bureau of child hygiene; Leroy Ewing, director, bureau of bacteriology, and H. R. Broll, chief of the division of chemistry.

**Change in Service at City Hospitals.**—Twenty-four hour service for the admission in the hospitals of acutely ill patients, obstetric patients and persons suffering from tuberculosis and venereal diseases will be installed in Baltimore City hospitals as soon as practicable, in accordance with the recent action of the board of supervisors of city charities, which has charge of the hospitals. Under this plan the health department will deal directly with the hospitals when seeking to have a patie admitted, instead of through the supervisors of the city char ties. Requests from the department for hospitalization fo tuberculous, maternity or venereal disease cases will be give priority over other cases, so far as there may be vacant and available beds at the city hospitals. It is also planned to install, as soon as possible, thirty beds for the hospitalization of patients with acute venereal diseases. Under the new arrangement, the city department of health will continue its obstetric delivery service until October, 1933, when the work will be taken over by the staff of the hospitals. These changes, which have been approved by the board of supervisors, were recommended, May 20, at a conference held by the president of the charities board, the city director of health and the superintendent of the hospitals. It is expected that the Baltimore City hospitals and the department of health will thus be brought into closer cooperation.

## MASSACHUSETTS

**Hospital News.**—The new Winthrop Hospital, Winthrop, was to have been opened for patients about March 1. It has a bed capacity of fifty, an increase of twenty-six over the old institution housed in wooden frame buildings.

**Society News.**—Dr. William E. Browne, Boston, was elected president of the Massachusetts Society of Examining Physicians at its annual meeting, April 27, in Boston, and Dr. William Pearce Coues, secretary. The speakers at this meeting included Drs. George V. Foster, Pittsbugh, on "Treatment of Compound Fractures," and Henry C. Marble, "Volkmann's Contracture."——The New England Heart Association conducted a cardiac course on "Chronic Myocarditis," June 1; the participating physicians were Drs. Shields Warren, Henry A. Christian, Henry Jackson and Francis W. Palfrey.——At the annual meeting of the Worcester District Medical Society, May 11, Dr. Edwin R. Leib, Worcester, was elected president. Dr. Walter C. Seelye, Worcester, gave the annual oration, on "Congenital Pyloric Stenosis."

## MICHIGAN

**Home for Incurable Cancer Patients.**—Mercy Hall, a free home in Detroit for incurable cancer patients too poor to pay for treatment, is now located in the thirty-room residence of the late Judge G. S. Hosmer, which has been given rent free by Miss Dorothy Brown. Opened for the first time in October, 1931 (THE JOURNAL, Nov. 14, 1931, p. 1473), Mercy Hall has cared for thirty-one cancer patients, has given five operations, and has taken charge of the burial of one patient. At present its eleven beds are occupied. The institution is operated by the Society of Perpetual Help, a group of five Detroit women, with no remuneration. It is one of three organized for the same purpose in the United States, it is reported. Dr. Louis J. Morand is president of the corporation and head of the medical staff. Mercy Hall was open to public inspection, June 5. Previously it occupied quarters in a twelve-room house at 312 Watson Street. It is understood that Detroit physicians have volunteered their services to this enterprise, through the Commission for Cancer Control of the Detroit Board of Health and the corresponding committee of the Wayne County Medical Society.

## MINNESOTA

**Dr. Buie Awarded Medal.**—The Southern Minnesota Medical Society presented its gold medal to Dr. Louis Arthur Buie, associate professor of proctology, University of Minnesota, Graduate School of Medicine, Rochester, May 25, for research in the treatment of intestinal disorders. The medal, which is awarded annually, was presented at the closing session of the Minnesota State Medical Association.

**Schuster Tries Another State.**—George Schuster pleaded guilty, May 9, to practicing healing without a basic science certificate in Minneapolis and was fined $100. He paid the fine. The state board reported that Schuster admitted that he had been convicted twice previously of practicing medicine without a license: in 1921 at Youngstown, Ohio, and, in 1928, at Chicago. His illegal practice of healing in Minnesota became known following his complaint in Chicago that one William W. Blyth swindled him out of $2,050 for a fake medical license. Schuster claimed to have been ordained a German Lutheran minister in 1909 at Pittsburgh. He also claimed to be a member of a naturopathic association.

## NEBRASKA

**Society News.**—Dr. Arthur D. Dunn, Omaha, addressed the May meeting of the Madison Six-County Medical Society, West Point, on "Relationship of Paranasal Sinusitis to Systemic Disease."——Drs. Adolph Sachs, Omaha, and Floyd S. Clarke addressed the Otoe County Professional Society, Nebraska City, May 9, on agranulocytosis and pneumonia in children, respectively.——At a meeting of the Cheyenne-Kimball-Deuel Counties Medical Society, Chappel, May 2, Drs. Charles F. Heider and Edward Stevenson, North Platte, spoke on "Diagnostic Problems in Kidney Lesions" and "Cerebrospinal Meningitis in Children," respectively.

**Dr. Long Honored.**—Dr. Francis A. Long, Madison, editor of the *Nebraska State Medical Journal*, was guest of honor at a dinner given by the Madison Six-County Medical Society, April 15, in Norfolk, commemorating his fiftieth year in medical practice. Dr. Benjamin F. Bailey, Lincoln, was toastmaster and the speakers were Drs. John E. Summers, John P. Lord, Albert F. Tyler and Byron B. Davis, all of Omaha; Roy B. Adams, Lincoln, and Morris Nielsen, Blair. A fountain pen desk set was presented to Dr. Long. A native of Pennsylvania, Dr. Long moved west with his parents when he was 18 years old and was graduated from the Medical Department of the University of Iowa in 1882, settling in Madison shortly afterward. Dr. Long was one of the founders of the Elkhorn Valley Medical Society and served as its third president. In 1906-1907 he was president of the Nebraska State Medical Association. He first advocated the creation of a state journal. He has served continuously since 1916 as chairman of the publication board and has been editor since 1920.

## NEW JERSEY

**Annual Clinics.**—The staff of Hackensack Hospital, Hackensack, presented its third annual program of clinics for physicians, May 23-27. Demonstrations were held in pediatrics, fractures and orthopedics, otolaryngology, obstetrics, gynecology, medicine, surgery, dentistry and laboratory methods. Dr. Harrison B. Wilson was chairman of the demonstration committee, which included also Drs. Howard M. Meyer and Spencer T. Snedecor and Miss Mary Stone Conklin, superintendent of the hospital.

## NEW YORK

**Study of Health Habits.**—A state-wide study of the health habits of 3,500 school children has been made during the current school year under the supervision of the health and physical education division of the state education department for the purpose of obtaining information to be used as a basis for a new state guide in health teaching for the kindergarten and first six grades. The department prepared a check list of 600 questions covering all phases of health behavior of children in and out of school. Seventeen hundred teachers in fifty-four communities were asked to select two children for observation during school hours for six weeks. The study was then carried into the homes in order to have a twenty-four hour record of the children's health habits. The entire study was to be made without the children's knowledge. The data for about 3,500 children have now been turned in to the state department for analysis, after which the returns will be used in setting up objectives for health education.

**Society News.**—Dr. George M. MacKenzie, Cooperstown, was elected president of the New York State Association of Public Health Laboratories at the annual session, May 23.——Drs. Thomas I. Tyrell and Harold P. McGan addressed the Medical Society of the County of Albany, June 10, on "Fractures of the Skull and Newer Methods of Treatment" and "Medical Aspects of Dysmenorrhea," respectively.——Dr. Charles H. Mayo, Rochester, Minn., addressed a joint meeting of the Broome County Medical Society, the Binghamton Academy of Medicine and the Binghamton Dental Society, in Binghamton, June 17, on infections with special reference to focal types and on elective localization and mutation of bacteria.——Drs. Thomas Ordway and Don Morse Griswold, both of Albany, addressed the Schoharie County Medical Society, Middleburg, May 2, on "Diagnosis and Treatment of Pneumonia" and "Medical Ethics," respectively.——Dr. Alvan L. Barach, New York, gave an address on the therapeutic use of oxygen in cardiorespiratory diseases before the Sullivan County Medical Society in Liberty, May 11.

### New York City

**Hospital News.**—The fortieth anniversary of the incorporation of the Jamaica Hospital was observed with a dinner dance, April 13, at the Waldorf-Astoria Hotel.——Irvington House, a convalescent home for children with heart disease, with a capacity of 150 beds, was dedicated, May 25, at Irvington-on-Hudson. It is said to be the fifth convalescent home in the metropolitan area.——The marine roof on the new wing of the New York Postgraduate Medical School and Hospital was opened, May 26.——A clinic for the treatment of children injured at birth has been opened at the Neurological Institute, Columbia University Medical Center, under the direction of Dr. Earl R. Carlson.

**New Hospital.**—The new nine-story building of the Bronx Hospital, completed in 1930 and unoccupied since that time because of financial difficulties, was opened, June 12. The building, which has a capacity of 310 beds, represents an investment of $2,500,000. One floor is devoted to private rooms, another to semiprivate rooms and one to rooms for children. There are no large wards, but ward patients are cared for in small units, their beds separated by curtains. The hospital has five operating rooms, five laboratories and a research laboratory for general investigative work. The old hospital building, directly across Fulton Street, will be used as a dispensary.

**Prizes to Medical Graduates.**—Two members of the graduating class and one graduate of 1920 were awarded prizes for meritorious work in medicine at the annual commencement of Columbia University College of Physicians and Surgeons. Robert Lloyd Windsor won the Thomas F. Cock Prize, the annual income from a fund of $1,000, for a thesis on puerperal fever. Henry Scott Waters was awarded the Dr. William Perry Watson Prize in Pediatrics, the annual income from a fund of $5,000, for notable work in the study of diseases of infants and children. Dr. Raphael Kurzrok, a 1920 graduate of Columbia, was awarded the Joseph Mather Smith Prize, the annual income from a fund of $3,500, for achievements in the application of biochemistry to the problems of sterility.

## NORTH CAROLINA

**University News.**—Dr. Ralph Pemberton, Philadelphia, gave a clinic on arthritis at the Duke Hospital of Duke University School of Medicine, Durham, April 8. A clinic on cancer was conducted at the hospital, April 15, by Dr. Warren H. Lewis, Carnegie Institution of Washington, Washington, D. C. Dr. Ernest W. Goodpasture, Nashville, Tenn., lectured at the hospital, April 22, on "Cytotropic Viruses."

## OHIO

**Personal.**—The University of Cincinnati at its fifty-fourth annual commencement, June 11, conferred the honorary degree of doctor of laws on Dr. George J. Heuer, who recently resigned as Holmes professor of surgery in the college of medicine to become surgeon-in-chief of the New York Hospital and professor of surgery at Cornell University School of Medicine, New York (The Journal, Feb. 21, 1931, p. 621). Dr.

Johnson McGuire, instructor in the college of medicine, has been appointed assistant professor of medicine, effective July 1. ——Dr. Morris C. Tarr, who has practiced medicine fifty years in Wellsville, was the guest of honor at a banquet sponsored by the Kiwanis Club of Wellsville, May 12. A gold watch was given to Dr. Tarr.

## PENNSYLVANIA

**Society News.**—Drs. Herbert G. Wertheimer and Andrew P. D'Zmura, among others, addressed the Allegheny County Medical Society, Pittsburgh, at the final meeting of the season, June 21, on treatment of erysipelas and the clinical value of electrocardiography, respectively.

**Five Chiropractors Convicted.**—Five chiropractors of Harrisburg were convicted in the Dauphin County Court, June 2, of practicing medicine without a license. Fines were imposed and all were placed on probation for three years. Robert W. White was fined $250 and costs and the remaining four were fined $100 each after pleading nolle contendere. The latter were W. Ray Burns, Howard A. Von Neida, O. D. Shankland and Henry Wohlgemuth. Hon. Robert R. Lewis, Coudersport, was the presiding judge.

### Philadelphia

**University News.**—Dr. John M. T. Finney, Baltimore, delivered the commencement address at the Woman's Medical College of Pennsylvania, June 8. Dr. Elise S. L'Esperance, New York, addressed the alumnae association, June 7, on "The Relation of Tuberculosis to Hodgkin's Disease." Dr. Catharine MacFarlane, Philadelphia, became president of the association and Dr. Mary Bickings Thornton, Philadelphia, president-elect.

**Society News.**—Drs. Frederic Maurice McPhedran, Philadelphia, and James J. Reilly, Camden, N. J., among others, addressed the Philadelphia Pediatric Society, June 14, on "Artificial Pneumothorax in the Childhood Types of Tuberculosis" and "Still's Disease," respectively.——Dr. Walter S. Cornell, medical director of the Philadelphia public schools, has been chosen president-elect of the Philadelphia County Medical Society. Dr. Charles F. Nassau now is the president.

**Personal.**—The honorary degree of doctor of laws was conferred on Dr. William N. Parkinson, dean of Temple University School of Medicine, at the annual commencement of Villanova College, Villanova, Pa.——Dr. Paul J. Pontius received the honorary degree of doctor of science at the commencement exercises of Bucknell College, Lewisburg, Pa., June 6.—The honorary degree of doctor of laws was conferred on Dr. William Wayne Babcock at the commencement exercises of Temple University.——Dr. Samuel Horton Brown has been appointed a member of the State Council for the Blind by Governor Pinchot.

## RHODE ISLAND

**State Medical Election.**—Dr. Charles S. Christie, West Warwick, was named president-elect of the Rhode Island Medical Society at the annual meeting, June 2, and Dr. Norman D. Harvey, Providence, became president. Dr. James W. Leech, Providence, was reelected secretary.

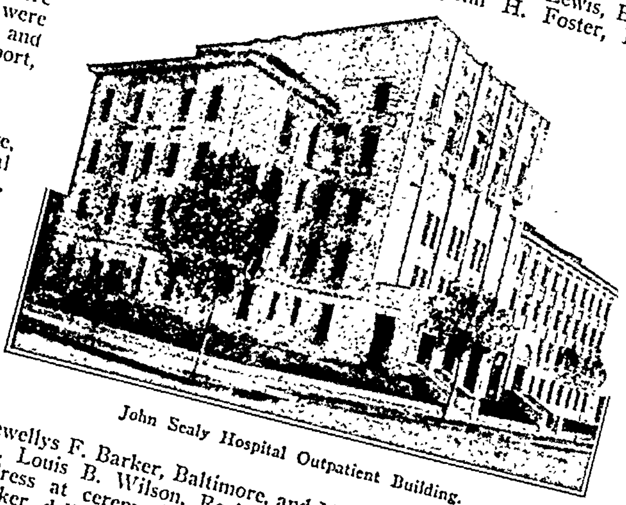
## TENNESSEE

**Society News.**—Drs. Virgil E. Simpson, Louisville, Ky., and Milton A. Gilmore, Hopkinsville, Ky., addressed the Montgomery County Medical Society, Clarksville, at a meeting, May 18, at which physicians of Christian and Todd counties (Kentucky) were guests.——Dr. Oval N. Bryan, Nashville, was elected president of the Middle Tennessee Medical Association at a meeting in Sparta, May 5-6.——Dr. William Oscar Baird, Henderson, was elected president of the West Tennessee Medical and Surgical Association at the recent annual meeting in Jackson. Dr. Isaac A. McSwain, Paris, secretary for more than forty years, was reelected.

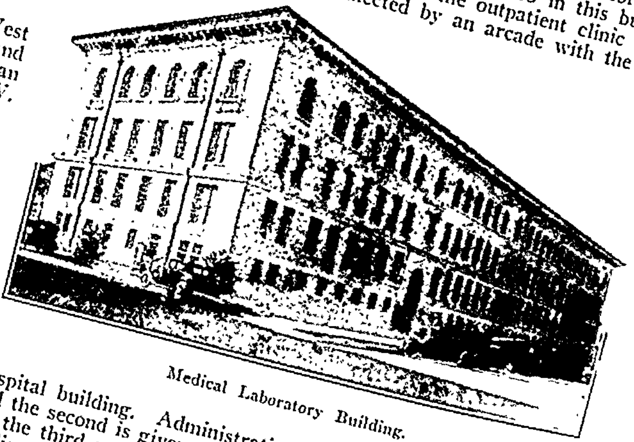
**Health at Memphis.**—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended June 11, indicate that the highest mortality rate (18.1) appears for Memphis and the rate for the group of cities as a whole, 10.8. The mortality rate for Memphis for the corresponding week last year was 13.3 and for the group of cities, 10.7. The annual rate for the eighty-five cities was 12.2 for the twenty-three weeks of 1932 as against a rate of 13.1 for the corresponding period of 1931. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

## TEXAS

**New Medical Buildings at the University.**—Three new buildings were dedicated at the University of Texas School of Medicine, Galveston, May 30-31, in connection with the annual graduating exercises. The buildings, which are a medical laboratory, the John Sealy Hospital Outpatient Building and the Rebecca Sealy Residence for Nurses, were erected by the board of regents of the university and the trustees of the Sealy and Smith Foundation at a cost of about $2,500,000. The first day was devoted to clinics and scientific addresses with the following guest lecturers, among others: Drs. Oscar H. Plant, Iowa City; Edward H. Cary, Dallas; Dean Lewis, Baltimore; Rudolph Matas, New Orleans; John H. Foster, Houston; Lewellys F. Barker, Baltimore, and Marvin L. Graves, Houston. Dr. Louis B. Wilson, Rochester, Minn., made the dedicatory address at ceremonies in the morning of May 31, and Dr. Barker delivered the commencement address in the evening. The new laboratory building has four floors. It contains laboratories for histology, embryology, pathology, anatomy and experimental surgery. In addition, there are a museum of surgical pathology of 2,000 specimens and a museum of general pathology of 3,000 exhibits. A library with space for 60,000 volumes and two large lecture halls are also in this building. The five-story building erected for the outpatient clinic of the John Sealy Hospital is connected by an arcade with the main hospital building. Administrative offices are on the first floor, and the second is given over to x-ray equipment and to surgery. On the third are laboratories for basal metabolism and electrocardiography and clinics for ophthalmology, otolaryngology, obstetrics and gynecology. Laboratories, amphitheaters and the mortuary room occupy the fourth floor, and the fifth is used for animal houses, supplies and storage of x-ray films. The nurses' residence has rooms for 165 nurses, an auditorium seating 250 persons and a number of classrooms.



John Sealy Hospital Outpatient Building.



Medical Laboratory Building.

## WASHINGTON

**Society News.**—At the final meeting of the season, speakers before the King County Medical Society were Drs. William B. and Charles R. McCreery, Tacoma, on "The Surgical Attitude Toward the Liver and Gallbladder in 1932"; Siegfried F. Herrmann, Tacoma; "Newer Values in the Application of the Biopsy," and Darrell G. Leavitt, Seattle, "Treatment of Simultaneous Fractures of Tibia and Fibula." Dr. George W. Freeman, Seattle, reported a case of celiac disease.

### GENERAL

**Surgical Journal for the South.**—A new quarterly journal entitled the *Southern Surgeon* was launched in April as the official organ of the Southeastern Surgical Congress. It will be devoted for the present to the publication of papers presented at the annual meetings of the congress. Dr. Launcelot Minor Blackford, Atlanta, is editor and the following surgeons make up the editorial board: Drs. Frank K. Boland, Edgar G. Ballenger and Charles W. Roberts, Atlanta; Hubert A. Royster, Raleigh, N. C.; Willis C. Campbell, Memphis; Rudolph Matas and C. Jeff Miller, New Orleans; William D. Haggard, Nashville; J. Shelton Horsley, Richmond, Va.; Hugh H. Young, Baltimore, and W. W. Harper, Selma, Ala.

**Medical Bills in Congress.**—*Changes in Status:* S. 572, the Jones bill providing for "federal cooperation" with the several states in promoting the welfare and hygiene of mothers and children, was reached twice on the Senate calendar during the week ended June 18, but consideration of the bill was again prevented by Senator King, Utah. S. Res. 26, proposing to change the name of the Senate Committee on Pensions to the Committee on Veterans' Affairs, was debated in the Senate, June 13 and June 15, but no action was taken on the resolution. H. R. 4743 has been reported to the Senate, without amendment, providing for federal subsidies for the promotion of vocational rehabilitation of persons disabled in industry or otherwise (S. Report 821).

**Special Board for Dermatology.**—The American Board of Dermatology and Syphilology has recently been formed to conduct examinations and issue certificates to physicians who are considered qualified to practice as specialists in those subjects. The new board is similar to the boards previously formed for the specialties of ophthalmology, otolaryngology and obstetrics and gynecology. It has eight members, four elected from the American Dermatological Association and four from the Section on Dermatology and Syphilology of the American Medical Association. Officers are Drs. Howard Fox, New York, president; William H. Mook, St. Louis, vice president; Clarence Guy Lane, Boston, secretary, and George M. MacKee, New York, treasurer. Other members are Drs. Jay F. Schamberg, Philadelphia; Howard Morrow, San Francisco; Harold N. Cole, Cleveland, and Arthur W. Stillians, Chicago. The board expects to hold its first examinations during the coming year.

**Plan Second Mental Hygiene Congress.** — The second International Congress on Mental Hygiene will be held in Paris, France, in 1935, it was announced following the first annual meeting of the governing board of the International Committee for Mental Hygiene, held in New York in April. Clifford W. Beers, secretary of both the national and the international committees, is now in Europe making preliminary arrangements. Dr. William Alanson White, Washington, D. C., was elected president and the following were elected vice presidents: Drs. Charles F. Martin, Montreal, for Canada; Joseph Genil-Perrin, Paris, for France; Robert Sommer, Giessen, for Germany; Giulio C. Ferrari, Bologna, for Italy; Adolf Meyer, Baltimore, for the United States, and Sir Maurice Craig, London, for Great Britain. Thomas W. Lamont, New York, is treasurer; Dr. Clarence M. Hincks, New York and Toronto, chairman of the executive committee, and Orlando B. Willcox, New York, chairman of the finance committee.

**Prevalence of Smallpox in 1931.** — Although the total number of cases of smallpox reported in the United States declined from 43,694 in 1930 to 26,000 in 1931, states of the north central and western sections of the country still show a heavy incidence of the disease, according to recent statistics. At least 86 per cent, or 22,413 of the cases, occurred in nineteen states of that section. In fifteen states of the Atlantic seaboard with approximately the same population, only 1,063 cases occurred. The states in which smallpox was most prevalent, amounting to more than 1 case per thousand of population in Kansas and South Dakota, are in general those in which the value of vaccination is not recognized, while in the Eastern states vaccination is the general practice. Certain cities and towns showing high prevalence were listed in the report. In Fort Scott, Kan., 128 cases occurred, which would mean a rate of 1,188 cases per hundred thousand of population; in Helena, Ark., 85 cases, a rate of 1,035, and in Bennington, Vt., 74 cases, a rate of 998; that is, 1 out of every 100 of the population was infected during the year.

# Foreign Letters

## LONDON

(*From Our Regular Correspondent*)

May 28, 1932.

### Tuberculosis and Literary Genius

The number of great writers who have suffered from tuberculosis has long been a subject of remark. Some authorities have held that the disease has an effect in promoting mental development. At the Congress of the Royal Institute of Public Health, Dr. S. Vere Pearson, physician to Mundesley Sanatorium for Tuberculosis, delivered an address on the psychology of the consumptive. Referring to such authors as Tchekov, Stevenson, Keats, Elizabeth Browning and D. H. Lawrence, he said that some people ascribed their genius to the stimulating powers of the toxins of tuberculosis. Undoubtedly a sort of restless agitation was produced in certain phases of pulmonary tuberculosis. There was also a feeling of apprehension lest life should be shortened. Both the apprehension and the restlessness might act as a stimulus to production and particularly to the production of authors, who could pursue their calling without much bodily exertion. But the reactions of well known writers to the misfortunes and inconveniences of consumption had been much exaggerated, especially in the case of Stevenson and Lawrence. Authors as much as other persons reacted much more strongly to influences of their environment than to those due to ill health. Lawrence's reactions to his early home life, his marriage, the war and other matters had a greater effect on his character and writings than all the consequences of the prolonged trouble he had with his health. Most of the well known authors who had died from consumption had not had much good treatment for it. That was largely due to their temperaments and the circumstances in which they were placed. Lawrence always resisted the receipt of proper advice from an experienced physician until shortly before his death. Of all modern writers he seemed to have understood best the connection between mental upsets and ill health. At the same time it was erroneous to ascribe much of the peculiarity of his writings to his being a sufferer from tuberculosis. Dealing with the beneficial effects of happiness on the disease, Dr. Pearson referred to the case of Mrs. Browning. In 1842 it was considered a feat for her to be able to walk across a room. Four years later she married Browning and her happy life enabled her to live until 1861. It might be said in criticism of Dr. Pearson's interesting address that he somewhat misses the point, which is not the effect which the trouble of tuberculosis has in molding the writings of authors, but that the toxins of the disease act in some way as a stimulus to the brain in the production of works of the imagination. The list of writers who have suffered from tuberculosis, some, such as Keats, the Brontës and Stevenson, supremely great, is so long as to suggest something more than coincidence.

### Discussion on the Teaching of Obstetrics

In a previous letter (THE JOURNAL, April 30, p. 1577) was reported the criticism by leading teachers of medical education. They considered that the main fault was the overburdening of the curriculum. Now the question of the teaching of obstetrics has been taken up at the Royal Society of Medicine in the Section of Obstetrics and Gynaecology by well known teachers. Mr. Eardley Holland of London Hospital, in opening the discussion, referred to the report of a committee appointed in 1919 to inquire into the teaching of obstetrics and gynecology. No fault was found with the systematic teaching, but the practical instruction was condemned, chiefly owing to lack of facilities for inpatient teaching. An expansion of hospital accommodations for maternity cases was recommended. All that the schools could hope to do was to turn out a reasonably safe practitioner of midwifery, not an obstetric specialist. It was the custom to decry systematic lectures, but he believed in their value, because a difficult subject could be obtained much more vividly than by reading a textbook. As to clinical teaching, he favored a six months course. He found students wofully ignorant of the anatomy and physiology of reproduction, and much of his time was occupied in teaching a student what he should have learned when studying anatomy and physiology. More use should be made of the phantom, on which students should practice maneuvers daily under supervision.

Mr. L. Carnac Rivett of Middlesex Hospital believed in clinical rather than systematic lectures and attached great importance to tutorial classes. Each student should be instructed not only in the actual delivery of normal cases but in all such obstetric operations as he would have to perform later in practice.

Mr. Ninian Falkiner of Rotunda Hospital, Dublin, considered two months residence in maternity hospitals necessary for students. The number of forceps deliveries at the Rotunda was not great, so that they could not teach every student to perform a forceps delivery. He desired to see the gradual development of postgraduate training in conjunction with a special degree.

Mr. W. J. H. M. Beattie of St. Bartholomew's Hospital considered the teaching of gynecology comparatively easy, but obstetrics was more difficult, chiefly because of the large number of students and the small amount of obstetric material. Tutorial and practical demonstrations should take precedence over systematic lectures. Too much attention was paid to the theoretical and academic side of teaching because of the need to pass examinations.

### Presentation of Medal to Sir Charles Sherrington

At a meeting of the Section of Neurology of the Royal Society of Medicine, the Hughlings Jackson gold medal was presented to Sir Charles Sherrington. Sir James Crichton-Browne, the oldest surviving friend of Jackson, whom he first met seventy-two years ago, gave some interesting reminiscences. When in 1875 Jackson published his most important paper on temporary mental defects following the epileptic paroxysm, Sir James sent a copy to a judge who had imposed the death sentence on a man who had epilepsy. The result was that the judge intervened and saved the man's life.

Dr. T. Watts Eden, president of the society, supposed that Jackson would always be regarded as one of the greatest clinical observers the world had ever seen. Sir Charles Sherrington's observations had disclosed a domain of nerve function which was hardly dreamed of in Jackson's time.

Sir Charles Sherrington said that the gift he received in the name of the master of neurology was an encouragement which nothing could exceed. He inspired the laboratory worker as much as he did the clinician. There were enthusiasts who had time to cultivate both aspects. But for Sir Charles the laboratory had always seemed such a busy place that he could not get outside it, though never from lack of interest in what was being done elsewhere.

### Financial Difficulties of Medical Socialism

The government has found it necessary to introduce a bill to insure financial stability of the national health insurance scheme. In the House of Commons the minister of health, Sir E. Hilton Young, said that no fewer than 17,000,000 persons were now insured. For the first ten or fifteen years of the twenty years' life of the scheme, its finances were prosperous and large surpluses were secured, out of which additional benefits were paid. Then came a change. Between 1921 and 1927 there was a startling increase in the sickness claims of married women—to 106 per cent above the expectation. More careful supervision of claims and better medical certification were urged, but without much effect. Then it became obvious that there was something seriously amiss with the finances of national health insurance. Claims were increasing, particularly with respect to women. On the other hand, another menace arose: Owing to the growth of unemployment, contributors were increasingly falling into arrears. Next the actuary reported that while during the period of prosperity the surplus assets of the lodges grew by no less than $125,000,000, during the subsequent period there was no real increase and "additional benefits" had to be considerably reduced. No fewer than 418 societies were faced with a deficiency, and if they could not fall back on central aid they would not be in a position to pay their minimum statutory benefits. The outlook was now critical. To go on as at present would result in a widespread deficiency among the societies. The breakdown with respect to married women was such that the sickness and disablement benefit was $20,000,000 in excess of actuarial expectation during the last valuation period. The loss in respect to married women was three and one-half times greater than in respect to single women. A government investigation led to the conclusion that the main cause of the increased claims was the number of persons who receive benefit although not incapable of work. The government proposes to reduce the disablement benefit of unmarried women from $2 to $1.25 and of married women to $1, and also to reduce the sickness benefit of married women. It has also been found necessary to curtail the extent to which persons are excused arrears of contribution because of unemployment.

## PARIS

*(From Our Regular Correspondent)*

May 18, 1932.

### Biologic Effects of Meteorological Factors

At the last Congrès national d'hygiène, it was decided to organize an official conference to study the influence of various meteorological elements on the organisms of man and animals. The program of this conference, which is to be held, July 10, at the Institut de Pasteur de Paris, has now been worked out by the organization committee and communicated to the press, in order to provoke inquiries and to stimulate, in the various countries, medical observations, which the conference will gladly accept. The program is as follows: (1) general statement of the problem; action of various meteorological factors on the organism, to be presented by Dr. Lesage, member of the Academy of Medicine, and former president of the Société de médecine publique; (2) exhibit of instruments and scientific procedures that meteorology can place at the disposal of biology, in charge of General Delcambre, inspector general of aeronautics and director of the Office national météorologique, and (3) scientific bases of statistics: exhibit of the methods that the statisticians can place at the disposal of biology, entrusted to Mr. Moine, statistician of the Comité national de défense contre la tuberculose and director of the Office national d'hygiène sociale. This first conference has for its object the establishment of a scientific basis for the researches that would bear on the following points, the results of which would be presented at a later conference: (1) influence on the healthy human organism, for example, shocks in nurslings, epidemic of Liége; (2) effects on the terrain (receptivity); (3) influence on the organism already infected (malaria, and the like); (4) influence on the progress and extension of epidemics; (5) influence on micro-organisms, and (6) influence on the means of vaccination. In each of these subjects to be considered, the investigator should give an historical account of what has been done and (2) a description of the scientific method to be adopted to serve as a basis for new researches.

### Seasonal Variations in the Virulence of Poliomyelitis

Professor Levaditi of the Institut Pasteur de Paris, who took up some time ago a study of poliomyelitis and directed the inquiry into the epidemic that occurred in Alsace in 1930, has made some interesting new observations. It is well known that poliomyelitis is subject to seasonal variations that have not as yet been explained. Some investigators have invoked cosmic influences, others the electrical condition of the atmosphere, and still others changes in the virus itself. Professor Levaditi and Mr. Hornus observed, in November and December, 1931, that first an attenuation and later a veritable suppression of virulence occurred in a strain of poliomyelitic virus conserved in the laboratory by regular passages through the monkey. They sought an explanation for this phenomenon and presented later to the Academy of Medicine the conclusions that they reached. They found that this disappearance of pathogenic activity took place in vivo owing to a progressive autosterilization of the neuraxis due to a partial and probably seasonal immunity of the organism of the monkey. Comparing their observations on the periodicity, likewise seasonal, of the epidemics of poliomyelitis, they concluded that this periodicity is ascribable to variations in the resistance of the organism of the animal, as determined by its external surroundings, rather than to changes of inherent biologic properties in the microorganism. This opinion is a further elaboration of that outlined by Levaditi last year. He assumes that the poliomyelitic virus, which attacks almost exclusively young persons, finds an increasingly resistant milieu as subjects pass beyond their twentieth year of age, which enables them to play then the rôle of germ carriers. Immunity, in man as well as in the monkey, is therefore established easily, merely with advancing age.

### Professor Bloodgood's Address Before the Anticancer League

The general assembly of the Ligue française contre le cancer was held in Paris, April 26, in the hall of the council of the faculty of medicine. The meeting was a formal occasion. The president of the republic and the ambassador of the United States sent representatives. Other notables present were the minister of public health, the director of the public health service, several professors of the Paris faculty of medicine, the management of the Institut Curie, and many eminent scientists. After the reading of reports of the general secretary and the treasurer, and the election of Professor Forgue of Montpellier as member of the council, the audience assembled in the Great Hall of the faculty of medicine, where Prof. Joseph Colt Bloodgood of Johns Hopkins University, Baltimore, delivered an address, with presentation of a film, on the need of the early detection and treatment of cancer. He praised the work in this field of French scientists and announced also what had been undertaken in the United States. He emphasized the importance of phenomena that, while they do not constitute cancer, may develop into cancer. For the prophylaxis of skin cancer, he recommended that, with the birth of the child, the attention of the obstetrician should be drawn to the slight anomalies; later this rôle diverts to the mothers and to the teachers. He emphasized the value of frequent examination of the buccal cavity by the stomatologist and enumerated the diseases that may originate in the mouth. He studied the rôle of roentgen rays and of radium in the treatment of malignant bone tumors and cancer of the breast, and the importance of radiography for the early detection of these tumors and of cancer of the stomach. Today, the cases in which operation is no longer practicable have been reduced to less than 50 per cent, for it is just as easy to roentgenograph the stomach as it is to examine the heart with a stethoscope, and it is easier to reach a sure diagnosis. In closing, Professor Bloodgood recommended a semiannual pelvic examination of mothers as the surest protection against cancer of the cervix or the uterus. The day following, he presented, at the Faculté de médecine, two other films used to illustrate two further lectures, one on "The Development in Vitro of Human Tumors and of Human Cancer Cells" and one on "The Radiologic Diagnosis of Bone Tumors." Professor Calmette gave a reception in Professor Bloodgood's honor at the Institut Pasteur.

### The Biologic Reactions of Lying

Accounts published in the United States in regard to a recording apparatus (lie detector), designed to reveal the emotions of a defendant in a court action and to detect a lie, awakened interest in France. Dr. Laignel-Lavastine suggested, in this connection, analyses of the urine before and immediately after the examination of a witness, he having noted that the hydrogen ion concentration is modified in subjects in whom the examination had caused great emotion. Several medicolegalists, writing in the *Siècle médical*, stated that they had frequently observed that the sudden acceleration of the pulse and the sharp rise of blood pressure in a defendant when asked an unexpected and embarrassing question often coincided with a fear state, and that the outcome of the inquiry had often shown that at that moment the defendant had lied. But there are causes of error due to the condition of the defendant's heart. If the accused is much depressed, he may have a very weak pulse, which does not vary whether his statements are true or false. The variation in the hydrogen ion concentration of the urine, if collected with a sound, would give, according to Laignel-Lavastine, results less likely to be affected by other factors, a strong emotion creating immediately a state of acidosis. It appears, however, that these laboratory experiments, interesting though they may be from a psychophysiologic point of view, will be difficult to apply practically in connection with the examination of court witnesses.

### Intoxication with Carbon Tetrachloride

Carbon tetrachloride has widespread medical and industrial uses. Employed by dermatologists to combat seborrhea of the scalp and seborrheic eczemas, it does not appear to have caused notable accidents. Used internally to destroy Ancylostoma, it provokes sometimes nervous or hepatic disorders. But it is chiefly when used for the extinguishing of fires that it produces the most serious accidents, several examples of which have been reported recently in various parts of France. Either by its direct action or by its decomposition into carbon oxychloride, it causes grave disorders in persons who have breathed in much of the vapors in the vicinity of a fire combated by extinguishers containing this substance. In the persons affected, one observes trembling, convulsive spasms and even tetanic attacks. In cases of inhalation, even though for only a brief interval, while the nervous signs may disappear rapidly, death may ensue within a few days, due to acute edema of the lungs, bronchial pneumonia or, particularly, hepatic lesions. The lesions found involve almost exclusively the liver; attention has been called to renal lesions in subjects probably predisposed. Dr. Mollaret of Grenoble reported a case of a fire that arose owing to a short circuit, in a poorly ventilated room, which required the use of extinguishers containing carbon tetrachloride, of which a rather large amount was employed. That evening the two men felt a slight discomfort, and the next day they presented a subicteric appearance and complained of nausea, gastric disturbances, and a profound asthenia. The symptoms remained intense for four days and then steadily diminished during the following week and ended in recovery. Drs. Hébert and Phélebon of Montrichard published their observations on an automobile chauffeur who had been cleaning for several hours the chassis of his vehicle by means of a carbon tetrachloride product used normally as a fire extinguisher. The following day, he was seized with vomiting and presented a subicteric appearance with hepatomegalia and azotemia. A cure was effected as the result of energetic treatment. It is to be noted in this case that the intoxication was not due to the projection of carbon tetrachloride on a fire but to the inhalation of the cold product, for several hours, in a confined atmosphere. The council of health has consequently decided that cleaning operations with carbon tetrachloride should be carried on in the open air. For the extinction of fires one should, as far as possible, combine the use of carbon tetrachloride with that of other products (water extinguishers using foam or spray). When one has recourse to this method, one must beware of fires of electrical origin developing in poorly ventilated spaces: for example, in cable conduits. In that case, it is well to equip the rescuers with gas masks.

## BERLIN

*(From Our Regular Correspondent)*

May 16, 1932.

### Organization of Cancer Research

The organization of cancer research, as has already been emphasized, is at present in the forefront of interest, whereas, for a number of years previously, it had received little attention. Mention has been made of the appointment of a federal commission to supervise and aid in the organization of cancer research (The Journal, May 30, 1931, p. 1887). The council of the federal commission for cancer research met recently in Berlin, under the chairmanship of Ministerial Director Dr. Dammann, at the federal ministry of the interior. Since others besides physicians are interested in the movement to spread a knowledge of cancer, the criteria for the organization of cancer research must, in their form of expression, take account of that fact. As representing the aim of organization measures, the following criteria have been proposed: the early detection of cancer patients and examination of suspects; the rapid and sure diagnosis of cancer; the aid of cancer patients after receiving treatment. The aid of incurables must not be neglected. Success depends primarily on the cooperation of the physicians, supported by suitable auxiliary forces and the population, after it has been properly enlightened on the subject of cancer. Since, aside from occupational cancer, there is no prophylaxis against cancer in general, the aim of the publicity campaign must be to induce persons with suggestive signs to submit to an immediate and adequate medical examination. The education of the people in the hygiene of cancer must be carried on in such a manner as to counteract fear of the disease. Attention should be called to the fact that cancer, if diagnosed in time, no longer belongs to the incurable diseases. Especial significance is attached also to promulgating a better knowledge of cancer among the physicians. The most important tasks of organization rest with the state and the provincial committees. The following should take part in the work: representatives of the governments and the administrations of the provinces, of the cities and the rural communities, of the medical profession and of the faculties of medicine, the social aid agencies and the volunteer public welfare agencies.

The example of Sweden and France was called attention to by many as worthy of imitation by reason of a centralization of cancer treatment. In spite of this suggestion, however, the criteria as drawn up were based on the principle of the natural development dictated by the conditions obtaining at present in Germany. It would be virtually impossible and certainly not feasible to try to take the cancer patients away from the surgeons and gynecologists and from the smaller and middle-sized pathologic institutes directed by them, since they are in a position to treat them by purely surgical means. That is not done even in Sweden, as is known from Forsell's public statement, although Sweden is usually put forward as a prototype of centralization. The utmost endeavors must be put forth to provide institutions in which cancer patients can be treated by methods that are in accord with the present status of medical knowledge.

Especial importance attaches to the providing of sufficient funds to assure the examination of cancer suspects and the prompt and effective treatment of all cancer patients. Aside from suitable agreements between the guarantors of the cost of treatment, concerning the continuation and the avoidance of interruption of therapeutic measures already begun, the collection of a general fund was proposed in order to assure for patients of limited means who have no one to guarantee the cost of treatment an immediate examination and prompt treatment.

According to the papers of Dietrich of Tübingen and Stauder of Nuremberg, in view of the improvement in the statistics and the assurance of good results from treatment, a movement in favor of voluntary submission to examination and treatment ought to be organized by the medical profession, as has been done in some parts of the country, with suitable participation on the part of the "chambers of physicians" *(aerztekammern)*. The federal cancer commission has decided to promote this idea more vigorously through the appointment of a small committee of experts.

### Are Fixed Prices for Courses of Treatment Feasible?

Like all other institutions, the mineral spring bath establishments have endeavored to accommodate themselves to economic necessities and changed conditions. On every hand, courses of treatment at fixed prices are announced. While this innovation appears to meet a present-day need, there is a possibility of the treatment becoming thereby too mechanical, and precisely in connection with treatment at mineral spring resorts evils may arise as a result of such a system. The physicians and the managements realize the dangers involved; but there is naturally enough a desire to relieve in this manner the not always unjustified fears of the patients that a course of treatment extending over several weeks may exceed the limits of their capacity to pay. One hears on every hand the complaint that spa treatment has become much more expensive. These complaints are unjustified in that it is impossible to state in advance what the exact cost of treatment will be, in view of the fact that the extent of the treatment needed becomes apparent only during the course of the treatment. Hence, many voices are raised against soliciting patronage by offering fixed prices for prolonged courses of treatment, it being alleged that it would be much better to reduce the charges for diagnostic measures and for treatments to as low a point as possible, and thus avoid unprofessional mechanization. What is true of therapeutic measures to be applied in spas and in sanatoriums is true also —allowing for slightly changed conditions—with reference to observation patients in hospitals, and particularly in private clinics. This applies to observation cases in the field of the internist, the surgeon, the urologist and others. Many a patient dreads an observation extending over several days on account of the heavy expense for special diagnostic aids, in which the roentgenologic examination is nearly always the principal component. But also chemical and physical examinations, functional tests, and the like, go to make up a sum, which, along with the regular hospital charges, is considerable, and there is a danger that little will be left to pay the physician's fees. There have been attempts to establish a fixed, previously announced price for the diagnosis of circulatory disturbances, gastro-intestinal disorders, and liver and gallbladder disease. Some of the plans that looked enticing when viewed theoretically have been found impracticable when it came to their execution. A hospital observation, with the application of modern diagnostic methods, is not usually undertaken unless a simple clinical examination fails to accomplish its purpose. If a fixed price is made, the examiner is obliged to confine himself to one organ or to one organic system. But it is well known that, not infrequently, in searching for a stomach ulcer the examination must be extended to the gallbladder, to the large intestine, and possibly to the renal pelvis. Such an eventuality plays havoc with a fixed price agreement. It would appear, therefore, that these endeavors to give a fixed price in advance, while well meaning enough, may be regarded as mere transitory attempts to adapt oneself to the changed economic conditions that prevail.

## THE UKRAINE

*(From Our Regular Correspondent)*

Odessa, April 28, 1932.

### The Third All-Ukrainian Therapeutic Conference

The Third All-Ukrainian Therapeutic Conference was held in Kiev, Sept. 10-15, 1931. On the first day, the attention of the conference was held by Prof. M. I. Leporsky's paper on "The Pathogenesis and Treatment of Acute Joint Rheumatism." Professor Leporsky pointed out that most investigators agree on the infectious or allergic theory.

Studying basal metabolism during rheumatism, Professor Leprosky found in the daily balance a retention of water and sodium chloride without hydremia or an increase of sodium chloride in the blood, an increase in the total and residual nitrogen in the blood, and a diminution in the basal metabolism of 23 per cent on an average. Connecting these facts with Pemberton's data on the increase of blood oxygen in the course of rheumatism, Professor Leprosky concludes that there is an increase of albumin metabolism, a retention of water and a limitation of oxidative processes in the tissues. As to treatment, Professor Leporsky removes any local septic foci and prescribes Pemberton's diet. He obtained good results using this treatment.

The problem of rational nutrition was one of the topics for discussion. Dozent L. K. Korovitzky discussed pellagra. During 1929-1931 he observed about 560 cases of pellagra in South Ukraine. He makes the following conclusions: Physicians often mistake indistinct forms of pellagra for skin diseases. The early symptoms of pellagra are salivation, obstinate diarrhea and skin manifestations. From a group of Dozent Korovitzky's sixty patients, all from one city, 50 per cent never eat maize; thus it did not enter into the etiology of the disease. The principal causes of pellagra are an unbalanced diet with insufficient protein and deficiency of vitamin $B_2$ in the food.

Prof. V. M. Cogan-Iasni read a paper on the pituitary diseases. He demonstrated the treatment of diabetes insipidus by means of transplantation of the pituitary. Clinical observations completely confirm the rôle of the hypophysis cerebri in the regulation of water balance and pathogenesis of diabetes insipidus. The cooperation of physiologists, biochemists and clinicians is necessary in the study of hypophyseal disorders.

Among the papers not included on the program was that of Prof. X. X. Vlados of Moscow on pernicious anemia of the Biermer type, treated by the method described by W. B. Castle (*Am. J. M. Sc.* **178**:748 [Dec.] 1929). He also treated with good results pernicious anemia patients with mucin from hog stomachs.

About 400 physicians, chiefly from the Ukrainian Socialist Soviet Republic, were present at the conference. The subjects on the program of the next conference will be the problem of influenza, stomach diseases and circulatory diseases.

Prof. I. I. Fainschmidt was elected president of the organization committee from the Ukrainian Socialist Soviet Republic.

### The Death of Professor Goubarev

Alexander Petrovitch Goubarev died, Oct. 23, 1931, of arteriosclerosis. He was born in 1855 in Moscow, where he graduated in 1889 from the medical faculty. In 1889 he was invited to be prosector to the chair of anatomy under Professor Zernov; at the same time he worked in the gynecologic clinic under Professor Snegirev. In 1893 he was elected professor of gynecology and obstetrics in the university of Dorpat, and in 1898 became professor in the same chair in Moscow. He was director of the gynecologic clinic of the First Moscow State University constantly until 1922, when he retired because of ill health.

Professor Goubarev has written 131 scientific works, many of which are in English, French and German. His "Operative Gynecology" and "Clinical Anatomy of Female Pelvic Organs," which he illustrated himself, received premiums. He was one of the founders and editors of the journal *Gynecology and Obstetrics*. He founded a school of Russian gynecologists and obstetricians. In 1911 he was elected Doctor of Science Honoris Causae of the Dublin University. He was an honorary member of many European and Russian gynecologic and obstetric congresses and societies.

### The Treatment of Trachoma

The soviet government has begun an intensive campaign against trachoma. Of the total number of blind persons in the Soviet Union, 234,833, one fifth lost their vision because of trachoma.

For the rational treatment of trachoma, Professor Phylatov of Odessa proposes to limit the use of drugs, reducing the treatment to frequent pressing out of the granules, the operation that is acknowledged as the best method of treatment. He advises that this intervention be repeated several times at intervals of from four to six weeks. The loss of the patient's time by this operation is compensated for by abolishing medical treatment, for which frequent visits to the hospital are necessary. The effectiveness of the treatment depends on the active stimulation of the local tissue reaction. In the treatment of sixty patients in Grossliebenthal, a village near Odessa, and in Luxemburg, a village near Marieoupol, the author and his collaborators secured good results. There were no complications in more than 400 cases which did not receive any further treatment.

## MADRID

*(From Our Regular Correspondent)*

May 2, 1932.

### The International Congress of Surgery

#### TUMORS OF THE SPINAL CORD

During the International Congress of Surgery, recently, in Madrid, Dr. Robineau of Paris presented an article based on sixty-four operations for tumors of the spinal cord, performed by himself. Death occurred in one case following hemorrhage and in two cases from cardiac syncope eighteen and twenty hours after the operation. Tumors of the spinal cord are fatal unless surgically removed. The diagnosis should be made early. The clinical diagnosis should be confirmed by the laboratory examinations with regard to the modifications of the cerebrospinal fluid, the pressure of the cerebrospinal fluid and the radiologic examination of the subarachnoid space, after the injection of an opaque iodized oil as a contrast medium. The oil stopped by the tumor shows its outline. In the presence of such conditions as Pott's disease or some types of myelitis it is possible to make a mistaken diagnosis of tumor of the spinal cord. In certain cases it is impossible to distinguish whether or not the pathologic process is a true tumor or an inflammatory condition. In cases of doubt, it is preferable to operate. Death following the operation occurs in 5 per cent of the cases. Diffuse intramedullary tumors cannot be removed. The life of patients with diffuse glioma who have been operated on may be greatly prolonged by postoperative roentgen irradiation. Flaccid paraplegia caused by destructive medullary lesions as well as spastic paraplegia of old duration do not disappear after the operation. Tumors with extensive intramedullary ramifications cannot be totally removed, because of the danger of sacrificing essential nerve cells during the operation, and their recurrence after the operation is fatal. The operation gives satisfactory results in 60 per cent of the cases, in 50 per cent of which no functional disturbances persist after some months following the operation. Surgery of tumors of the spinal cord is one of the achievements of neurology during the last four decades.

Dr. Dominici of Rome presented statistics covering sixty-three cases of intraspinal tumors. The tumor could not either be found or reached in five patients; three patients died as a result of the operation; in the remaining fifty-three patients the cause of the spinal disturbances was intraspinal tumors, cysts, gummas or fibrous or serous meningitis. The postoperative mortality is higher for tumors located in the superior portion of the spinal cord. The diagnostic method most frequently used in Italy is the descending injection of iodized oil. Radiography is the best method to establish the diagnosis and also to locate the tumor in relation to the vertebrae. In doubtful cases Dr. Dominici resorts to exploratory laminectomy, according to Alessandri's method.

Dr. C. A. Elsberg of New York presented a study of tumors of the spinal cord with statistics on 208 cases, with a postoperative mortality of 6.9 per cent for extramedullary tumors and 1.7 per cent for extrameningeal tumors. The following results were obtained: complete recovery or considerable improvement in 63 per cent of the cases, a minimal improvement in 10 per cent and no modification of the conditions in 18 per cent; in five cases the results were not reported. The tumors were seated in the thoracic region in 51 per cent of the cases, in the cervical region in 32 per cent, and in either the sacral or the lumbar regions in 17 per cent of the cases. The tumors were intrameningeal in 72 per cent of the cases and extrameningeal in 28 per cent. The content of total globulin and protein in the cerebrospinal fluid is higher when the tumor is intradural than when it is extradural.

Dr. Mixter of Boston originated a method to prove the presence or absence of an intraspinal tumor above the operative field during the operation. As soon as the arachnoid membrane is located, the assistant makes digital compression on the veins of the neck. The absence of any pathologic lesion which may cause obstruction of the arachnoid space above the operative field is proved by the free passage of the fluid from top to bottom through the arachnoid space while the veins are under compression.

### CARDIOSPASM

Dr. L. Cardenal of the Faculty of Medicine of Madrid discussed cardiospasm, which he defined as "a functional disturbance of the cardiac sphincter, during the passage of food into the stomach, followed by hypertrophy and dilatation of the esophagus, without the presence of an anatomic stenosis." The condition does not indicate a spasm but a dilatation of the esophagus, the pathogenesis of which is similar to that of congenital stenosis of the pylorus and to congenital hypertrophic dilatation of the colon. The identity in the pathogenesis of these conditions becomes evident by an interpretation of the laws of Bayliss and Starling on the mechanism of peristalsis. This may explain the production of disturbances in some other sphincters, as well as some postoperative disturbances related to the passage of food through the new anastomosis made in operations on the stomach. The esophagus is permanently separated from the stomach and opens into it, through the cardiac sphincter, only during brief periods as the result of a physiologic reflex caused by deglutition. The cardiac sphincter represents a vegetative muscle. Smooth muscles resist pressure and traction for a long time without consumption of energy. But they are not true sphincters, since Kastner defined true sphincters as muscles with tonus, which do not have various dimensions but only variations of tension, and which do not follow the laws of peristalsis given by Bayliss and Starling. The cardiac sphincter of the esophagus follows these laws. In normal conditions the cardiac sphincter is in an intermediary condition between maximal contraction and maximal dilatation. If one stimulates mechanically the wall of the pharynx, one can observe a peristaltic movement which runs the entire length of the esophagus. In the same manner, the passage of food through the pharynx causes in the esophagus a wave of dilatation, which is immediately followed by a wave of contraction. The latter, however, is more imaginary than real, since it is only the return of the esophageal segment to its original position. The active phenomenon of stimulation causes the opening of the esophageal segments that are immediately under its influence, and while this movement progresses downward, the passive phenomenon, that is, occlusion, takes place in the segments previously dilated. A peristaltic wave of opening on the epicardia permits the passage of the food, but as soon as the food passes through a given segment into another, the first epicardial muscular segment returns to its previous condition of occlusion. If one studies the blood supply of the cardiac sphincter of the esophagus during its phase of rest or occlusion, one can prove that the active phase is dilatation while the passive phase is occlusion. The blood supply of the cardiac sphincter corresponds to the minimal amount necessary for the conservation of the cells. During the spasmodic contraction an almost absolute ischemia of the contracted segment is noticeable, while the circulation is considerably increased during the phase of relaxation. The experimental ligature of the local vessels causes ischemia and prevents the opening of the cardiac sphincter. In cases with a pathologic increase of circulation (such as peritonitis or mediastinitis) the cardiac sphincter is dilated, relaxed and patent. Bayliss and Starling in 1899 established a law with regard to the peristaltic movements of the digestive tract according to which any natural stimulation on the intestinal mucosae causes at the same time dilatation of the intestinal segment immediately under the influence of the stimulus and contraction above it. According to the law of Bayliss the dilatation (which starts immediately below the stimulated point and follows in a movement of propagation downward all through the digestive tract) is not a relaxation caused by inhibitive impulses but a manifestation of activity of all the vascular and muscular cells of the intestinal mucosae. The following contraction is only the return to a condition of rest of the segments.

### SURGERY OF THE ESOPHAGUS

Dr. Gregoire, of the Faculty of Medicine of Paris, stated that the progress of surgery depends on advances made in the examination of the patient, in pathology, and in the treatment of cases. From these points of view, surgery of the esophagus has made great progress in the last few years. Roentgen examination of the esophagus and endoscopy are of great value, and by these methods intra-esophageal treatment has brought good results. The pathology of ulcer, diverticula and idiopathic dilatation of the esophagus has advanced. A more precise operative technic has been developed to approach the mediastinal esophagus, especially at the level of its inferior segment. By the use of extraserous methods, the dangers of the infection of the pleura and of the peritoneum have been avoided.

Dr. J. L. Faure of Paris stated that, although he performed two operations with resection of the thoracic segment of the esophagus thirty years ago, at present he has supplanted the operation by roentgen therapy.

Dr. Sauerbruch of Berlin said that he has successfully operated in four cases of esophageal diverticula opened into the bronchi; he performed esophagogastric anastomosis in twelve cases without having had a death; in two cases of cancer of the esophagus invaginated into the cardiac sphincter, he succeeded in resecting the pathologic segment in a one-stage operation.

### PROGRESS IN SURGICAL ANESTHESIA

Dr. Monod of Paris said that rectal anesthesia should be resorted to only in exceptional cases, because the absorption through the intestine is irregular and the anesthesia cannot be controlled. Anesthesia with tribrom-ethanol is pleasantly mild and patients prefer it to spinal anesthesia. Ether anesthesia given as a mixture of ether in oil is less dangerous than tribrom-ethanol anesthesia and the dose of the anesthetic does not have to be repeated. Ether has a less irritative action on the rectum than tribrom-ethanol, and its anesthetic effect is more prolonged. The principal indications of ether anesthesia are for operations on the thorax, the neck and the head. The toxicity of tribrom-ethanol limits its use. It is especially of value in operations performed on weak persons and in operations of long duration; its use is not followed by any disturbances that usually follow any other anesthetic by inhalation. Theoretically, tribrom-ethanol is not the best anesthetic for the following reasons: It demands the constant supervision of an expert anesthetist during the operation; the anesthetic effects are rapid; the enema should be given at a temperature not higher than 40 C. (104 F.), since when it is given at a higher temperature it becomes irritative to the rectal mucosae and may cause necrotic colitis. The sensitiveness of the respiratory center to tribrom-ethanol is even greater than to chloroform, and tribrom-ethanol depresses the blood pressure. An excessive dose of tribrom-ethanol is dangerous. Killian in 1927 reported 33 deaths among 3,646 operations made under tribrom-ethanol anesthesia. Sixteen out of the thirty-three deaths were undoubtedly caused by the anesthetic. By improvements in the technic, better results have been reported from Germany among 400 operations done under tribrom-ethanol anesthesia. Lundy believes that the mortality rate from tribrom-ethanol anesthesia is 3 per thousand, while Sprecht believes it is 1 per thousand. The dose of tribrom-ethanol is 0.1 Gm. per kilogram of body weight. Then the solution should be diluted in water distilled twice in a proportion of 2.5 per cent; that is, 6 Gm. of tribrom-ethanol and 240 cc. of water distilled twice. The solution is made up in an Erlenmeyer's flask to a temperature of 40 C. Great care should be taken not to exceed this temperature. The solution is shaken in the bottle during five minutes and it is prepared in the same manner in which arsphenamine is prepared; that is, at the time that it is going to be used. Before the injection is given, 5 cc. of the solution is poured into a test tube to which a drop or two of a 1 per cent solution of congo red is added. The color given by this mixture should be a clear orange red. If the mixture has a bluish hue it should not be used because it is dangerous. The enema is given by using a catheter with a diaphragm in order to avoid escape of the anesthetic. After the solution has been injected, the catheter is closed with a hemostat and left in the rectum for fifteen or twenty-five minutes, until the effects of the anesthesia begin to appear.

Dr. Goyanes of Madrid spoke on arterial anesthesia by injecting inside of the arteries a 0.5 per thousand solution of procaine hydrochloride. By this method, operations in the area supplied by the arteries injected can be made without any pain. The principal indications of this method are operations in the left arm. The effect of the anesthetic lasts all the time during which ischemia is present.

### Superior Board on Psychiatrics

The department of the interior has nominated several psychiatrists to form a superior board on psychiatrics, with Dr. G. Lafora as president. The duties of the board will be to act as consultants and inspectors of psychiatric dispensaries and to promote their establishment; to collaborate with architects appointed to erect psychiatric hospitals; to attend to the prevention of mental disease and to the care of psychiatric patients, and to modernize psychiatric hospitals. The superior board on psychiatrics requested the government to provide the provinces with two different types of psychiatric hospitals: small hospitals of about 150 or 200 bed capacity, built in the city, in which patients with a recent development of the disease may be attended, and larger hospitals, built in rural areas, which may serve as interprovincial or regional psychiatric hospitals, to which patients with mental diseases who have been attended for more than one year in the small hospitals may be transferred. The authorities of Galicia decided to carry on this project. The members of the superior board on psychiatrics requested from the ministry of public education the creation of a chair of psychiatrics in the several schools of medicine in order that the personnel in charge of psychiatric hospitals may be selected from specialists who have attended those courses. The board will also select the nurses. Through the efforts of the board, a society for the guardianship of psychiatric patients has been organized. Members of this society are well known laymen who will help the board by taking charge of certain chronic patients who are not dangerous; they will help them to live in better conditions to bring about their social adjustment by placing them or helping to support them as guests of families who live near the psychiatric hospitals. In some Spanish hospitals it has been estimated that 60 per cent of the psychiatric patients develop tuberculosis in about six months after admittance.

### Eightieth Birthday of Ramon y Cajal

The histologist S. Ramon y Cajal has passed his eightieth birthday. Besides the studies made on histology, Ramon y Cajal founded a school of research on the histology of the nervous system. The anniversary of Ramon y Cajal passed unobserved by his pupils and friends and it appeared only among the news of some daily papers. When Ramon y Cajal was 70 years old, a bust of him was unveiled. Some politicians at that time grasped the opportunity to make a hostile manifestation against the government, which manifestation failed through the efforts of Ramon y Cajal. Those friends who heartily greeted Ramon y Cajal on his seventieth anniversary failed to remember his eightieth anniversary. Dr. Ramon y Cajal works now with the same energy as when he was 50. He feels he should work continuously to complete many of his important researches as soon as possible. The changes of weather affect his health, so during the last winter he lived in an artificial atmosphere while working, so as not to lose time. He spent his eightieth birthday, as every day of his life, over his microscope.

### A Philanthropist Dies

The Marques de Valdecilla, a well known Spanish philanthropist of Santander, died. He gave a great part of his fortune (which was made in America) to universities and hospitals and in promoting medical education. He was the founder of the Hospital Valdecilla of Santander, which he supported. He gave 25,000,000 pesetas ($2,500,000) to medical schools and hospitals. Since rich persons in Spain are few, the fortune of Marques de Valdecilla was considered fabulous and everybody praises him for giving a large part of it to the benefit of mankind. He will always be remembered with respect and admiration.

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## Marriages

Charles J. Weigel, River Forest, Ill., to Miss Mary Beatrice Rooney of Amboy, June 4.

Willis E. Elder to Miss Elsie Schneider, both of Columbus, Ohio, at Cannonsburg, Pa., May 7.

James Clayton Brown, Valparaiso, Ind., to Miss Mary Birdwell Davis of Elwood, May 8.

F. Dennette Adams, Boston, to Miss Elliott O. Blanc of New York, May 21.

Leon N. Sussman to Miss Evelyn Kaufman, both of New York, June 8.

# Deaths

**Thomas Patrick Hennelly** ⊕ Pittsfield, Mass.; Harvard University Medical School, Boston, 1908; past president of the Berkshire District County Medical Society; fellow of the American College of Surgeons; on the staffs of the House of Mercy Hospital, St. Luke's Hospital and Crippled Children's School, Pittsfield, and the Fairview Hospital, Great Barrington; aged 50; died, May 19, of heart disease.

**Thomas Appleton Cope,** Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1900; member of the Medical Society of the State of Pennsylvania; assistant professor of medicine at the University of Pennsylvania Graduate School of Medicine; pathologist to the Germantown Hospital; aged 53; died, May 27, of heart disease, while on a boat trip in Maryland.

**Rewellien Cornelius Peters,** Allentown, Pa.; Medico-Chirurgical College of Philadelphia, 1898; member of the Medical Society of the State of Pennsylvania; past president of the Lehigh County Medical Society; member of the school board; aged 62; died, May 19, of arteriosclerosis and cerebral hemorrhage.

**William Ernest Fleet,** Cambridge, Mass.; College of Physicians and Surgeons, Boston, 1893; Tufts College Medical School, Boston, 1895; member of the Massachusetts Medical Society; aged 59; died, May 25, of hypertension, arteriosclerosis, cerebral hemorrhage and hypostatic pneumonia.

**Charles A. Zinn,** Frankfort, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1897; member of the Indiana State Medical Association; health officer of Frankfort; aged 58; on the staff of the Clinton County Hospital, where he died, May 22, of cerebral hemorrhage.

**Heralda Palma Tyng,** San Francisco; Hahnemann Medical College of the Pacific, San Francisco, 1917; member of the Associated Anesthetists of the United States and Canada; aged 40; died, May 1, in the Franklin Hospital, of acute hemorrhagic nephritis and puerperal eclampsia.

**Edward Beecher Nims,** Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1864; member of the Massachusetts Medical Society; member of the American Psychiatric Association; Civil War veteran; aged 94; died, May 24, of chronic nephritis.

**William Gue Morgan,** Woodward, Iowa; Rush Medical College, Chicago, 1891; member of the Iowa State Medical Society; on the staff of the Hospital for Epileptics and School for Feebleminded; aged 64; died, May 17, of cerebral hemorrhage.

**Alfred Long Gaither** ⊕ Lieut., U. S. Navy, San Diego, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1918; entered the Navy in 1921; on the staff of the U. S. Naval Hospital; aged 38; died, April 10.

**Irwin T. Medsker,** Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1904; member of the Indiana State Medical Association; aged 55; died, May 14, in St. Vincent's Hospital, of injuries received in a fall.

**Norris A. Smith,** Lineville, Iowa; Kansas City (Mo.) Medical College, 1905; aged 53; died, May 13, in the Wright Hospital, Trenton, Mo., of injuries received when the automobile in which he was driving was struck by a train.

**Charles Sumner Morley,** Holly, Mich.; Homeopathic Hospital College, Cleveland, 1876; for many years on the staff of the Grace Hospital, Detroit; aged 80; died, May 28, of intestinal obstruction and cardiac decompensation.

**Humphrey D. Robinson,** Manistee, Mich.; Detroit Medical College, 1884; member of the Michigan State Medical Society; on the staff of the Mercy Hospital and Sanitarium; aged 74; died, May 14, of heart disease.

**George Hiram Robbins** ⊕ Madison, Wis.; Rush Medical College, Chicago, 1915; formerly assistant professor of clinical medicine, University of Wisconsin Medical School; aged 42; died, May 26, of cerebral hemorrhage.

**Gamaliel C. Myers,** Dayton, Ohio; Cincinnati College of Medicine and Surgery, 1880; Civil War veteran; for twelve years on the staff of the Miami Valley Hospital; aged 84; died, May 24, of cerebral hemorrhage.

**Henry E. Johnston,** Oshkosh, Wis.; Chicago Homeopathic Medical College, 1893; member of the State Medical Society of Wisconsin; aged 67; died, May 22, in Edwardsburg, Mich., of a wound inflicted with a knife.

**Edward S. Gooch,** Lawton, Okla.; Hospital College of Medicine, Louisville, Ky., 1896; member of the Oklahoma State Medical Association; on the staff of the Southwestern Hospital; aged 62; died, April 14.

**Oscar Hasencamp** ⊕ Toledo, Ohio; University of Tennessee Medical Department, Nashville, 1887; aged 68; on the staff of St. Vincent's Hospital, where he died, May 20, of bronchopneumonia and cystitis.

**Woodson T. Merchant,** Louisville, Ky.; Howard University School of Medicine, Washington, D. C., 1888; on the staff of the Red Cross Hospital; aged 70; died, May 13, of secondary anemia and gastric carcinoma.

**Charles Francis McCaffrey** ⊕ Somerville, Mass.; Harvard University Medical School, Boston, 1903; on the staff of the Somerville Hospital; aged 55; died, May 20, of coronary sclerosis and thrombosis.

**Whedon Worley Mercer** ⊕ Chillicothe, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; aged 47; died, May 20, in the Proctor Hospital, Peoria.

**Leo A. Wilkinson,** Colfax, La.; University of Nashville (Tenn.) Medical Department, 1907; county coroner; aged 49; died, May 9, in the Baptist Hospital, Alexandria, of appendicitis and peritonitis.

**Charles Augustus Henry, Jr.,** Fostoria, Ohio; Rush Medical College, Chicago, 1901; member of the Ohio State Medical Association; aged 55; died, April 6, in the Cleveland Clinic Hospital.

**Walter C. Goss,** Johnson City, Tenn.; Tennessee Medical College, Knoxville, 1902; medical superintendent of the Elizabeth Goss Memorial Hospital; aged 61; died, May 12, of nephritis.

**Frank Collins Garvey** ⊕ Scranton, Pa.; Medico-Chirurgi College of Philadelphia, 1909; on the staffs of the Me Hospital and the Scranton State Hospital; aged 49; di April 17.

**Harry Holmcombe Nelden,** Stanhope, N. J.; Bellev Hospital Medical College, New York, 1891; bank presiden formerly mayor of Stanhope; aged 61; died, May 22, of hea disease.

**Robert Maffet Palmer,** Johnstown, Pa.; Jefferson Medica College of Philadelphia, 1913; member of the Medical Society of the State of Pennsylvania; aged 43; died, May 11, of heart disease.

**James Morgan O'Connell,** Ponca, Neb.; Rush Medical College, Chicago, 1881; member of the Nebraska State Medical Association; aged 79; died, April 13.

**Green V. Daniel,** Paintsville, Ky.; Tennessee Medical College, Knoxville, 1901; aged 66; died, April 6, in the Stephenson Hospital and Clinic, Ashland.

**Martin J. Palmer,** Los Angeles; Eclectic Medical Institute, Cincinnati, 1888; aged 71; died, May 14, of carcinoma of the bladder and prostate and uremia.

**Frank Fisk Casseday,** Portland, Ore.; Hahnemann Medical College of Philadelphia, 1879; aged 76; died, April 22, of cirrhosis of the liver.

**Jeremiah Noble Hankins,** Milton, Fla.; Memphis (Tenn.) Hospital Medical College, 1901; aged 52; died, May 20, of chronic myocarditis.

**John Wesley Gillespie,** Albany, Ga.; University of Georgia Medical Department, Augusta, 1892; aged 69; died, May 20, of senile dementia.

**Myron G. Rood,** Stevens Point, Wis.; Medical College of Ohio, Cincinnati, 1882; aged 73; died, May 27, of acute dilatation of the heart.

**William Arthur Singleton,** Port Huron, Mich.; Detroit College of Medicine, 1912; aged 56; died, May 22, in a local hospital.

**James E. Goldsby,** Gleason, Tenn.; University of the South Medical Department, Sewanee, 1901; aged 72; died in May.

**Anna Moon Randolph,** Hampton, Va.; Woman's Medical College of Pennsylvania, Philadelphia, 1899; aged 67; died, April 8.

**Millard F. Deeren,** Macksburg, Ohio; Columbus Medical College, 1887; aged 72; died, May 26, of diabetes mellitus.

**Corwin F. Howard,** Deepwater, Mo.; American Medical College, St. Louis, 1883; aged 76; died, April 9.

**John H. Imme,** Ottawa, Ill.; Eclectic Medical Institute, Cincinnati, 1880; aged 76; died in April.

# Bureau of Investigation

## ADULTERATED OR MISBRANDED PHARMACEUTICALS

### A List of Some of the Notices of Judgment Issued Between January and June, 1931, Inclusive, by the Food and Drug Administration, U. S. Department of Agriculture

[For many years, the Bureau of Investigation has published in this department, brief abstracts of Notices of Judgment issued by the Food and Drug Administration of the United States Department of Agriculture against "patent medicines." The number of proprietary preparations of this type that each year are found misbranded or adulterated is so large that these abstracts have to be published frequently.

The same officials that deal with cases of adulteration and misbranding in proprietary package medicines also, of course, act to protect the public against adulterated or misbranded official pharmaceuticals. As most official products are made by reputable pharmaceutical houses, the number of cases of adulteration or misbranding in this particular group is small compared with cases in the "patent medicine" group. For this reason, the Bureau of Investigation has made a practice of abstracting each year such Notices of Judgment as have been published by the government during the previous calendar year. We present, at this time, a list of the Notices of Judgment issued during the first half of 1931 dealing with pharmaceuticals. These are arranged alphabetically by products. First is given the name of the product, then follows the name of the manufacturer, shipper, or consigner; finally the number of the Notice of Judgment and its date of issue. It is to be borne in mind that the dates of publication of the Notices of Judgment are always several months later than the date of seizure of the product.]

**Aconite Tincture.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)*

**Aletris Root.**—Hamilton-Bacon-Hamilton Company, Bristol, Va. *(N. J. 17174; January, 1931.)*

**Antipyrine Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Aspirin.**—J. R. Watkins Company, Winona, Minn. *(N. J. 17153; January, 1931.)* McCormick and Company, Baltimore, Md. *(N. J. 17642; April, 1931.)*

**Bacillus Acidophilus Cultures.**—H. K. Mulford Company, Philadelphia, Pa. *(N. J. 17161; January, 1931.)*

**Bacillus Bulgaricus Culture A.**—Ferment Company, New York City. *(N. J. 17158, 17219; January, 1931.)*

**Barbital Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Beef, Iron and Wine.**—Devore Manufacturing Company, Columbus, Ohio. *(N. J. 17791; June, 1931.)*

**Belladonna Extract.**—Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)*

**Belladonna Fluid Extract.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931).* American Laboratories, Inc., Richmond, Va. *(N. J. 17752; June, 1931.)*

**Belladonna Tincture.**—American Laboratories, Inc., Richmond, Va. *(N. J. 17752; June, 1931.)*

**Benzoin Tincture.**—Edward I. Lowell, New York City. *(N. J. 17771; June, 1931).*

**Buchu, Compound Elixir.**—Standard Drug Company, Spartanburg, S. C. *(N. J. 17169; January, 1931.)*

**Calisaya Alkaloids Elixir.**—Zemmer Company, Pittsburgh, Pa. *(N. J. 17463; March, 1931.)*

**Calisaya Elixir.**—Standard Drug Company, Newark, N. J. *(N. J. 17781; June, 1931.)*

**Calomel Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Camphorated Oil.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)*

**Camphor Spirits.**—Southern Chemical Company, Petersburg, Va. *(N. J. 17302; January, 1931.)* Standard Drug Company, Newark, N. J. *(N. J. 17781; June, 1931.)*

**Chloroform.**—Samson Rosenblatt, New York City. *(N. J. 17627; April, 1931.)*

**Cinchona Powdered Extract.**—Frederick Stearns and Company, Detroit. *(N. J. 17603; April, 1931.)*

**Cinchona Tincture.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)* Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)* American Laboratories, Inc., Richmond, Va. *(N. J. 17752; June, 1931.)* Standard Drug Company, Newark, N. J. *(N. J. 17781; June, 1931.)*

**Cinchophen.**—Zemmer Company, Pittsburgh, Pa. *(N. J. 17463; March, 1931.)*

**Codeine Sulphate Tablets.**—P. J. Noyes Company, Lancaster, N. H. *(N. J. 17841; June, 1931.)* C. M. Bundy Company, Indianapolis, Ind. *(N. J. 17911; June, 1931.)*

**Colchicum Fluid Extract.**—Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)*

**Cramp Bark.**—E. A. Dobbin and Company, Lenoir, N. C. *(N. J. 17649; April, 1931.)*

**Digitalis Tincture.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)* Brewer and Company, Inc., Worcester, Mass. *(N. J. 17860; June, 1931.)*

**Ergot Fluid Extract.**—Burrough Bros. Manufacturing Company, Baltimore, Md. *(N. J. 17610; April, 1931.)* American Laboratories, Inc., Richmond, Va. *(N. J. 17752; June, 1931.)*

**Ergot Solution.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)*

**Ether.**—J. T. Baker Chemical Company, Phillipsburg, N. J. *(N. J. 17162, 17304, 17310; January, 1931; 17640; April 1931; 17917, 17966, June, 1931.)* Merck and Company, Inc., Philadelphia, Pa. *(N. J. 17155, January, 1931; 17609, 17619, April, 1931; 17854, 17909, 17939, 17965, 17967, June, 1931.)* Ohio Chemical and Manufacturing Company, Cleveland, Ohio. *(N. J. 17151, 17168, 17214, 17321, January, 1931; 17381, 17385, February, 1931; 17458, 17464, March, 1931; 17621, April, 1931.)* American Solvents and Chemical Corporation, Albany, N. Y. *(N. J. 17308, January, 1931; 17475, March, 1931; 17831, 17918, June, 1931.)* Mallinckrodt Chemical Works, St. Louis, Mo. *(N. J. 17466, March, 1931; 17796, 17919, 17941, June, 1931.)* Pacific Chemical Company, New York City and Edgewood, Md. *(N. J. 17845, 17953; June, 1931.)* Brewer Company, New York City. *(N. J. 17910; June, 1931.)* Martin Elias Company, Elizabeth, N. J. *(N. J. 17974; June, 1931.)*

**Fowler's Solution Tablets.**—C. M. Bundy Company, Indianapolis, Ind. *(N. J. 17911; June, 1931.)*

**Ginger Fluid Extract.**—Hub Products Company, Boston, Mass. *(N. J. 17452, March, 1931; 17773, June, 1931.)* American Products Company, Kansas City, Mo. *(N. J. 17606; April, 1931; 17758, June, 1931.)* Land Drug Company, Cincinnati, Ohio. *(N. J. 17605; April, 1931.)* Queen City Distributing Company, Cincinnati, Ohio *(N. J. 17604; April, 1931.)* De Lux Packing Company, Brooklyn, N. Y. *(N. J. 17751; June, 1931.)* Savoy Drug and Chemical Company, Chicago. *(N. J. 17769; June, 1931.)* York Distributing Company, Brooklyn, N. Y. *(N. J. 17765; June, 1931.)* Interstate Drug Company, Harlem Transfer, N. Y. *(N. J. 17922; June, 1931.)*

**Magnesium Citrate Solution.**—Citro-Nesia Company, Inc., Chicago. *(N. J. 17313; January, 1931.)*

**Mercuric Iodide Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Myrrh.**—Devkapan-Adenwalla, Aden, Arabia. *(N. J. 17384; February, 1931).*

**Niter, Sweet Spirits.**—Standard Drug Company, Newark, N. J. *(N. J. 17781; June, 1931.)*

**Nitroglycerin Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Nux Vomica Tincture.**—American Laboratories, Inc., Richmond, Va. *(N. J. 17752; June, 1931.)* Standard Drug Company, Newark, N. J. *(N. J. 17781; June, 1931.)* Brewer and Company, Inc., Worcester, Mass. *(N. J. 17860; June, 1931.)* P. J. Noyes Company, Lancaster, N. H. *(N. J. 17841; June, 1931.)*

**Opium Tincture.**—Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)*

**Phenolphthalein Tablets.**—Tilden Company, New Lebanon, N. Y. *(N. J. 17325; January, 1931.)* Brewer and Company, Inc., Worcester, Mass. *(N. J. 17860; June, 1931.)*

**Potassium Bromide Elixir.**—Brewer and Company, Inc., Worcester, Mass. *(N. J. 17860; June, 1931.)*

**Santonin and Calomel Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)* P. J. Noyes Company, Lancaster, N. H. *(N. J. 17841; June, 1931.)*

**Sodium Salicylate Elixir.**—Zemmer Company, Pittsburgh, Pa. *(N. J. 17463; March, 1931.)*

**Sodium Salicylate Tablets.**—Brewer and Company, Inc., Worcester, Mass. *(N. J. 17860; June, 1931.)*

**Sodium Sulphocarbolate Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

**Strychnine Nitrate Tablets.**—Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)*

**Strychnine Sulphate Tablets.**—Frederick Stearns and Company, Detroit, Mich. *(N. J. 17603; April, 1931.)* George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)* P. J. Noyes Company, Lancaster, N. H. *(N. J. 17841; June, 1931.)*

**Trional Tablets.**—George A. Breon and Company, Kansas City, Mo. *(N. J. 17848; June, 1931.)*

# Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## EFFECTS OF RADIUM AND RADON GAS TAKEN INTERNALLY

*To the Editor:*—The papers all over the United States have had articles reporting the death of Eben M. Byers from a "patent medicine" that he had been imbibing for the last two years, containing radium. Considering the cost of refined radium, it stands to reason that there was only an infinitesimal amount, if any, of the element present in the "patent medicine" under consideration; hence radium in the form of carnotite or uranium ore was used, containing many other ingredients besides radium that could have caused the ill effects reported. Have any tests been made on niton gas, or radon for internal use, and if so what would be the results of taking this gas suspended in water into the system for the amelioration or cure of various metabolic ailments? I have a number of patients taking radon emanations in water, 2,000 mache units in a liter of water daily, and the majority report excellent results; a few report no change, but none has reported, so far, any actual ill effects. Some of the patients have taken this remedy to the exclusion of all else for six months or more, most of them for lesser time. I am using an emanator, to produce radon gas, manufactured in this city (Los Angeles) by the Zimmer Laboratories, Bendix Building.

A. S. Waiss, M.D., Los Angeles.

Answer.—This question was referred for reply to Dr. Frederick B. Flinn, Columbia University, who made special studies of the case of Mr. Byers. Dr. Flinn writes:

"The death of Mr. Eben M. Byers was caused by the ingestion of radioactive material over a period of months. Electroscopic tests, the history and the clinical picture leave no doubt in the matter. The necropsy confirmed the diagnosis. The whole picture was the same as that presented by the cases of "radium poisoning" among dial painters. Pneumonia was one of the accidental terminal conditions. Phosphorus did not enter into the picture in any manner. Attempts of the physical therapist who recommended Radithor to Mr. Byers to cloud the issue by saying that the death "was the result of a combination of blood diseases which induced gout" shows a deplorable ignorance in the matter. Mr. Byers had an anemia, which is always present in radium cases in the advanced stage, but there was no evidence of gout during the year that I saw him. It might be interesting to say that out of the "dozen patients on radium water at any one time" of the foregoing physical therapist I have had two cases of radium poisoning —Mr. Byers and one other, in which death occurred in September, previous to the death of Mr. Byers. The second patient was brought to me the same time that Mr. Byers was and to the best of my information they took the medicine on recommendation from the same source. Both were radioactive.

"Radithor by my own tests contained 2 micrograms of radioactive material in solution. This test was made on five bottles which Mr. Byers gave me on his second visit and which he said was the preparation he had been taking. It contained both radium and mesothorium chlorides. Radium chloride can be bought for around 20 cents per microgram, mesothorium at a slightly lower price. Radium itself is quoted at $70 a milligram, which makes the metal itself worth 7 cents a microgram. Expense is a trivial matter.

"Water jars lined with carnotite or uranium ore constitute a potential danger because of the possibility of such metals as vanadium, uranium or arsenic dissolving out. I have had cases which suggested such a possibility called to my attention. These salts are poisonous. I am informed that illness occurred among the miners of radium ores in Portugal. At first it was thought it was caused by the radioactivity in the water which they drank, but it was found that the radioactivity had disappeared and that the trouble was due to salts of these metals which had gone into solution.

"On account of the slight solubility of radon or niton in water as compared with some gases, it is doubtful whether it remains in the system very long. My own experiments show that in half an hour 82.5 per cent is eliminated and 97.5 in an hour and a half. At the end of from four to five hours the expired breath is negative. Tests on persons who have drunk water for a year containing more than 2,000 mache units show at the most the mere trace of any radioactivity. These tests are not completed but will be in the near future, when the results will be reported.

"Radon is toxic to some extent. The emanations from a gram of radium bromide will kill mice in two days. Deaths have been reported when workers have been exposed to large amounts of emanation over a period of time. It will kill tissue, as tests in my own laboratory show. The advantage of radon is that the treatment can be stopped at any time by the physician and the exposure ceases. However, there is need of well controlled experiments to show definitely the value of its use. It should never be taken except under the advice of a physician who is qualified by his knowledge of physics to administer it."

In spite of many years of trial, acceptable evidence for the value of the internal use of radium solutions or of water containing radon has not become available, and until such evidence does become available the Council on Pharmacy and Chemistry has decided not to accept generators for the production of water charged with radon.

## TREATMENT OF HEMORRHOIDS

*To the Editor:*—A patient has acute prolapsed internal hemorrhoids with strangulation by a reflexly contracted sphincter accompanied by prolapse of the mucous membrane of the anus. To obtain reduction I used alternately the application of cold and a solution of epinephrine hydrochloride and chlorbutanol. Thirty-six hours after, and though the reduction was easily made, the internal hemorrhoid with the mucous membrane of the anus prolapsed again. As I examined the patient I discovered there was an inflammation of the mucous membrane of the rectum and advised my patient to undergo an operation to avoid possible disastrous consequences. He complied with my advice and was operated on. Some friend or parent of the patient called on him at the hospital and said that he had the same trouble and was cured by application of hot compresses without operation. My patient, believing him, blames me, saying that if I applied hot compresses instead of cold and epinephrine, the operation could have been avoided. The surgeon who made the operation cut off four inches of the diseased portion, more than he believed when he first examined him. I should like to have your opinion in the matter, whether I was right in the application of cold and epinephrine with chlorbutanol and recommending an operation; or could the application of hot compresses make the operation unnecessary. I will appreciate a prompt answer. Please omit name.

M.D., New York.

Answer.—The advising of cold applications and epinephri and chlorbutanol locally, and eventually an operation, was fo the best interests of the patient and therefore proper advice. I is true that occasionally thrombotic hemorrhoids will recede by expectant treatment, but by far the best treatment is to remove the clot, which offers the patient the safest and speediest convalescence.

## HYALINE CASTS

*To the Editor:*—There seems to be a considerable lack of agreement on the part of the home office examiners of certain insurance companies, on the one hand, and of the general profession, on the other, concerning the significance of hyaline casts in the urine. Assuming that, in a given case, albumin is not present, there is good concentration, and other clinical and laboratory examinations give negative results, but that occasional or even frequent centrifugated specimens of urine show hyaline casts in no large numbers, a discussion in your careful way as to their prognostic significance might be of wide interest. Such a discussion or reference to similar discussions in previous issues of The Journal will be highly appreciated.

Charles H. Stoddard, M.D., Milwaukee.

Answer.—Between better informed members of the profession and similar home office insurance men there is no disagreement concerning the significance of hyaline casts. Both will look for some reasonable explanation in any apparently healthy case with normal clinical and laboratory observations, including good concentration when casts are found frequently and in no large numbers, as the inquiry puts it.

If the patient is middle-aged or older, and especially if actively engaged, both will incline to follow Osler and look on the casts somewhat in the same way as gray hairs. If the patient is younger, they will look for strains or exposures to explain the meaning of the casts. Thus, one young man dolled himself into a rosy condition for insurance examinations, which had to be repeated because of the finding of casts, by working in a gymnasium and taking a cold plunge before furnishing specimens of urine. Another always found it more convenient to furnish specimens on his return to work just after bicycling four miles to eat a hurried dinner and do chores about the house. Still another went light on lunch so as to have an appetite for dinner, and all of the specimens he passed just before eating were acid and contained acetone as well as casts. A wide variety of similar instances, including prohibition liquor, might be cited to illustrate the advisability of seeking a reasonable explanation for the casts in such cases as those referred to.

Such cases offer an ideal field for applying the principles of preclinical medicine or the promotion of longevity because it is well known that frequent strains or malfunctions extending over long periods tend to lead to organic changes. Thus, the assumption that habits which are perfectly harmless for some may be harmful to others is borne out by insurance experience, which indicates that casts in protein-free urine are apparently without effect on mortality statistics until after a lapse of ten years or more.

Taking all ages together, it is interesting to note that insurance experience fails to show any difference in significance as between hyaline and granular casts, although fewer granular casts are expected in younger persons; also that the exhibition of casts, intermittently or constantly, does not give an unfavorable insurance experience when the cases are known to be uncomplicated. When there are complications, the picture naturally changes immediately to another, which depends on the nature of the complication.

Quantitative microscopy, which takes no more time or trouble than far less informatory methods, and sufficiently sensitive urine tests also tend to diminish disagreements because they help to clarify cases with doubtful urinary manifestations. When practitioners are in possession of information which home office insurance men do not have, or vice versa, disagreements are, of course, likely to occur, which are more apparent than real.

## TUBERCULOSIS OF KIDNEY

*To the Editor:*—1. What is the prognosis following the positive diagnosis of tuberculous kidney? 2. The frequency of spontaneous recovery? 3. What characterizes the terminal stage? 4. A positive bacteriologic diagnosis of right tuberculous kidney was made over six years ago. At present, roentgen examination shows extensive calcification of the pelvis and ureter. The phenolsulphonphthalein test shows function about one-fourth normal. Cystoscopy shows ulceration of the right ureteral orifice and the trigon of the bladder. Bacteriologic examination of the urine from the right kidney and bladder is positive for tuberculosis. The only positive observation on the left kidney is irritation of the ureteral orifice. What is the probability of involvement of the left kidney? Please discuss the advisability of surgical removal of the right kidney and the prognosis with or without surgery. M.D., Calif.

Answer.—1. The prognosis in cases of renal tuberculosis is good in cases that are treated by nephrectomy. However, bladder symptoms may persist after the kidney has been removed, and the duration of the bladder symptoms after the nephrectomy is dependent on the duration of the disease before the nephrectomy was done. In the largest number of cases, especially the early ones, the bladder symptoms completely disappear.

2. Spontaneous recovery rarely, if ever, occurs. It is doubtful whether there are any proved cases of healed renal tuberculosis.

3. The terminal stage is often marked by frequent and painful urination, hematuria, great urgency, and incontinence. The causes of death are tuberculosis of the lung, tuberculosis in the opposite kidney, tuberculous meningitis, miliary tuberculosis, and occasionally nephritis in the remaining kidney.

4. The only way to answer the question relative to the possibility of involvement of the left, or opposite, kidney is by means of ureteral catheterization, with careful bacteriologic study of the urine for tubercle bacilli. This may be done by direct smear or by guinea-pig inoculation. Intravenous pelography may be done as an adjunct, and finally, if indicated, a retrograde pyelogram. In this case nephrectomy may be done. The prognosis with surgery is good; without surgery, bad.

## ELECTROPHORESIS AS MEASURE OF VIRULENCE

*To the Editor:*—I should like to know something about the value of the Falk electrophoretic method of measuring the virulence of diphtheria bacilli. Is this just an experiment or has it really proved to be of value?

E. M. Lucke, M.D., Hannibal, Mo.

Answer.—The published evidence is conflicting. Stone and Weigel (*Am. J. Pub. Health* **19:**1133 [Oct.] 1929), who tested eighty-seven pure cultures of the diphtheria bacillus by the electrophoretic method of Falk and his co-workers and by animal inoculations, believed that their results demonstrated "the impracticability of applying the test to routine public health control practice." On the other hand, R. L. Thompson (*Am. J. Hyg.* **14:**235 [Sept.] 1931) found in a study of 173 cultures "belonging to the diphtheria group of organisms" that toxigenic and nontoxigenic cultures could generally be separated by the method of electrophoresis, the toxigenic organism migrating more slowly than the nontoxigenic. Thompson also found, however, that, contrary to the results of Jacobson and Falk, no relation existed between the virulence of a pneumococcus strain for white mice and the electrophoretic rate of migration for that strain. Obviously a method that gives diverse results in the hands of different experimenters should be adopted cautiously, if at all, as a decisive routine diagnostic test in a public health laboratory.

## IRRITANTS AND GASES AFFECTING WORKERS IN SILO

*To the Editor:*—From four to eight hours after working in a silo, a farm laborer has been troubled by coughing, headache, aching joints and subjective sensations of fever. These are not the usual symptoms of either carbon dioxide or carbon monoxide poisoning. I should be glad to know what gases are generated in a silo and whether there are cases of a fatal result. The symptoms referred to last with lessening severity for a day or two. W. J. LeRossignol, M.D., Denver.

Answer.—The prime harmful gas associated with the storage of ensilage is carbon dioxide. This gas may exist in quantities up to 75 per cent of the atmosphere, the remainder being made up almost entirely of nitrogen. Such a combination will not support life. Isolated instances of fatalities occur from time to time, but the most complete presentation of the problem may be found in an article by Mayhurst and Scott (The Journal, Oct. 31, 1914, p. 1570) reporting four fatal cases.

Carbon dioxide is not an intoxicant. As best known, it acts solely through its displacement of oxygen. In silos its abnormally high percentage is limited to the immediate time of filling with ensilage and it rapidly diminishes thereafter, so that at the end of two or three weeks no large quantity is present.

While carbon dioxide is not an irritant gas, there is associated with it an irritant, which is described by Hayhurst and Scott as "startling, pungent, alcohol-smelling, which irritates the mucous membranes and throat considerably." It is probable that this irritant is a combination of such volatile ingredients as butyric, propionic, acetic and lactic acid. The fluid that settles to the bottom of the silo contains, after fermentation, between 2 and 3 per cent of alcohol. Intoxication has been attributed to the drinking of this fluid as a beverage.

Of the case cited in the query it is believed that the manifestations may fully be accounted for on one or more of these assumptions:

(*a*) The condition may be low grade respiratory irritation from volatile acids.

(*b*) It may be allergic, following sensitization due to exposure to protein-containing dusts.

(*c*) Mechanical irritation by ensilage dusts may have inaugurated bacterial action along the respiratory tract.

Many forms of ensilage are well known, ranging from alfalfa to sunflower. It is probable that particular forms of ensilage may contain peculiar irritants, such as arise from oxidized sunflower seed oil.

## PITUITARY DEFICIENCIES

*To the Editor:*—Will you kindly outline the management of the various pituitary disorders from an endocrine standpoint, particularly in regard to glandular and radiation therapy? Recently a man, aged 31, came to me complaining of weakness, insomnia, recent increase of weight from 180 to 200 pounds (81.6 to 90.7 Kg.), and loss of mental acuity and capacity for sustained effort in the profession of law. The libido is decreased, and sexual congress increases mental apathy and leaves the patient depressed and irritable. Physical exertion quickly brings on fatigue and predisposes to infections of the upper respiratory tract. The latter are common. There are no marital, business or social conflicts. There have been two children, aged 4 and 1, both girls, who are living. The cardinal points in the physical examination are as follows: height, 5 feet 11 inches (180 cm.); weight, 200 pounds (90.7 Kg.); dilated left pupil; otherwise, reflexes normal, with vision 18/20 in the right eye and 14/20 in the left, corrected to 20/20 with glasses; thick, coarse, graying brown hair, with large, coarse eyebrows; left ethmoiditis; prominent nasal bones and hat size 7½. The thyroid is slightly enlarged and soft; the collar size is 16. There is a definite increase in collar fat pads and pelvic girdle fat. The breasts are quite large. The pulse ranges from 60 to 64; the blood pressure is 132 systolic and 80 diastolic. The abdomen is slightly obese. The testicles are about 50 per cent reduced in size and somewhat increased in firmness. The hands are large and well formed, size 8½; the feet are equally large, a size 11 B shoe being necessary. Two basal metabolic tests were done giving —18 on each occasion. The Kahn reaction is negative. A test of the spinal fluid was not done. The sella turcica is larger than normal. The patient has had a persistent tinea infection of the feet, the right hand and the scalp for the past four years. Recently an initial attack of pityriasis rosea appeared and is now receding. Headaches are rare and appear only during exacerbations of the respiratory infections. Soreness of both eyes is a marked symptom. Anything you can suggest will be greatly appreciated. Please omit name. M.D., Philadelphia.

Answer.—It is not possible, in this space, to outline fully the management of the various pituitary disorders. It may be said briefly that for the so-called hypopituitary states either low dosage roentgen therapy, applied to bitemporal fields 5 x 5 cm., or pituitary preparations subcutaneously, may be used. Pituitary tumors, of course, are treated either by surgical removal or by destructive doses of the x-rays.

Judging from the complaints of the patient, and from his size and build, the mammary development, testicular atrophy, loss of libido, lack of physical and mental endurance, the gain in weight and the prominent eyebrows, it seems that he probably has had a hyperpituitarism, particularly of the anterior lobe, which has now regressed to the hypo state, which involves both lobes. In the way of clinching this diagnosis, one should know the results of a differential blood count, a determination of the visual fields, and the blood nonprotein nitrogen, uric acid and dextrose tolerance. The presence of eosinophilia, an increased sugar tolerance and high uric acid, together with contraction of the form and color fields, would speak for a hypopituitarism. The low basal metabolic rate suggests an involvement also of the thyroid.

In treatment, solution of pituitary and of anterior pituitary should be given subcutaneously to the point of tolerance and the dose should be repeated three times a week, wholly experimentally. The anterior pituitary preparation should be kept below the amount which produces a headache and the pituitary solution should be given in doses just short of those sufficient to produce intestinal cramps.

### IMMUNITY AFTER TOXIN-ANTITOXIN IMMUNIZATION

*To the Editor:*—How long does one have immunity following the regular triple injection of toxin-antitoxin for diphtheria? Some texts seem to imply about six years and others do not state definitely.

E. C. Herber, M.A., Carlisle, Pa.

Answer.—The experience of Park and Schroder (*Am. J. Pub. Health* **18:**1455 [Dec.] 1928) is in line with that of most observers. Twenty-five infants and young children who were positive to the Schick test in 1919, and who received two injections of toxin-antitoxin when retested in 1926, gave negative reactions in twenty-three tests, a positive reaction in one and a doubtful reaction in one. Either 92 or 96 per cent retained their immunity. They also made observations on seventy-eight adults, originally giving a positive Schick test, who became negative in 1920 after one or two series of injections of toxin-antitoxin. Retested in 1928, at least 75 per cent had retained their immunity. They conclude that lapses are not great enough to make it necessary to reinject or retest as a public health measure, and that children seem to hold their immunity somewhat better than adults. They give the wise warning, however, that in time of exposure there is never certainty that a person's immunity has persisted. It must be remembered that immunity does not always result from the triple injection of toxin-antitoxin, and that this can be determined only by a subsequent Schick test.

### SUBUNGUAL EXOSTOSIS

*To the Editor:*—A man, aged 60, a shoe cobbler, noticed about four months ago a horny growth forming under his left thumb nail. It is as hard as bone, cavernous, and slightly darker than the nail. The growth has gradually increased in thickness until now it is about one-fourth inch in thickness. Three months ago a similar condition appeared under the right thumb nail and now his left great toe nail is becoming involved. The growth pushes the nail upward to such an extent that the pressure from his shoe causes pain. What is this condition? Please state cause and suggest treatment. Please omit name.

M.D., Missouri.

Answer.—This condition may be that rare type of subungual lesion discussed by L. W. Shaffer (Subungual Exostoses, *Arch. Dermat. & Syph.* **24:**371 [Sept.] 1931), who believes that these abnormalities arise from cartilaginous rests. "As the cartilaginous bud develops, it grows upward, seemingly as a branch from the phalanx; this bud, when it becomes completely osseous in a typical mature specimen, consists externally of dense cortex and internally of trabecular structure, both of which are directly continuous with the corresponding structures of the phalanx." Contrary to this concept is the fact that the lesions described by Shaffer are almost invariably limited to the great toes. Also these lesions commonly occur early in life and before 50. Trauma is mentioned as an important factor which may in this case be significant, since in a cobbler much pressure trauma arises from the hand sewing of shoes and in other shoe repairing operations. These tumors are benign and are to be accepted as teratologic anomalies rather than neoplastic. Simple paring is not efficacious; recurrences are likely to follow. Total excision is the best method of treatment, without, however, injury of the matrix. Details of the operative procedure are furnished in the article cited. Roentgen examination, except in very early cases, will establish the condition as an exostosis if such is the case. If not, consideration must be given to the possibility of granuloma pyogenicum, warts, simple fibroma, and a malignant condition.

# Council on Medical Education and Hospitals

## COMING EXAMINATIONS

Alabama: Montgomery, July 11. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

Arizona: Phoenix, July 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave., Phoenix.

California: San Francisco, July 11-14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

Colorado: Denver, July 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

Connecticut: *Regular.* Hartford, July 12-13. *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

District of Columbia: Washington, July 11-12. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

Hawaii: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Room 48 Young Bldg., Honolulu.

Maine: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

Massachusetts: Boston, July 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

North Dakota: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

Oregon: Portland, July 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

Pennsylvania: Philadelphia and Pittsburgh, July 5-9. Sec., Mr. Charles D. Koch, Dept. of Public Instruction, Harrisburg.

Rhode Island: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

South Dakota: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

Utah: Salt Lake City, July 6-8. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

Washington: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

West Virginia: Harpers Ferry, July 12. Sec., Dr. W. T. Henshaw, State Health Dept., Charleston.

## Colorado April Report

Dr. William Whitridge Williams, secretary, Colorado Bo of Medical Examiners, reports the written examination Denver, April 6-9, 1932. The examination covered 8 s and included 80 questions. An average of 75 per ce required to pass. Three candidates were examined, all of passed. Four physicians were licensed by endorsement. following colleges were represented:

| College | PASSED | Year Grad. | |
|---|---|---|---|
| University of Colorado School of Medicine | | (1931) | 8 |
| Rush Medical College | | (1932) | 9 |
| Osteopath | | | 7. |

| College | LICENSED BY ENDORSEMENT | Year Grad. | Endorsem of |
|---|---|---|---|
| College of Medical Evangelists | | (1931) | Californ |
| Rush Medical College | | (1929) | Illinc |
| Indiana University School of Medicine | | (1925) | Indian |
| Washington University School of Medicine | | (1925) | Missour |

## California Reciprocity Report

Dr. Charles B. Pinkham, secretary, California Board of Medical Examiners, reports 58 physicians licensed by reciprocity with other states and 5 physicians licensed by endorsement from Jan. 2 to April 14, 1932. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of Arkansas School of Medicine | | (1930) | Arkansas |
| University of Colorado School of Medicine | | (1917), (1930) | Colorado, (1922) Virginia |
| Emory University School of Medicine | | (1926) | Georgia |
| Southern Medical College, Georgia | | (1893) | Colorado |
| Chicago Medical College | | (1888), (1894) | Illinois |
| Coll. of Phys. and Surgs. of Chicago | | (1892), (1894), (1911) | Illinois |
| Hahnemann Medical College and Hospital, Chicago | | (1920) | Illinois |
| Northwestern University Medical School | | (1923) | Utah |
| Rush Medical College | | (1895), (1919) Iowa, (1910) | Utah, (1901), (1911, 2), (1929, 2) Illinois |
| University of Illinois College of Medicine | | (1916) | Illinois |
| Indiana University School of Medicine | | (1911) | Indiana |
| State University of Iowa College of Med. | | (1897), (1927) | Iowa |
| University of Kansas School of Medicine | | (1922) | Montana |
| Tulane University of Louisiana School of Medicine | | (1924) | Louisiana |
| Baltimore Medical College | | (1890) | Maryland |
| Harvard University Medical School | | (1921) | Utah |
| University of Minnesota Medical School | | (1922), (1925) | Minnesota |
| Ensworth Medical College, Missouri | | (1913) | Missouri |

| | | |
|---|---|---|
| Washington University School of Medicine | (1923) | Montana, (1924) Missouri |
| University of Nebraska College of Medicine | (1920) | Nebraska, (1928) Idaho |
| Columbia University College of Phys. and Surgs | (1926) | Virginia |
| Cleveland Medical College, Homeopathic | (1895) | Florida |
| Miami Medical College, Cincinnati | (1903) | Ohio |
| Ohio Medical | | N. Dakota |
| Starling-Ohio | | Ohio |
| University of | | Ohio |
| University of | | Oregon |
| Jefferson Medi | | ticut, Maine |
| Woman's Medical College of Pennsylvania | (1907) | Penna. |
| University of Pennsylvania Department of Medicine | (1898) | New York |
| University of Pennsylvania School of Medicine | (1925) | Montana |
| Medical College of the State of South Carolina | (1925) | Minnesota |
| Chattanooga Medical College, Tennessee | (1910) | Texas |
| Vanderbilt University School of Medicine | (1926) | Tennessee |
| Marquette University School of Medicine | (1928) | Minnesota |
| University of Manitoba Faculty of Medicine | (1924, 2) | N. Dakota, (1925) Arizona |
| McGill University Faculty of Med. | (1903) New York, (1909) | Washington |
| Moscow State University Faculty of Medicine | (1889) | Illinois |

| College — LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|
| Yale University School of Medicine | (1927) | N. B. M. Ex. |
| Harvard University Medical School | (1928) | N. B. M. Ex. |
| University of Oregon Medical School | (1923) | N. B. M. Ex. |
| University of Pennsylvania School of Med. | (1919), (1926) | N. B. M. Ex. |

## Montana April Report

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports 6 physicians licensed by reciprocity with other states, April 15, 1932. The following colleges were represented:

| College — LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University Medical School | (1930) | California |
| University of Minnesota Medical School | (1930, 2) | Minnesota |
| University of Nebraska College of Medicine | (1925, 2) | Nebraska |
| University of Oregon Medical School | (1930) | Washington |

# Book Notices

**The Human Voice: Its Care and Development.** By Leon Felderman, M.D. Cloth. Price, $2.50. Pp. 301, with 22 illustrations. New York: Henry Holt & Company, 1931.

Either directly or indirectly, many organic and psychologic factors, including disease, are capable of influencing the complicated and difficult function of artistic voice production, particularly singing. The author conceives that all these factors should be comprehended and information concerning them placed at the disposal of the vocalist and vocal trainer. The theme is both important and ambitious. In each of most of the forty-eight chapters, some disease or other organic or psychologic factor supposedly bearing on artistic voice production is discussed. For the most part the subjects treated refer to the air passages directly, for example, "laryngitis" and "nervous disorders of the pharynx"; but other chapters discuss more indirect subjects, such as "headache," "alcohol," "immunity from disease," and "goiter." Obviously the basis on which such discussions should rest is a clear analysis of the speech mechanism itself and the psychologic and physiologic principles involved in its employment for the purposes of singing; but the author's descriptions on these subjects (including also the illustrations) are largely vague and inadequate. Owing in part to the failure to build such foundations strongly, the relation of disease or other factors discussed to the function of singing is usually not clearly depicted. The chapters vary greatly in value. Generally speaking, the text lacks in clear analysis of its subjects, being somewhat sketchily presented. One comes to question the author's opinions. For example, without discussing especial individual susceptibility to the inhaled drugs of tobacco, or the significance of "inhaling" the smoke, or the possible irritative effects of tobacco on the mucous membranes, the author expresses the opinion, possibly fraught with danger, that tobacco is essentially harmless to the singer. The chapter on the anomalies of speech is especially confused and inadequate. Analysis of tonsillectomy from the point of view of the singer, a subject that especially needs clarification, is omitted. While the vocalist will find much of interest and value in this volume, its real significance lies in the initiation of a unique and valuable subject for book making. It is to be hoped that a future edition will appear with important revisions of the present text.

**La maladie de Boeck: Sarcoïdes cutanées bénignes multiples.** Par le Docteur A. Kissmeyer, médecin de l'Institut Finsen. Préface du Dr. J. Darier. Paper. Pp. 147, with 67 illustrations. Copenhagen: Levin & Munksgaard, 1932.

This is a monograph of real value, covering a phase of cutaneous medicine which has caused a great deal of discussion among dermatologists. In the preface, Darier highly congratulates the author on his work but shrewdly urges further research before entirely discarding the theory of a tuberculous causation. The introduction presents the historical background of the controversy over sarcoids. Following this is a clinical and histologic description of the various types of cutaneous sarcoid and of the involvement of the eye, mucous membranes, lymph nodes, lungs, muscles, internal organs and the bones. Special emphasis is placed on lung involvement. The chapter on etiology and pathogenesis discusses the theory of a tuberculous etiology of sarcoids from every possible angle, with the conclusion that the disease is not caused by the bacillus of Koch. The author compares the histologic appearance of sarcoid with that of leprosy, especially as it occurs in the osseous system. Prognosis and treatment are then discussed. The conclusion of the author is that this condition belongs among infective granulomas of unknown etiology; but histiogenetically he places it between tuberculosis and leprosy. The true worth of the illustrations has been lost because of the poor quality of paper used.

**Nudism Comes to America.** By Frances and Mason Merrill. Cloth. Price, $3. Pp. 300, with illustrations. New York: Alfred A. Knopf, 1932.

It remains for the psychologist to explain the nudist movement. From the standpoint of health there is no reason to believe that exposure of the entire body to sunlight and fresh air will accomplish any more than exposure of those portions of the body that do not shock the puritanical. The authors of this book have visited the nudists in their special assemblages abroad and in this country. They present a complete survey of the extent to which organized nudism has made its appearance among us. One chapter is entitled "What Physicians Think." In this chapter the authors have collected replies to a questionnaire, statements from the literature, quotations from magazines and newspapers and other material from all sorts of sources. They do not, of course, distinguish between competent scientific opinion and notions. The illustrations chosen for the book are photographs of nudism in action, but neither the female nor the male reproductions of nudism in the book are in general nearly as repulsive as most of the actual nudists when seen in their colonies. These pictures seem to have been chosen for the beauty of the models rather than for demonstration of conditions as they are.

**Ernährung und Diät bei Tuberkulose.** Von Dr. Med. Paul Rehfeldt, Polizei-Medizinalrat in Köln a. Rh. Unter Mitwirkung von Professor Dr. med. Adolf Bacmeister, leitender Arzt des Sanatoriums für Lungenkranke in St. Blasien. Paper. Price, 13.50 marks. Pp. 187. Dresden: Theodor Steinkopff, 1932.

In an introduction to this complete work, Bacmeister writes that the surgical treatment of pulmonary tuberculosis in recent years has made such strides that it has overshadowed dietetic considerations, and tuberculosis as a general disease has been neglected. The ideas of Sauerbruch, Herrmannsdorfer and Gerson restored interest in dietetic treatment. Their treatment has been successful in skin and bone tuberculosis but disappointing in the treatment of pulmonary tuberculosis. The book is divided into nine interesting chapters, beginning with metabolism in tuberculous patients. The Harris-Benedict tables are given in regard to caloric needs, and the variations from the normal in tuberculous patients are discussed in regard to the various foodstuffs. The concept of a demineralized body in tuberculosis is not accepted, but, in contrast with the healthy, the tissues have not the same capacity to fix the mineral salts. The relationships of the different minerals and the different vitamins to general immunity are fully discussed. The absence of a single vitamin in the diet favors the progress of tuberculosis. Scientific investigation has reestablished the value of cod liver oil. The relationship of constitution to tuberculosis is sketched from Hippocrates and Hufeland to the present time. Inherited constitution is influenced by climate, nourishment, training, work and illness. Tables are given to illustrate the proper growth of children and the correct weights of adolescents. The three main types of Kretschmer, in regard to body form, are analyzed, the asthenic or narrow chested, the thick chested, and the athletic types. In puberty the proportion of tuberculous patients is highest in the asthenic type, and in this type there is less ability to develop immune bodies and to form connective tissue. The thick-chested type of individual has greater reaction power of the tissues to infection but is more prone to gout, arteriosclerosis and other constitutional diseases. This type has a better chance of overcoming tuberculosis. These constitutional types are discussed in relation to treatment such as climate, occupational therapy, and diet. Extensive dietetic tables are given with the balanced proportions of albumin, fat, carbohydrate and their resultant calories, and also depicting the mineral content of different foods. A body weakened by lack of food has an increased sensitiveness and a lessened resistance to tuberculosis. The central nations, impoverished in food during the World War, showed an astonishing increase in tuberculosis mortality. "Hunger is the reminder, appetite is the desire for food," and the art of diet and medication is described for the tuberculous in whom toxic conditions destroy appetite. The salt-free diet of Herrmannsdorfer is fully discussed and its advantages pointed out in skin, bone and joint tuberculosis, and in tuberculous fistulas. In pulmonary tuberculosis the addition to the diet of vitamin-containing vegetables and fruits, of cod liver oil and of calcium is stressed. Excellent results were seen in patients who could take daily six oranges, two raw egg yolks, a teaspoonful of cod liver oil after each meal, and a calcium preparation half an hour before each meal. The employment of insulin in diabetic patients is outlined, and tables of diet for these patients are given. The advantage of insulin for stimulating the gain in weight and well being of the nondiabetic tuberculous patient is pointed out. The dietetic treatment of intestinal and renal tuberculosis is fully discussed and also the dietetic treatment of nephritic complications. The book is thoroughly modern in the physiology of nutrition and represents a valuable contribution to the library of those engaged in tuberculosis work.

**Man and Microbes.** By Stanhope Bayne-Jones, M.D., Professor of Bacteriology, School of Medicine and Dentistry, University of Rochester, Rochester, New York. Cloth Price, $1. Pp. 128, with 16 illustrations. Baltimore: Williams & Wilkins Company, 1932.

This little volume is a part of a series to be issued in connection with the Century of Progress Exposition in Chicago. The books are planned to make understandable the advance of science. It is doubtful whether any better performance could have been made as a contribution to this series than this book by the professor of bacteriology at the University of Rochester. He makes clear the place of discoveries in technic as the basis of advance in the science of bacteriology; he has a feeling for historical background, and he provides a vast number of facts of importance for the prevention of disease. The book is beautifully illustrated, well written and an exceedingly worthy contribution to the series.

**Ergebnisse der Enzymforschung.** Herausgegeben von F. F. Nord und R. Weidenhagen. Band I. Cloth. Price, 29 marks. Pp. 377, with 63 illustrations. Leipzig: Akademische Verlagsgesellschaft m.b.H., 1932.

The realm of enzyme research involves problems concerned alike with chemistry and with physiology and serves to establish a closer relationship between these two branches of science. For this reason the literature of enzyme studies is found widely scattered in natural science and medical publications. In order to offer a survey of material which is not easily accessible, the plan was developed to publish from time to time a collection of summarizing reports on various topics of enzyme research. The papers are designed not to be comprehensive reviews of the literature but rather to deal with special problems and particularly to present the writers' own work in the field. This volume is therefore the first of a series, which will appear at intervals in the future. The book includes an elaborate author index. References to the literature are given for all work discussed or mentioned. The summaries vary in length from six to forty pages, the average being approximately twenty pages. The material is presented in the language native to the author of the discussion; and the book therefore contains reviews written in English, French and German. The men chosen to present various phases of enzyme research are leaders in their respective fields and have aided in preparing an excellent book, which should be of value to those interested in the chemistry and the physiology of enzymes. The table of contents includes articles covering the thermodynamics of cell reactions, significance of oxidation-reduction potentials in enzymatic reactions, mechanism of enzyme action, physical chemical processes in enzyme reactions, alcoholic fermentation, proteolytic enzymes of the plant and animal world, specificity and mode of action of carbohydrates, bacterial enzyme reactions, acetic fermentation, tyrosinase, bone phosphatase, crystalline urease, crystalline pepsin, the oxygen transporting ferment of respiration, biochemistry of the lower fungi, and the activation of plant enzymes.

***Hépatites et cirrhoses: Classification, pathogénèse et morphogénèse des hépatites diffuses aiguës, subaiguës et chroniques d'après les notions récentes sur la physiopathologie hépato-biliaire.*** Par Guy Albot. Préface du Pr. G. Roussy. Paper. Price, 34 francs. Pp. 247, with 56 illustrations. Paris: Masson & Cie, 1931.

The first part of this book on some of the common diseases of the liver deals with experimental data showing the evolution of acute diffuse hepatitis to more chronic forms. The second part is devoted to a scholarly discussion of anatomicoclinical material in which the experimental observations seem to be duplicated and the transition of hepatitis is traced to chronic forms and eventually to cirrhosis. It is emphasized that cirrhosis is a form of chronic inflammation of the liver, slow in development but involving all the elements of the liver lobule. The author describes in great detail the various pathologic and histologic changes, many of which are well illustrated by photomicrographs and by drawings. Much of the material represents personal experimental and anatomic study. The author's own observations are woven with the work of others into an interesting and compact discussion of the various forms of hepatitis and cirrhosis. Briefly, diffuse hepatitis is divided into three large groups: toxiinfectious, the hepatitis of biliary stasis, and the form associated with passive congestion. Transitional stages are described, linking the acute with the chronic forms and the latter with cirrhosis. It is stated that not all cases progress to the stage of cirrhosis but that some may stop at earlier periods in development. There then follows a copious list of protocols taken from anatomic and experimental studies. A good bibliography and a summary of the author's conclusions are found at the end.

**The Aetiology of Tuberculosis.** By Dr. Robert Koch. A translation from the German of the original paper announcing the discovery of the tubercle bacillus, read before the Physiological Society in Berlin, March 24, 1882, and published in the Berliner Klinische Wochenschrift, 1882, XIX, 221, specially prepared for The American Review of Tuberculosis, March, 1932, by Dr. and Mrs. Max Pinner. With an introduction by Dr. Allen K. Krause. Cloth. Price, 50 cents. Pp. 48, with 8 illustrations. New York: National Tuberculosis Association, 1932.

As a memento of the fiftieth anniversary of Koch's discovery of the cause of tuberculosis, the National Tuberculosis Association has published an English translation of the original essay of Koch together with an introduction by Dr. Allen K. Krause. The book is illustrated with facsimiles of the original illustrations in the book on the subject and the contribution to the *Klinische Wochenschrift*. The price of the publication is so reasonable that it should be in the library of every worker in the field.

**Traitement de la tuberculose par la sanocrysine.** Par Knud Secher, médecin-chef à l'Hôpital de Bispebjerg, Copenhague. Paper. Pp. 110, with 21 illustrations. Copenhagen: Levin & Munksgaard; Paris: J. B. Baillière & Fils, 1932.

This small monograph represents an exposition of the author's experience and ideas concerning treatment of tuberculosis with "Sanocrysin" (gold sodium thiosulphate). The frankness with which he admits the severe reactions and results at the beginning of the experiments is to be admired, for such is the lot of the pioneer; but the rather dogmatic assertions that the "reactions" are tuberculin reactions and the insistence on the necessity of heavy "sterilizing" doses are not to be accepted without question. The author's review of the literature in support of the tuberculin-like action is biased in favor of the theory, leaving out any reference to the excellent work of the Japanese and others, who found no proof of such a tuberculin reaction in animals. Although there may be and perhaps is a certain degree of such action, many of the reactions resemble metallic poisoning, such, for example as salivation, severe pain and exfoliative dermatitis following large doses. As to the "sterilization" of tuberculous lesions, there is little established evidence of a direct effect on the tubercle bacilli. The opinion is now generally in favor of an indirect action on the body rather than a direct one on the parasites. Patients with disseminated bacilli without resistance are not affected at all favorably, which indicates a lack of bactericidal effect. There is therefore no need to adhere to the large and rather dangerous dosage advocated by the author. On the other hand, good results have been obtained by many others, without the objectionable reactions, by using smaller dosage. The indications, contraindications, types of reaction and various systems of dosage are rather well given and are useful as guides in treatment. The methods of dosage used by Permin and especially by Sayé afford a good plan to all those contemplating use of the drug. In the evaluation of the results of treatment, several authors are cited, but perhaps the most representative is that of Stub-Christiansen, who showed that 53 per cent of treated patients are able to work after one year, while only 37 per cent remain in that condition after five years. With certain reservations regarding the author's method of dosage, the booklet may be used as a guide in treatment with "Sanocrysin."

**Walter Bradford Cannon: Exercises Celebrating Twenty-Five Years as George Higginson Professor of Physiology, October 15, 1931.** Boards. Pp. 94. Cambridge: Harvard University Press, 1932.

In connection with the presentation of the portrait of Dr. Walter B. Cannon to Harvard and the celebration of his twenty-five years of service as professor of physiology, a beautiful souvenir volume has been issued. It includes the addresses made on the important day by Drs. Edsall, Alvarez, Howell and Lusk, the acceptance address of President Lowell, and a record of Dr. Cannon's service, together with a bibliography of his writings. The book is beautifully printed, contains a reproduction of the portrait, and will be appreciated by all those who know Dr. Cannon.

**Gynäkologische Operationslehre.** Von Hofrat Prof. Dr. Josef Halban. Paper. Price, 37.50 marks. Pp. 448, with 398 illustrations. Berlin: Urban & Schwarzenberg, 1932.

The author's aim in this book is to accomplish two purposes: to describe the technic of gynecologic operations and to point out the indications for these operations. As Halban emphasizes, it is frequently more difficult to know whether and when to operate than how to perform an operation. The purposes have been so well fulfilled that this book is one of the best books on surgical indications and technic ever published in any language. Because there are numerous different operations for many gynecologic conditions, Halban describes and illustrates the ones which he himself generally performs. For this reason the book is most valuable. There are few gynecologists in the world who can equal Halban's ability to perform vaginal operations. It is unfortunate that the large majority of gynecologists in this country, especially the younger ones, are unfamiliar with the technic of vaginal operations. The latter operations have a decidedly lower mortality and morbidity than laparotomies, and all gynecologists should learn the anatomy and technic of vaginal operations in order to give their patients the benefits of these operations. The author describes not only gynecologic operations but also operations on the bladder, ureter and kidney, the repair of hernias and the removal of the appendix, hemorrhoids and pulmonary emboli. The illustrations cannot be surpassed for their accuracy, clearness and instructiveness. Every gynecologist should obtain a copy of this book, even those who cannot read German, for there are enough illustrations to label this book an excellent atlas.

**The Business Man and His Health.** By Jesse Feiring Williams, M.D. Cloth. Price, $2. Pp. 175. New York and London: McGraw-Hill Book Company, Inc., 1932.

Dr. Williams has planned this book for people who work indoors. It is a brief book of common sense advice, written in simple but somewhat prosaic form. Since people who work indoors are much like other people except for the fact that they work indoors, the book is really a good book on personal hygiene for every one. Especially to be recommended is the chapter on the choice of a physician.

# Medicolegal

## Practice of Dentistry by a Corporation

*(Parker v. Board of Dental Examiners of State of California (Calif.), 1 P. (2d) 501)*

"Painless Parker Dentist," a corporation, was organized to "conduct, own, operate and control dental offices." E. R. Parker, one of its incorporators, a licensed dentist, changed his name to "Painless" Parker, by court decree. Apparently, the corporation never acted in any respect other than to appoint Painless Parker, the incorporator named above, as its "manager and chief surgeon." The corporation never paid a dividend nor had any assets or funds on hand. Shortly after the incorporation of "Painless Parker Dentist," the Associated Dental Supply Company was organized as a corporation to deal in all kinds of dental supplies. When proceedings to revoke Painless Parker's license were instituted, fourteen dental offices seem to have been operating in California by dentists using "the E. R. Parker system," all owned or leased by the Associated Dental Supply Company, but these offices were in turn "leased" by that company to the Painless Parker Dentist corporation. Notwithstanding this subleasing of these offices, however, the Associated Dental Supply Company seems to have dealt directly with the managers of these local dental offices, and these managers deposited all the receipts of their respective offices to the credit of the Associated Dental Supply Company. Painless Parker, the individual, seems to have supervised the operation of all the offices for the benefit of the Associated Dental Supply Company. He employed a licensed dentist as the local manager of each office, and each such local manager employed licensed dentists to perform all necessary dental operations. Painless Parker Dentist, the corporation, was apparently the lessee of these offices, and the term "Painless Parker Dentist" appeared on the doors, windows and letterheads, although later the term "dentists using the E. R. Parker system" was substituted. But Painless Parker, the man, managed these offices apparently for the benefit of the Associated Dental Supply Company.

Painless Parker's conduct was deemed unprofessional by the California board of dental examiners, and after notice and hearing it revoked his license to practice dentistry. Parker petitioned the superior court, city and county of San Francisco, to set aside the revocation, which the court refused to do. He then appealed to the district court of appeal, first district, division 2, California.

Section 11, Act 2048, Deering's General Laws, 1923, the dental practice act, declares the practice of dentistry to include the activities of any one "who manages or conducts as manager, proprietor, conductor, or otherwise a place where dental operations are performed." Section 13 of that act defines as unprofessional conduct "aiding or abetting any unlicensed person to practice dentistry unlawfully." The conduct of Parker, contended the board, was "unprofessional" in that he aided and abetted an unlicensed person, the Painless Parker Dentist corporation, to practice dentistry "by permitting, allowing and authorizing said corporation to conduct, own, operate, and control dental offices throughout the state . . . where dental operations were performed, and carry on the practice of dentistry therein." The board contended that conducting, owning, operating, and controlling dental offices constituted the practice of dentistry within the purview of section 11 of the dental practice act, *supra;* that a corporation cannot be licensed to practice dentistry; and that any licensed dentist who aids a corporation in performing any of the acts named above is aiding "an unlicensed person" to practice. Parker claimed, however, that the term "unlicensed person," as used in the prohibition of "aiding and abetting any unlicensed person to practice dentistry unlawfully," refers only to natural persons, who might be licensed under the act, and not to a corporation owning or operating a dental office, and that the provisions of section 11 are unconstitutional so far as they purport to prohibit an unlicensed person from managing the purely business or economic affairs of a dental office.

Bearing in mind, said the district court of appeal, that the ultimate purpose of the dental practice act is to bring about and insure skill and proficiency in the practice of dentistry, section 11 as construed by the board would be unconstitutional, because it would place unreasonable restrictions on the conduct of a lawful business. To support this statement the court quoted from *State* v. *Brown*, 37 Wash. 97, 79 P. 635, decided in 1905. In that case the Supreme Court of Washington had under consideration a provision of the dental practice act of Washington, which made it a misdemeanor for an unlicensed person to "own, run, operate or cause to be operated, or manage a dental office." The Washington court said, in part, as follows:

> To own and manage property is a natural right, and one which may be restricted only for reasons of public policy, clearly discernible. . . . But, we are unable to say or perceive that the health, moral, or physical welfare of the public, or any of the personal or property rights of its individuals, are endangered by the ownership and management of a dental office, so long as those employed therein to do the actual dentistry work are qualified and licensed as by law required.

The Supreme Court of Washington in its exposition of the supposed unreasonableness of the Washington statute described the hypothetical case of a supposed widow of a licensed dentist, who assumed control and management of the business of the office of her deceased husband, and who, though she employed none but licensed dentists to perform the dental work, would be chargeable under the strict terms of the act with practicing dentistry without a license. Other illustrations, said the California district court of appeal, might be added. "The manager or proprietor of a place where dental operations are performed," said the court, "would include the manager and owner of every hospital and clinic permitting such operations, the many charitable agencies maintaining clinics, the infirmaries and guilds maintained and operated by the students in universities and colleges, the many dental clinics maintained by parents' organizations for the benefit of school children, as well as the owners and managers of buildings where such operations are performed."

The California court found further authority for its holding, in *Messner* v. *Board of Dental Examiners*, 87 Calif. App. 199, 262 P. 58, decided in 1927, in which the court of the third appellate district annulled an order suspending the license of a dentist on the charge that an unlicensed person was the "manager" of his office. In that case, the court said, in part, as follows:

> Cohn had charge of the purely business end of the dental office, . . . but there is no evidence that he had or exercised the slightest control or direction of the professional work performed in such office. . . . A reasonable construction of the quoted provisions of the statute appears to be that, to come within the terms thereof, one must in some manner, to some extent, directly or indirectly, control or direct some professional service of the kind that dentists are licensed to render.

The court found itself in full accord with and quoted from *State Electro-Medical Institute* v. *State*, 74 Neb. 40, 103 N. W. 1078, decided in 1905, as follows:

> There was no necessity of legislation to prohibit corporations, as such, from practicing medicine. It is impossible to conceive of an impersonal entity "judging the nature, character and symptoms of the disease," or "determining the proper remedy," or giving or prescribing the application of the remedy to the disease. Members of the corporation, or persons in its employ, might do these things, but the corporation itself is incapable to do them. The qualification of a medical practitioner is personal to himself. The intention of the law is that one who undertakes to judge the nature of a disease or to determine the proper remedy therefor, or to apply the remedy, must have certain personal qualifications; and, if he does these things without having complied with the law, he is subject to its penalties. Making contracts is not practicing medicine. Collecting the compensation therefor is not practicing medicine, within the meaning of this statute. No professional qualifications are requisite for doing these things.

It follows, said the California court, that when the California legislature declared it to be unprofessional for a licensed dentist to aid an unlicensed person to practice dentistry, it did not contemplate aid to a corporation, which itself could not become licensed under the act and which could do no more than conduct the business side of the office. Since a corporation cannot practice dentistry, Parker could not have aided it to practice and could not have been guilty of unprofessional conduct in this respect as charged by the board.

The board of dental examiners charged further that Parker had been guilty of unprofessional conduct in that he aided an unlicensed person, Ramona McShane, to practice dentistry unlawfully by permitting her to participate in the profits of the dental offices operated by "Painless Parker Dentist, a corporation." The board, to support this charge, introduced evidence that some years ago the Associate Dental Supply Company executed a trust agreement and sold trust certificates in small denominations. Ramona McShane purchased a number of these certificates, and dividends were later paid to certificate holders. As the Painless Parker Dentist corporation leased offices from the Associated Dental Supply Company, the board, after its hearing in the case, held that Ramona McShane participated in the profits of the Painless Parker Dentist corporation that she therefore practiced dentistry unlawfully, and that Painless Parker aided and abetted her in so doing. But, said the district court of appeal, it would be just as reasonable to hold that every stockholder of a bank which has lent money to the owner of a building in which some dentist has practiced without a license is an aider and abetter in the unlawful practice of dentistry. To interpret the statute as contended for by the board would make it unconstitutional for the reasons stated above. If, however, the statute is given a reasonable and constitutional interpretation, the evidence demonstrates that Ramona McShane was not practicing dentistry within any sound construction of the act.

The board held also, after its hearing, that Painless Parker had been guilty of unprofessional conduct in that he practiced under an assumed or fictitious name in the use of the term "Painless Parker Dentist." But, said the court, the name Painless Parker Dentist was not fictitious. Parker was practicing under the name given him by decree of court, which also was the name under which he was licensed to practice by the board.

For the reasons stated above, the order of the California board of dental examiners suspending Parker's license to practice dentistry was reversed.

# Society Proceedings

## COMING MEETINGS

American Ophthalmological Society, New London, Conn., June 27-29. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. Frederick Epplen, 1215 Fourth Avenue, Seattle, Secretary.

Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.

Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

## ASSOCIATION OF AMERICAN PHYSICIANS

*Forty-Seventh Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1932*

The President, DR. THOMAS B. FUTCHER, Philadelphia, in the Chair

### Use of the Matthews Oscillograph in Phonocardiography

DRS. WILLIAM J. KERR, JOHN J. SAMPSON, JOHN B. LAGEN and FREDERICK KELLOGG, San Francisco: The advantages of studying heart sounds by graphic means are as follows: 1. Permanent records are available for comparison. 2. Confused rhythms may be analyzed. 3. Detailed study of pitch, time and intensity of sound elements is possible. 4. Sounds normally inaudible may be recorded and studied. 5. Sounds may be analyzed from a different group of criteria in special relationship of pitch and intensity. The methods used condenser microphones and various types of rigid electroschemes, use of the Einthoven string galvanometer in series with a carbon particle or electromagnetic microphone, and the Einthoven galvanometer in series with an electron tube amplifying circuit and electrical filter, as well as an electromagnetic microphone. Recently Sell, Duchosal and others have used condenser microphones and various types of rigid electromagnetic oscillographs with natural periods higher than those of the Einthoven galvanometer with customary string lengths. Other types of oscillographs, particularly the cathode ray oscillograph and the short string Einthoven galvanometer, have been developed for other purposes and not yet applied to phonocardiography. Our purpose in this presentation is to show illustrations of the character of records taken with a Matthews electromagnetic oscillograph with a high natural period and an electrical amplifying and filtering mechanism (the Western Electric Company's IA electrical stethoscope) as transmitted from a solid medium conducting electromagnetic microphone. The results obtained are favorably comparable to the records published by any of the other methods with a recorded range from 64 to 2,048 vibrations a second. The technic is simple and rapid, with or without simultaneous electrocardiograms.

DISCUSSION

Dr. F. N. Wilson, Ann Arbor, Mich.: I should like to ask about the microphone, whether it is capable of responding accurately to vibrations of very high frequency. Some years ago Dr. H. P. Williams, working with the Western Electric Company on the electric stethoscope, thought that the record of the galvanometer as showing response to high frequencies would not be any good unless the microphone was corrected. He felt that it did not respond accurately enough to sounds of very high frequencies.

Dr. William J. Kerr, San Francisco: We have been able to reproduce tuning fork vibrations of 2,048 frequency with a fair degree of accuracy, but this tracing does not enlarge very well on the slide. Later we hope to send some of our results to Dr. Wilson for comparison.

### Vaccine Therapy in Rheumatic Cardiovascular Disease

Drs. W. D. Stroud, Albert W. Bromer and J. Roswell Gallagher, Philadelphia: These studies are based on ten years' observations in the Children's Heart Hospital in Philadelphia, which cares for children suffering from severe rheumatic cardiovascular disease. Treatment has included removal of foci of infection, removal from home environment, possible removal of familial contagious factors, care, rest and sufficient diet. The results have been disappointing. First of all, the follow-up results were unsatisfactory. Of 405 children, we have been able to follow up completely only 64 per cent. Thirty-six per cent have been lost sight of. Results in the 64 per cent were disappointing. Of these, 34 per cent died uncompensated, at the hospital or at home. Thirty per cent improved sufficiently to continue at work or at school. We knew that other workers had unsatisfactory results also and we wondered whether it would not be better to spend our funds on sending the children to Porto Rico or to Florida, rather than on research work. We were interested in Swift's work on the hyperergy of these children to streptococci, and we studied how to make them hyposensitive. We divided the children into three groups, as regards similarity of age. Twenty-five were under 17 years of age. We divided these into groups as to hypersensitivity to streptococci, and also as to the extent of cardiovascular damage and functional disability. Treatment also was grouped. Group 1 received the triple streptococcus vaccine of Swift in weekly injections; group 2 received triple typhoid vaccine; group 3 was used for control. Our method was to begin with a dose of from 50,000 to 100,000 and work gradually up to doses of 25 million. The triple typhoid vaccine could not be raised above 15 million on account of severe reactions. The visiting nurse went to the home of the patient to follow up the reactions and to fill in the questionnaire. There were more severe reactions in the triple typhoid group than in the other. Exacerbations often seemed to be delayed and were apt to appear in March. We wondered whether this could be attributed to seasonal influence. Our conclusions were that we must be very cautious in determining the results of the treatment. We feel it would be better to treat only a small group, so that each individual case can be followed up. We felt that there were no harmful results to be observed, and after consultation with Dr. Swift we feel justified in continuing the vaccine therapy. We intend to use younger individuals and to give the triple streptococcus vaccine intravenously.

DISCUSSION

Dr. Homer F. Swift, New York: In discussing this interesting report, one must realize the difficulty in evaluating the effect of any therapy in this disease, especially over such a limited period. Recently Dr. May Wilson has reanalyzed the data on the condition of the rheumatic children at the New York Nursery and Child's Hospital. In a report made before this association two years ago, a group of about 80 children vaccinated intravenously during a period of two years had a distinctly lower incidence of relapses than an unvaccinated group of similar size. Vaccination was then stopped for about two years; and recently the old vaccinated group has shown a higher incidence of recurrences than the nonvaccinated. At least two explanations of this phenomenon are applicable: 1. Relative freedom from relapses may be followed by a greater susceptibility. 2. In emerging from a condition of relative immunity, or hyposensitiveness, there may be a phase of hypersensitiveness.

### Myocardial Failure Due to Trichinosis

Drs. Carl V. Weller, Ann Arbor, Mich., and Milton Shaw, Lansing, Mich.: In 1865, Kornblum noted the occurrence of a marked parenchymatous degeneration in the heart of a patient dying of trichinosis. He found millions of trichinae in the skeletal muscle but none in the heart muscle. In the latter there was probably an active defensive process characterized by a large number of eosinophils. With one exception (Frothingham in 1906 described what he believed to be an embryo in heart muscle) there have been no reports of trichinae found in heart muscle fibers. This led to the view that there was a toxic substance found in the body which was carried through the blood stream. We have studied a patient brought to the St. Lawrence Hospital. His illness, which had lasted six weeks, commenced with diarrhea; he had fever, night sweats and muscle pains. On admission he was nearly moribund. He had dyspnea, cyanosis, edema and feeble pulse with a rate of 136. He died before anything could be done. Necropsy showed an enormous number of trichinae in the stage of encystment in the skeletal muscles. The heart muscle showed no embryos but a marked diffuse myocarditis, both a focal and diffuse type of the process. Staining showed a large number of eosinophils. Studies by Graham on rats showed that from eight to fourteen days after infested meat has been eaten, embryos can be demonstrated in the heart muscle. The fact that they are found in every situation gave rise to the belief that they reach the myocardium but are promptly disposed of. Weiss made an elaborate clinical study of the disease and called attention to the edema phenomena that occurred. Facial edema in the third week was mostly toxic from the infected muscles. In the fourth or fifth week it was largely inflammatory. In the sixth week the edema appeared in the dependent portions of the body as a result of the failing myocardium. Studies show that fatal cases are not common. There are many sublethal cases and also subclinical cases. It seems to be a curious condition if the heart disposes of the parasites. There is an analogy to syphilis. The spirochetes can be demonstrated in the aorta, but it is difficult to demonstrate them in the myocardium. It seems as if a defensive mechanism might be supposed which disposes of the parasites.

DISCUSSION

Dr. Thomas Ordway, Albany, N. Y.: The authors have spoken of these cases of trichinosis presenting myocardial symptoms. I will call attention to cases of trichinosis with the patients dying of pneumonia. I have had two such cases. There is often a very low blood sugar in cases of trichinosis. I am wondering whether the glycogen content of the heart muscle is different from that of the skeletal muscle because of its constant activity. This may have some bearing on the conditions found in the heart muscle.

Dr. George Blumer, New Haven, Conn.: I should like to ask the authors whether it is essential to assume that the parasites are destroyed. May they not, by passing through, do sufficient damage to lead to the lesions? There is an analogy to the infection in the chicken. One can infect the chicken, but the parasites do not remain in the muscle. If one examines the voluntary muscle in trichinosis the muscle shows areas of degeneration, but there are also areas of degeneration in which no trichinae are found.

Dr. Carl V. Weller, Ann Arbor, Mich.: I do not think that the myocardial weakness predisposes to the pneumonia under the circumstances. We had no opportunity to make glycogen estimations, but I think that this is a point of great interest. I do not know whether this reaction is evidence of a temporary condition or whether it represents evidence of actual destruction. I incline to the latter view because of the amount of destruction and because of the cellular reaction.

In examining the skeletal muscle we found many areas of degeneration, but, in serial sections, areas of infiltration lay above and below the areas where the parasite was present in the muscle. The very young trichinae are exceedingly small and translucent and it is exceedingly difficult to demonstrate them in the early stage in areas rich in eosinophils.

### Experimentation on the Heart in Hyperthyroidism

Dr. E. Cowles Andrus, Baltimore: Cardiac manifestations of hyperthyroidism are prominent manifestations of the disease. It is impossible, however, to correlate the severity of the heart lesion with the other clinical signs of the disease. The cardiac manifestations may be so prominent as to mask the hyperthyroidism. On the other hand, the patient may perish in the flames of a hyperthyroid crisis without showing any myocardial insufficiency.

We studied a series of 200 cases of goiter at the Johns Hopkins Hospital. We also made a study of the hearts of animals receiving thyroxine. These 200 clinical cases were taken care of first in the medical service, and later the patients were sent to the surgical wards. Exophthalmic goiter was present in 158 cases. The adenoma cases numbered 42. The latter patients were of greater age and had had symptoms for a longer time. In the exophthalmic cases the cardiac symptoms were related to the hyperthyroidism. An average time of twenty months was noted. In the adenoma class there had been goiter for several years and cardiac manifestations for years. In one case, cardiac failure was associated with symptoms for twenty-six months.

In regard to the age factor, we found that myocardial insufficiency was related to the higher decades. There were only nine patients with cardiac failure under 40 years of age. In one patient who died, Aschoff bodies were found in the myocardium. One patient, a Negress, aged 26 years, was found to have syphilis.

As regards experimental work, it is impossible to produce exophthalmic goiter in animals on account of the position of the thyroid. In experimental animals there is a latent period analogous to that seen in surgical patients before the postoperative storm. In animals under thyroxine the heart is more rapid than in normal animals. Depletion of the glycogen reserve and increase in lactic acid concentration occur. The glycogen drops from a normal of 314 to 116 mg. after the animals receive thyroxine. This is comparable to the glycogen changes in skeletal muscle. It is found that increased metabolism throws an added load on the heart, which is the cause of cardiac failure in hyperthyroidism. The heart, however, is not singled out or uniquely poisoned by thyroxine. The heart muscle merely partakes of the general metabolic upheaval set up by the hyperthyroidism and suffers depletion of the glycogen reserve. Thus, first the excessive load and secondly the metabolic changes in the muscle bring into prominence the cardiac manifestations of hyperthyroidism. This may lead, especially in older persons, to cardiac insufficiency, because the load thrown on the myocardium exceeds the limits set up by its own metabolism.

#### DISCUSSION

Dr. E. B. Krumbhaar, Philadelphia: The clinical and electrocardiographic approach to this study is of interest. Some years ago I studied a number of cases of toxic goiter before and after surgical treatment. Many cases showed ventricular preponderance. Signs were about equally divided among the patients of right and of left ventricular preponderance. After surgical treatment, examination showed that examples of increased activity in the right ventricle had disappeared; but signs of preponderance in the left ventricle showed very little change postoperatively. This seems to show that signs of right ventricular preponderance may be due to overload or there may be some other factor present, possibly not connected with the hyperthyroid condition, which causes greater and more prolonged change in the left ventricle.

Dr. J. H. Means, Boston: Dr. Andrus has gone a long way toward settling the long drawn out controversy as to whether the heart is successfully compensated. The weight of clinical evidence is that the heart tolerates this burden of work with success in thyrotoxicosis. We had one patient with thyrotoxicosis under observation seventeen years and by all examinations there was no evidence of pathologic cardiac changes at all. I think the heart is not specifically poisoned but carries on very well. If a patient has some cardiac burden and then gets a thyroid condition there is, of course, a double burden, and decompensation is apt to occur.

Dr. W. S. Thayer, Baltimore: The extraordinary capacity for cardiac recovery evidenced by some patients without anything besides thyrotoxicosis is remarkable. A woman who in 1909 had an extreme degree of right-sided insufficiency, auricular fibrillation, distended veins and general dropsy then had a subtotal thyroid removal. Her general condition was entirely reestablished, except for the auricular fibrillation. After a time she developed a slight hypothyroidism. She was given small doses of thyroid. That woman is alive and well at the present time with a slow, normal, but irregular pulse. Nothing in the history was found except the thyrotoxicosis. She was able to live a normal life after the operation. I have seen other cases not so marked, but this instance makes one feel that there should not be, at least in some instances, any great disturbance of the heart muscle.

Dr. W. J. Kerr, San Francisco: In California my associates and I have been interested in cases of hyperthyroidism with cardiovascular manifestations. We have observed auricular fibrillation in one third of the toxic cases. We have seen frequent changes in the liver going on to focal or diffuse necrosis. The heart muscle has shown marked changes in only a few cases. In other structures, such as the skeletal muscles, we have not been able to demonstrate these changes. This study was limited to the ribbon muscles of the neck. Dr. Naffziger, in our hospital, has found degeneration and hypertrophy of the extra-ocular muscles in patients with marked exophthalmos. Dr. Andrus, two years ago, reported reduced glycogen and increased lactic acid content of the muscles in experimental hyperthyroidism. Dr. Anderson, in my department, has studied the lactic acid content in the blood. In the thyrotoxic patient the lactic acid is normal during rest but is greatly increased during exercise. In the normal individual, either it does not go up or it returns very quickly to the normal level. A more careful study of those structures in which the glycogen content is normally high may reveal structural changes in the most severe or more prolonged cases of thyrotoxicosis.

Dr. E. Cowles Andrus, Baltimore: I should like to emphasize one point which Dr. Means raised, and that is that any result as regards the heart muscle must be determined by the soil on which hyperthyroidism is implanted. One cannot expect the same response from all individuals. One has to consider the age of the patient and the development of the disease. A description of the myocardial changes must be approached with caution. Dr. McEachern examined a group of patients with hyperthyroidism at Johns Hopkins Hospital and also a control group of patients dying of other conditions. There were similar changes in the hearts of the control group, and to a similar degree.

### Studies on the Circulation in Hypertensive Cardiovascular Disease by the Use of the Injection Method

Drs. W. de B. MacNider, Chapel Hill, N. C., and John Walker Moore, Louisville, Ky.: Cardiocirculatory dynamics have been hitherto considered of a mysterious nature and have given rise to conflicting theories. Our studies have been made with the idea of throwing some light on this lack of unanimity among workers. In the first place we have made a study of the normal man, as a basis from which to compare the results in hypertension. The studies were confined to a group of cases admitted to the City Hospital. The cardiac cases studied were divided into four groups: severely decompensated, moderately decompensated, compensated, and undecompensated hypertensive cases. The patient was placed in a recumbent position on the edge of the bed, and injections of scarlet red were given into the circulation.

### The Rôle of Arterial Thrombosis in Visceral Disease of Middle Life

Dr. Lewis A. Conner, New York: Whereas thrombosis in the arteries of the heart and of the brain is known to be common and is easy of clinical recognition, almost nothing is known concerning the symptoms of arterial thrombosis in the abdominal viscera. Nevertheless the frequent occurrence of degenerative changes in the arteries of the pancreas, kidneys, spleen and mesentery indicate that thrombosis in these vessels cannot be rare. The failure to recognize attacks of arterial thrombosis in the abdominal organs must be due in part to the inherent difficulties of diagnosis but is almost certainly due partly to one's failure to have the possibility of such attacks in mind. One may attempt to construct a framework of diagnosis for arterial thrombosis in the kidney, pancreas, spleen and mesentery by utilizing certain symptoms associated with thrombotic infarction in the heart (fever, leukocytosis) and those which result from infarction due to embolism in the kidney, spleen and mesentery. It seems probable that, when both internists and pathologists begin seriously to seek for evidences of such thromboses and to correlate their observations, the difficulties of diagnosis will be found to be not insurmountable and the features of the respective clinical pictures will gradually emerge from the present obscurity much as have those of the diagnosis of coronary thrombosis.

### DISCUSSION

Dr. R. C. Levy, New York: I would suggest that following the appearance of this paper by Dr. Conner there will be an increase in the statistical incidence of visceral thrombosis reported. Medical diagnosis depends on such incentive. Dr. Conner has brought this question to our attention before. An example of this notice was the diagnosis of angina pectoris, which was first made in 1768 and was recognized thereafter. In the decade 1920-1930 at the Presbyterian Hospital in New York it was interesting to see the increase in the number of diagnoses of coronary artery disease, including thrombosis. In the pathologic records the incidence was noted as 12 per cent, but on the other hand in the clinical files during that time there was an increase of 400 per cent in the frequency of this diagnosis. Following the publication of papers by Herrick and others, the interest in these various conditions was aroused, and clinicians became more alert to recognize them and record the diagnosis. Dr. Dublin, the statistician of the Metropolitan Life Insurance Company, received a letter from the Bureau of Vital Statistics in Washington stating that in the decade 1920-1930 the frequency of this diagnosis had increased 100 per cent.

Dr. Emanuel Libman, New York: Among other things of interest, Dr. Conner has brought up an important consideration; namely, the question of the possible relationship of coronary thrombosis to changes in the blood. I am strongly in favor of this conception. In fact, in 1919, in the course of a paper presented to the association, I took up this subject and stated that I felt that patients suffering from coronary thrombosis had a tendency to thrombosis in general. I drew attention to the frequency of thromboses elsewhere before and after an attack of coronary thrombosis, as, for example, in the arteries of the lower extremities, in the cerebral arteries, and in veins. For some years I have called this tendency "thrombophilia," and I have considered that while the thrombosis may at times originate from infectious processes and its incidence be influenced by the condition of the vessel wall, the process is mainly of metabolic origin, having a relationship to what are called "gouty conditions." Incidentally, I am in favor of dropping the term "gout." Recently I have found that Mendel introduced the term "thrombophilie" for the same condition and that von Recklinghausen stated that there occurs an individual tendency to thrombosis and that it had a "relationship to such metabolic disturbances as diabetes and gout." The problem of coronary thrombosis is in the main a metabolic one. It is urgent that the chemical disturbances be studied and that a great concerted effort be made to prevent coronary thrombosis. While much study is being made of this disorder, I believe the most important lines of investigation are not being at all stressed. At the risk of being considered facetious I am tempted to write a paper entitled "The Present-Day Neglect of the Study of Thrombosis of the Coronary Arteries." Dr. Levy has taken up the question of the incidence of coronary artery thrombosis formerly and now. I have the impression that the frequency is greater at the present time—and I have been studying the condition for over thirty years. In this connection the study of the incidence of cerebral thrombosis may be of great significance. Is cerebral thrombosis less frequent than it was twenty or thirty years ago? Another important question is, Does coronary thrombosis occur at an earlier age, and, if so, are those who formerly died at an advanced age of cerebral thrombosis dying of coronary thrombosis at an earlier period of life? If this should prove to be the case it would be another example of what James Paget designated "errors in the chronometry of life."

Dr. J. H. Means, Boston: Thrombosis of the pulmonary artery is a very rare condition but it exists. I had a case of complete thrombotic occlusion of the right pulmonary artery, but on account of the fact that there was an unusually rich collateral circulation through the bronchial artery the patient was able to carry on. Cyanosis and unexplained signs put us on the track of something in the pulmonary circuit. There has been a case reported in which the roentgenogram showed an oblong shadow projecting into the pulmonary artery.

Dr. A. R. Dochez, New York: During infection of the respiratory tract in individuals with arteriosclerosis there is a tendency for thrombosis to occur. Whether this is due to diffusion in the circulatory tract is not clear. But, as one goes over records, there is correlation with minor infection. This is not frequently mentioned, but it should be noted as often as it exists.

Dr. Alfred E. Cohn, New York: Last year Ehrich and I published the report of an investigation on the coronary arteries. We examined the coronary arterial system by decades in persons living a normal life. Our method of study was to analyze changes that took place in the intima of the coronary arteries. We found that the branches of the right and the left coronary artery were different in the results as regards time of life. The ramus descendens anterior was often well advanced in arteriosclerosis in the fifth decade. The ramus descendens posterior was not affected till the seventh decade. There are systemic changes that take place in these lesions which must be considered in the whole picture.

Dr. W. S. Thayer, Baltimore: Thrombophilia is a condition that is commonly associated with thrombosis of the veins or the arteries. It may or may not be related to infection. There are some cases of spontaneous venous thrombosis, and sometimes of arterial thrombosis. I saw a marked example in a woman who had multiple thrombosis, both arterial and venous, all over the body. Dr. Cohn, who was studying the coagulation of the blood, found a lower antithrombin content than he had ever seen. I think this is a condition which will have to be recognized.

Dr. Lewis A. Conner, New York: As far as Dr. Libman's views are stated, I am in entire sympathy with him. I think that there are probably subtle changes in the blood mixture which determine changes in the arteries. I do not think that evidence of this has yet been found but rather evidence as to the relation of arteriosclerosis and thrombosis. While there are cases occurring early in life, in the long run the relation between thrombosis and arteriosclerosis is striking. What is needed is accurate detailed study of individual cases. If one goes over the literature, the facts given are scanty and so many details are lacking that there is little help. Another difficulty is failure of cooperation in postmortem studies. Most of these abdominal cases go on to recovery. These cases must be studied in great detail, with years of confirmation by necropsy study. It is not an easy study but may prove to be quite possible if the necessary steps are taken.

## Some Studies on the Mechanism of Diuresis in Patients with Congestive Heart Failure

Drs. George Herrmann, C. T. Stone and E. H. Schwab, Galveston, Texas: We should like to stress the importance of edema as a clinical therapeutic problem. The methods and mechanisms of its elimination seem to warrant further studies. The spontaneous diureses of rest in bed with limited low protein, salt and water intake were noted to occur as a rule, if at all, within the first three days. Digitalization seemed to act in much the same way apparently as a result of increased general circulatory efficiency and with that improved renal glomerular circulation. The mode and point of action of the so-called specific diuretics, the xanthines and the mercurials in the accomplishment of profuse diuresis in edematous patients with congestive heart failure are still unsolved questions.

We have attacked the problem of the dissipation of cardiac edema by attempting to calculate the amount of glomerular filtration and the amount of tubular reabsorption per minute before, during and after an acute profuse diuresis. We followed the method of Rehberg, in which 5 Gm. of creatinine is ingested and the blood levels and urinary percentages are followed periodically and the ratio taken as the index of concentration. This is true if creatinine is a totally nonthreshold substance filtered entirely through the glomerular tufts and not at all absorbed by the tubular epithelium as it is assumed to be. This index of concentration multiplied by the minute volume of urine (U) gives the figure which is taken to represent the amount of filtrate per minute (F). This filtration (F) minus the urine volume per minute (U) is taken to represent *the amount of fluid reabsorbed (R) in the tubules.* The simultaneous blood and microquantitative urine analyses for chlorides and urea yield data on which the amounts of these substances filtered, reabsorbed and excreted in the urine can be calculated before, during and after the diuresis.

We have made twelve such studies in patients with edema from heart failure. In four, digitalis bodies were used by mouth, intramuscularly and intravenously to produce diuresis; in four, theophylline ethylenediamine, 0.96 Gm. intravenously, and in four mersalyl, 0.2 Gm. intravenously. The diuresis of rest, digitalization and theophylline is accomplished by an increased filtration along with some decrease in reabsorption. Such results can be explained on the basis of increased glomerular circulation and the consequent more rapid passage of the blood from the tuft through the tubular plexus, thereby decreasing minute plasma volume reabsorption. In mersalyl diuresis, on the other hand, there is no increase in filtration but definitely a sharp decrease in reabsorption to account for the increased urinary output. This is apparently due to a change produced in the cells of the tubular epithelium by the passage of mercury through them. Interesting combination effects were obtained suggesting the persistence of effects. The effects of diuretics seemed to be primarily on the kidney rather than in the tissues.

The blood and urine chemical analyses suggested that the chlorides first lost through the kidney were mobilized rapidly and in great quantity from the tissues along with other electrolytes, urea and water, and were filtered through the glomeruli, diffusing back or being reabsorbed only incompletely, and therefore being carried out along with the desired increased fluid output.

### Experimental Observations on Diuretics

Drs. Henry A. Christian and Edward A. Bartram, Boston: Various diuretics have been injected into the left renal artery of dogs under anesthesia produced by the intraperitoneal injection of diallylbarbituric acid. The urine has been collected and measured separately from each ureter.

With merbaphen, mersalyl and theophylline sodio-acetate, a small dose in the left renal artery causes a diuresis from the left kidney and no effect on the flow of urine from the right kidney. A somewhat larger dose causes an increase in flow from the left kidney, and a diuresis from the right less than that occurring from the left. As the dose is increased further, the flow from the left kidney begins to decrease while that from the right continues to increase. With still larger doses, diuresis from the left kidney ceases while that from the right kidney continues to increase. These results, which were found with an occasional exception, indicate that these mercurial and theophylline diuretics have a direct action on the kidney.

With theobromine sodiosalicylate and caffeine citrate, usually there is approximately the same flow of urine from each kidney when the diuretic is injected into the left renal artery, the diuresis increasing to an equal degree from each kidney as the dose of the diuretic is increased. These results harmonize with but do not prove that the theobromine and caffeine diuretics have an extrarenal effect.

The conclusion seems justified that diuretics, as represented by those used by us, may be divided into two groups with different pharmacologic action.

### The Effects of Diuretics on Water and Salt Metabolism

Dr. Herrmann L. Blumgart, Boston: In studies dealing with the clinical effects and mechanism of diuretics, an attempt was made to influence the examination of the urine in the effort to render it as constant as possible. The patients were placed under strict metabolic control. The time and amount of the dosage were uniform. Urine was collected seven times daily. The specimen was analyzed for sodium, potassium, calcium, ammonia, phosphates, sulphates and acidity. The stools were analyzed. A definite daily curve of excretion was found the best method for obtaining effects of the diuretics. The studies were begun on a group of normal subjects in whom the diuretics caused increased excretion of the urine as to both volume and constituents. No changes occurred in the ammonia, acidity or inorganic phosphates and sulphates. In the normal subject it was found that 90 per cent of the body fluids excreted were extracellular and 10 per cent intracellular. The mercury diuretics had more marked effects than the xanthine diuretics. If the dose was doubled, the effect was trebled. Tubular reabsorption ran parallel to the increased diuresis. Diuresis may take place without the glomerular filtration being affected. Another group of subjects studied were patients with cardiac decompensation. The drugs used were theobromine sodiosalicylate, mersalyl, merbaphen and theophylline. In this group of patients, instead of 10 per cent intracellular body fluid being affected, the proportion was 30 to 40 per cent.

#### DISCUSSION ON DIURETICS

Dr. J. C. Aub, Boston: I should like to ask Dr. Herrmann what he terms defective reabsorption.

Dr. Norman M. Keith, Rochester, Minn.: The remarks of Drs. Herrmann, Stone and Schwab as to the comparative diuretic action of digitalis, caffeine derivatives and mercury are of clinical significance. In their experience, and in that of many others, digitalis is less effective than mercury and caffeine, and this fact needs to be emphasized. The results of Drs. Christian and Bartram with mercury show the importance of dosage and the undoubted toxicity of large doses to the kidneys. Dr. Blumgart has compared the reaction of diuretics in the normal subject and patients with edema under controlled conditions. Such a method has been distinctly productive for several years. As Dr. Blumgart has pointed out, the diuretic action in the normal subject and in cases of edema may be different. His suggestion is that this difference may be due to the chief effect being exerted in either the intracellular or the extracellular fluid. This question must be studied further to determine whether such differences are peculiar to distinct types of edema states.

Dr. W. deB. MacNider, Chapel Hill, N. C.: Drs. Christian and Bartram said that they studied the effects of different types of diuretics in different types of renal lesions. Did they carry this work out in animal experimentation as well as clinically?

Dr. George Herrmann, Galveston, Texas: We used filtration to determine the creatinine ratio in the urine and in the serum. Reabsorption was shown by the difference between the concentration in the urine and the blood creatinine. For each of the substances used, we estimated the level of the chloride and urea in the blood in percentages. We subtracted the filtered amount in the excreted urine and this gave us the reabsorbed amount.

Dr. Henry A. Christian, Boston: In answer to Dr. MacNider, I have not done experiments on any but normal animals. The effect of mercurial diuretics is most injurious to the kidneys of animals, as judged by the albuminuria which is always produced in dogs to a marked degree. It is curious that this should be so when there is most diuresis, but it is due to increase in reabsorption.

Dr. H. L. Blumgart, Boston: Edema varies in different types of the disease. In the cases studied the percentage of intracellular fluid was normal, but in some cardiac patients the percentage of the intracellular fluid was much greater as compared with the extracellular fluid. Intracellular edema is not always present. It depends on the stage of the pathologic changes present in the cardiac disease.

*(To be continued)*

# Current Medical Literature

## AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

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### American Journal of Diseases of Children, Chicago

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*Effect of Vitamin B Complex on Resistance of Rats to Enteritidis Infection. J. R. Ross and Elizabeth Chant Robertson, Toronto, Canada.—p. 547.

Some Factors Influencing Fecal Flora of Infants. J. R. Gerstley, Katharine M. Howell and Beth Reynolds Nagel, Chicago.—p. 555.

*Substances Involved in Coagulation of Blood of the New-Born: II. Effect of Ultraviolet Radiation and Viosterol. H. N. Sanford, T. H. Gasteyer and Lois Wyat, Chicago.—p. 566.

Id.: III. Effect of Withholding Protein and Fat from Diet. H. N. Sanford, H. J. Morrison and Lois Wyat, Chicago.—p. 569.

*Serum Therapy in Meningococcus Meningitis. G. M. Lyon, Huntington, W. Va.—p. 572.

The Infant Ward. J. Brennemann, Chicago.—p. 577.

Roentgenographic Changes in Thorax of Normal Premature Babies: Daily Roentgenographic Study of Fifteen Normal Premature Babies During First Fourteen Days of Life. C. A. Weymuller, A. L. L. Bell and A. A. Trivilino, Brooklyn.—p. 585.

*Atelectasis in the New-Born. Ethel C. Dunham, New Haven, Conn.—p. 594.

*Esophageal Obstruction: Clinical and Experimental Study of Its Effect on Life and Growth. J. Stokes, Jr., and T. S. Wilder, Philadelphia.—p. 604.

*Migratory Peritonitis: Clinicopathologic Study of So-Called Hematogenous Peritonitis in Children. S. A. Wile and O. Saphir, Chicago.—p. 610.

*Pyuria and Pyelitis: Influence of Exsiccosis on Their Experimental Production. C. C. Stewart, Rochester, Minn.—p. 632.

**Vitamin B Complex.**—Ross and Robertson placed a group of young rats on a vitamin B-free diet, and a second group on a similar diet plus 6 per cent dried brewers' yeast. Both groups were infected by mouth with an enteritidis organism. Of fifty-three rats on the diet deficient in vitamin B ten, or 19 per cent, survived the infection, whereas of fifty-one rats given the yeast in addition, thirty-eight, or 75 per cent, survived the infection. The authors conclude that the addition of the vitamin B complex to the diet lacking in this factor increased the resistance of the rats against infection.

**Coagulation of Blood of the New-Born.**—Sanford and his associates exposed ten new-born infants to ultraviolet radiation by means of an air-cooled mercury vapor quartz lamp of 110 volts, 60 cycles and 10 amperes. A voltage of 70 was always administered and maintained throughout the exposure. The dorsal and ventral surfaces were exposed for two minutes each daily, and the time was increased one minute a day until the length of the exposure was eight minutes. Next, ten new-born infants were given 3 drops of viosterol in oil 250 D on the second day, and the dose was doubled each day until 96 drops was given; this dosage was used for two days. Examination of the blood revealed that either exposure to ultraviolet radiations or the administration of viosterol 250 D, or both tended to increase the fibrinogen of the coagulation substance to a slight extent, and to decrease the antithrombin, thereby increasing the tendency of the blood to clot.

**Serum Therapy in Meningococcus Meningitis.**—Lyon reports four cases of meningococcus meningitis in which he gave large doses of serum by introducing the serum into the ventricle and simultaneously withdrawing fluid from the spinal subarachnoid space. The cerebrospinal fluid became sterile within from thirty-six to forty-eight hours. These patients, given but two injections of serum, received large doses of serum at each injection; in this respect the desideratum was approached, i. e., a high concentration of serum in the cerebrospinal fluid with a chance for maximum and speedy toxin neutralization, agglutination, bacteriolysis and phagocytosis, and a wide distribution of the serum throughout the cerebrospinal fluid system. A child of 9 months took from 60 to 70 cc. of serum at one administration. A child of 3½ years took from 90 to 100 cc. The major portion of this serum remained within the cerebrospinal fluid system, even if from 10 to 20 cc. more fluid was removed than was introduced. This gives some idea of the amount of serum that may be substituted for cerebrospinal fluid by this method of serum administration or "substitution." The method was not severe on the patients so treated, and unfavorable reactions did not occur. The patients were singularly free from increased depression or other untoward effects, such as one might anticipate from such a form of treatment. Clinical improvement was remarkably speedy and satisfactory. This method is particularly valuable in the case of an infant with a patent anterior fontanel. In such cases it may be employed with ease. In infants the incidence of complications and the mortality rate is usually highest. Because of the decreased number of administrations of serum, and the shorter period of serum therapy made possible by this method, the chances of an Arthus phenomenon occurring would be greatly reduced. This method of substituting serum for cerebrospinal fluid is presented with the realization that such a small series of cases cannot be more than suggestive of possible results. It is a method that may be employed with relative safety to the patient. It makes possible a greater dosage and a wider distribution of serum than may be had with other methods. It should be effective in preventing, as well as removing, complicating obstructions. The method should produce a higher percentage of complete recoveries, and quicker recovery than any method of serum therapy now in use.

**Atelectasis in the New-Born.**—According to Dunham, atelectasis of the lungs in new-born infants is the abnormal persistence of the fetal state of the lungs due to some condition that interferes with the normal functioning of the respiratory center or to mechanical obstruction of the air passages. The chief symptom of atelectasis is cyanosis. Cyanosis due to atelectasis of the lungs can be differentiated from cyanosis caused by other conditions by means of roentgenograms. The roentgenographic picture of atelectasis of the lungs in the new-born is characterized by haziness of the lung fields, which is evidence of lack of complete aeration, and by the abnormal shape of the thorax and the abnormal position of the ribs, which are evidence of incomplete expansion of the lungs. The author emphasizes the fact that roentgenographic examination of the lungs is always indicated when a new-born infant is cyanotic.

**Esophageal Obstruction.**—Stokes and Wilder studied the effect of complete closure of the esophagus with the loss of saliva on the life and growth of a child of 10 years. Such closure appears to have no serious effect provided a well balanced diet is supplied. The addition of saliva and other secretions of the mouth to the food is probably unnecessary for the maintenance of a state of nutrition at least approaching normal. Experimentally, the authors produced esophageal fistulas by means of a three stage operation on young pigs. This work furnished evidence that growth will proceed at a rapid rate in this particular animal despite a complete loss of saliva.

**Migratory Peritonitis.**—Wile and Saphir report that twenty-four cases of peritonitis, twenty-one of which were diagnosed clinically as hematogenous peritonitis, proved at necropsy to be the result of an invasion of the peritoneal cavity by bacteria from primarily diseased intraperitoneal organs or structures close to the peritoneum, without perforation or without direct extension of the inflammatory process to the peritoneum. Sixteen of the twenty-four cases showed enteritis. The term "migratory peritonitis" seems appropriate for this type of case, because it corresponds with the German term "Durchwanderungs-Peritonitis" and signifies the pathogenesis of this form of peritonitis. The authors believe that clinical reports of cases of hematogenous peritonitis without necropsies, or with necropsies but without complete histologic examination of the gastro-intestinal tract, such as comprise the bulk of the literature of so-called hematogenous peritonitis, should be discarded. Many of the cases in which the condition was reported as hematogenous peritonitis are examples of migratory peritonitis. The evidence supporting the occurrence of peritonitis directly following a blood stream infection without an intermediary lesion within or adjacent to the peritoneal cavity is inadequate. So-called hematogenous peritonitis may occur as part of a generalized metastatic pyemic process that results in abscess formation or infected thrombi within or adjacent to the peritoneal cavity. The ensuing peritonitis is the direct result of the abscess or thrombus. It is unlikely, however, that this form of peritonitis does occur in the absence of other metastatic pyemic phenomena.

**Pyuria and Pyelitis.**—Stewart produced pyelitis in fourteen of forty-five rabbits by infusions of 20 per cent solution of sucrose. In thirteen of twenty-eight animals that had received four or more injections, pyelitis developed. Repeated injections and longer survival of the animals increased the incidence of urinary infections. The situation of the inflammation in the lining of the pelvis and the absence of cortical abscesses are strong evidence that the lesions were due to ascending infection. There is no evidence to show whether this occurred by way of the lumen of the ureter or the accompanying lymphatic channels. Some possible explanations of these observations are considered. A logical conclusion is that the injection of sucrose lowered the resistance of the kidneys to infection. That this can result from a decreased water content of the body was shown in mice by Schiff. The mechanism by which this lowered resistance is brought about is not known. The effect of decreased intake of water was studied in rats, guinea-pigs and dogs. In spite of rigorous restriction of fluids, pyuria was observed only once, in a guinea-pig without bacilluria. There was no histologic evidence of inflammation of the urinary tract in any of the animals. From these observations it seems improbable that withdrawal of water from the tissues alone was responsible for the pyelitis produced in rabbits. The symptoms of toxicosis as described by Kramár appeared only in the two dogs, but in these animals pyuria did not develop. Definite conclusions cannot be drawn from so few experiments. It has been established, however, that a similar picture does not result in rats or guinea-pigs. Pyuria occurred only once in these animals, and thus it seems improbable that it was related to the exsiccosis.

## American Journal of Ophthalmology, St. Louis

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*Tonometry Before and After Cataract Operation. H. Ferrer, Havana, Cuba.—p. 324.
Pulsating Exophthalmos. A. Kolodny, Sioux City, Iowa.—p. 327.
Analogies and Differences of Second and Eighth Nerves and End-Organs: Generalizing Preliminary Considerations: II. Anatomic. C. B. Walker, Los Angeles.—p. 329.

**Granular Conjunctivitis in Monkeys.**—Four of five monkeys in which folliculosis was produced by Thygeson yielded Bacterium granulosis. The disease differs from human trachoma mainly in the absence of pannus. The author concludes that etiologic relationship of this organism to human trachoma can never be established by monkey experimentation.

**Tonometry Before and After Cataract Operation.**—Ferrer advises the routine use of the tonometer in the examination of eyes preliminary to cataract extraction. In the majority the tension will be found normal and choice of operative procedure is unrestricted. In those with subnormal tension it is advisable to dilate the pupil widely with atropine to promote ease of delivery of the lens, which is liable to be luxated by pressure. In eyes showing notably increased tonus, atropine is a source of danger. The tension should be lowered by suitable measures before extraction of the lens. Tonometric measurement may be made by the twelfth postoperative day if anything abnormal is noticed. The use of atropine is objectionable before or after discission. It is never necessary and frequently dangerous, as hypertension is apt to follow this operation as the result of imbibition of aqueous into the vitreous.

## American Journal of Physical Therapy, Chicago

### 8: 317-344 (March) 1932

Flatfoot and Its Relation to Triceps Surae Muscle. A. Gottlieb, Los Angeles.—p. 321.
Arthritis. N. J. Seybold, Toledo, Ohio.—p. 324.
What is Sciatica? W. Martin, Atlantic City, N. J.—p. 326.
Meditations of a Medicine Man. I. S. Trostler, Chicago.—p. 332.
We: Electric Expeditionary Forces. B. B. Grover, Colorado Springs, Colo.—p. 337.

## Arch. of Physical Therapy, X-Ray, Radium, Chicago

### 13: 133-189 (March) 1932

Postparalytic Treatment of Poliomyelitis from Orthopedic Standpoint. W. I. Galland, New York.—p. 133.
*Roentgen Therapy in Infantile Paralysis: Review of Technic and Results of Treatment. L. T. Le Wald, New York.—p. 138.
General Problem of Poliomyelitis. Shirley W. Wynne, New York.—p. 140.
*Scope of Electrosurgery in General Surgery. W. E. Ground, Superior, Wis.—p. 148.
Electrosurgery in Rhinolaryngology: A Solution for Tonsil, Turbinate and Sinus Problems. L. J. Silvers, New York.—p. 154.
Ultraviolet and Infra-Red Glasses. S. English.—p. 164.

**Roentgen Therapy in Anterior Poliomyelitis.**—Le Wald calls attention to the fact that opinions regarding the specific value of roentgen therapy in anterior poliomyelitis are divided even among foreign workers. It should be noted, however, that nowhere among those using the method has there been voiced any distinct opinion against its use or its harmfulness. On the basis of what has already been accomplished, radiation therapy promises definite amelioration and improvement of certain symptoms and hence may well be considered as a potent therapeutic adjuvant in the management of anterior poliomyelitis.

**Scope of Electrosurgery in General Surgery.**—According to Ground, electricity has a wide field of usefulness in gynecology, and few there are who can practice this specialty successfully without its use in some form. Electrocoagulation is being utilized by many gynecologists, but there is no reason why the general practitioner who is, so to speak, electrically and gynecologically inclined, cannot use this very beneficient agency with equal readiness.

## Arkansas Medical Society Journal, Little Rock

### 28: 185-208 (March) 1932

Irritable Spastic Colon: Common Condition Frequently Mismanaged. G W. Parson, Texarkana.—p. 185.
Electrocardiography as an Aid in Diagnosis and Prognosis of Cardiac Irregularities. R. F. Baskett, Texarkana.—p. 189.

## Bulletin of Neurol. Inst. of New York, Baltimore

### 2: 1-156 (March) 1932

*Reflexes and Other Motor Activities in New-Born Infants: Report of One Hundred and Twenty-Five Cases as Preliminary Study of Infant Behavior. L. B. Chaney and Myrtle B. McGraw, New York.—p. 1.
*Familial Periodic Paralysis. E. G. Zabriskie and A. M. Frantz, New York.—p. 57.
*Improved Method of Encephalography. L. M. Davidoff and C. G. Dyke, New York.—p. 75.
*Meningeal Fibroblastomas on Under Surface of Temporal Lobe, and Their Surgical Treatment. C. A. Elsberg, New York.—p. 95.
Studies of Pathogenesis of Multiple Sclerosis: III. Further Evidence of Abnormal Lipolytic Activity in Blood in Multiple Sclerosis. R. M. Brickner, New York.—p. 119.
Note on Sympathetic Nerve Supply of Eye in Cat. E. M. Deery, New York.—p. 134.
Tumors in Posterior Cranial Fossa with Mental Symptoms: Three Cases. R. W. Southerland, New York.—p. 144.

**Motor Activities in New-Born Infants.**—Investigation of the reflex reactions in infants during the first ten days of life lead Chaney and McGraw to the following conclusions: Individual differences are evident in the simplest type of reflex reaction in new-born infants; the more complex the type of reaction, the more marked is the individual variation. Although there is great variability in type of reaction among new-born infants, the total absence of any active reflex response is strongly suggestive of a pathologic condition. For example, an infant's response to plantar stimulation may be dorsiflexion of the toes, plantar flexion of the toes, or some other reaction pattern, but the absence of any reaction whatever is so unusual that it calls for a search for evidence indicating some abnormality or something pathologic. There is nothing in the investigation to substantiate the contention that certain reflex patterns, such as the Babinski (considered of pathologic significance when present in adults), is in infants a normal reflex reaction attributed to an immature nervous system. Reflex reactions of normal new-born infants are different from the characteristic reflexes of normal adults; but they are different also from the classic pathologic reflex patterns.

**Familial Periodic Paralysis.**—Zabriskie and Frantz report the case of a man, aged 23, with a rather severe form of familial periodic paralysis. His mother suffered from the same disease and in all probability died from it. Examination during an attack showed a decrease or abolition of the deep reflexes, a slowing of muscular decontraction after reflex or electrical stimulation, a diminution or loss of the electrical excitability of the muscles, and at times an enlargement of the heart to the left with an apical systolic murmur. All these observations have been noted repeatedly by other clinicians. The chemical constituents of the blood were within normal limits during the free intervals and during the attacks; in particular, alterations in the calcium content were not found. A somewhat increased tolerance for dextrose was noted. Microscopic examination of specimens of muscle removed at biopsy showed a vacuolization of some fibers and in places a granular substance in these vacuoles. Partial attacks were repeatedly induced by local cooling, in confirmation of the work of Neel. During the induction of such attacks and during the artificially accelerated recovery (by local heat) the steady decrease of electrical excitability could be followed to its extinction, and then the rise of this excitability was again watched. What the authors believe to be a new contribution is the demonstration of an extraordinary fluctuation in the creatinine output with the patient under standard conditions. This is probably the expression of a fundamental disorder of muscular metabolism. The variable, but generally high, fluid intake and output is also in keeping with previously published observations. The striking differences noted in oxygen consumption between excised portions of paralyzed and nonparalyzed muscles is also a new observation. It must be emphasized, however, that this is an isolated observation and proper weight can be given to it only after further similar experimental studies have been made. Finally, chemical analysis of the muscles showed a low total inorganic phosphate, low creatinine and very low organic acid soluble phosphorus.

**Improved Method of Encephalography.**—Davidoff and Dyke emphasize that it is possible to obtain good encephalograms with much less air than is usually introduced, and thereby to decrease materially the discomfort of the patient both during and after the procedure. The severity and duration of the symptoms occurring during and after lumbar air injection seem to depend on the amount of air used, not, however, in absolute terms, but relative to the size of the ventricles. The authors have learned to determine the amount of air necessary in any given case by taking a film after 20 cc. of air has been introduced, and immediately developing it. Inspection of this film shows whether the ventricular system is normal in size or whether it is dilated. If the size of the ventricles is within normal limits, from 50 to 70 cc. of air is sufficient for excellent encephalograms. Furthermore, they are convinced that stereoscopic roentgenograms from four sides with the head both vertical and horizontal are necessary for the proper interpretation of the encephalograms. They have followed this procedure for two years in more than 300 cases and have been able to demonstrate that the practice of taking the films in only the vertical or horizontal position may lead to erroneous interpretations. This relatively large number of exposures entails no danger to the patient.

**Meningeal Fibroblastomas.**—Elsberg believes that for the approach to a tumor underneath the temporal lobe, whether the growth is derived from the dura of the floor of the middle cranial fossa or from that of the sphenoid ridge, the base of the bone flap must be as low in the temporal region as possible, and bone should be rongeured away below the bone flap until the base of the skull has been reached. If the neoplasm is attached to the sphenoid ridge and is to be approached by elevation of the frontal lobe, the flap that is outlined should extend forward almost to the frontal sinus; while if the tumor lies farther back, the scalp incision may be made entirely within the hairline. After the bone flap has been turned down and the bone has been rongeured away down to the base of the skull, an incision should be made in the dura low in the temporal region. If the neoplasm is exposed or its position located, the dura incision should be enlarged forward and backward, and a dural flap formed with its base upward. This dural flap should be large, so that there will be room for the elevation of the temporal lobe without undue pressure on this and adjacent parts of the brain. In order to expose the growth fully, a small secondary flap must often be made by incisions in the dura downward toward the base of the skull. When the layer of cortex that lies over the growth is thin, it is usually advisable to excise it or to make an incision through the brain tissue down to the surface of the neoplasm. On the other hand, if a considerable part of the temporal lobe covers the growth, the attempt must be made to elevate the lobe by slowly wiping it away at the same time that the brain is raised with a retractor. As soon as one is certain that the neoplasm is attached to the dura on the floor of the middle fossa and especially if intracranial pressure is not much increased, the attempt should be made to separate the dura from the bone underneath the temporal lobe, in a similar way to that done in operations for trigeminal neuralgia. By this procedure it may be possible to expose and plug the foramen spinosum with waxed cotton, and by this means to occlude the middle meningeal artery. This vessel or its branches supply a great deal of blood to growths in this situation, and the advantage gained by occluding it is evident. If, however, the bleeding is excessive while the dura is being separated from the bone, or if the pressure is so great that the dura cannot be elevated without undue force, the procedure cannot be carried out. It is seldom, if ever, advisable to attempt to deliver the tumor in toto unless the growth is soft in consistency and every part of the tumor bed can first be brought into view by drawing the growth in one or another direction. In the large hard growths it is always better to remove the central part with the electric knife before attempting to separate the brain from the tumor capsule. The gradual raising of a firm growth out of its bed can sometimes be successfully accomplished, but there is always the danger that vessels in the deeper part of the tumor bed will be torn and a troublesome if not serious bleeding will occur. The larger the author's experience with these growths has become, the more often has he attempted to excise the attached part of the dura by separating it from the bone. No operation for a meningeal growth is ever ideally complete unless the dural attachment is removed together with the growth. Cauterization of the inner surface of the membrane with the electric current or with Zenker's solution is often the best that can be done; it is frequently an efficacious though not an ideal procedure. When there is a marked hyperostosis on the floor of the middle fossa, it is seldom possible to do a radical operation and a late recurrence of symptoms may be expected.

## Johns Hopkins Hospital Bulletin, Baltimore

**50:** 237-304 (April) 1932

Centers of Vegetative Nervous System. E. A. Spiegel, Philadelphia.—p. 237.

Experimental Yaws: I. Comparison of Availability of Rabbit and Monkey for Isolation of Strains of Yaws. T. B. Turner, Baltimore, and J. H. Chambers, Port au Prince, Haiti.—p. 253.

*Serologic Reactions with Hemolytic Streptococci in Acute Bacterial Infections. W. S. Tillett and T. J. Abernethy, Baltimore.—p. 270.

Direct Measurements of Oxygen Consumption of Isolated, Beating Auricles from Normal and Thyrotoxic Guinea-Pigs. D. McEachern, Baltimore.—p. 287.

**Serologic Reactions with Hemolytic Streptococci in Acute Bacterial Infections.**—Tillett and Abernethy present observations which demonstrate that serums from patients acutely ill with a variety of bacterial infections are capable of agglutinating certain strains of hemolytic streptococci. During the course of an acute illness, the capacity of a patient's serum to react is demonstrable early after onset, persists during the active stage, and disappears soon after recovery. Four strains of Streptococcus hemolyticus, derived from different diseases, are agglutinable. Agglutinability is destroyed by heating cultures to the thermal death point. Agglutinable cultures killed with solution of formaldehyde are not altered. The protein fraction of serum precipitated by carbon dioxide under conditions described contains the constituent reactive with streptococci. By this method, serums from cases of typhoid were fractionated and the agglutinins for typhoid bacilli and hemolytic streptococci were separated.

## Journal of Infectious Diseases, Chicago

**50:** 185-280 (March) 1932

*Derivation of Staphylococcus Albus, Citreus and Roseus from Staphylococcus Aureus. M. Pinner, Tucson, Ariz., and Marie Voldrich, Northville, Mich.—p. 185.
*Bacteriology of Bronchiectasis: Analysis Based on Nine Cases in Which Lobectomy Was Done. P. H. Greey, Toronto, Canada.—p. 203.
Study of Intestinal Flora of Chicks Affected with Pullorum Disease. M. W. Emmel, Auburn, Ala.—p. 213.
*Nature and Properties of Virus of Herpes. Margaret Holden, New York.—p. 218.
*Progressive, Selective Absorption of Precipitins in Multivalent Serum. L. Hektoen and Edna Delves, Chicago.—p. 237.
Flocculation Tests for Differential Diagnosis of Smallpox and Chickenpox. L. C. Havens and Catherine R. Mayfield, Montgomery, Ala.—p. 242.
Effect of Urine on Hemolytic Streptococci. G. H. Robinson and F. A. Taylor, Pittsburgh—p. 248.
Toxicity of Iodine for Cells of Mycobacterium Tuberculosis. G. Knaysi, Ithaca, N. Y.—p. 255.
Use of Iodine and Certain Iodine Compounds in Experimental Tuberculosis. G. Knaysi, Ithaca, N. Y.—p. 261.
*Influence of Blood and Exudate on Action of Bacteriophage Against Colon Bacillus. Martha Applebaum and W. J. MacNeal, New York.—p. 269.
Purification of Virus Vaccinia. C. A. Behrens and L. B. Morgan, Lafayette, Ind.—p. 277.

**Staphylococcus Aureus.**—According to Pinner and Voldrich, apathogenic Staphylococcus albus, Staphylococcus citreus ad Staphylococcus roseus are split off spontaneously from pure line strains of Staphylococcus aureus. The splitting off of Staphylococcus albus can be much enhanced by growing Staphylococcus aureus in broth containing aureus agglutinins and by animal passage. The three nonidentical strains derived from Staphylococcus aureus appear to be stable under ordinary conditions. They differ from the mother strains in regard to pigment production, growth intensity, individual morphology, staining reactions, virulence, fermentative and proteolytic action, hemolysin production, alkali production, agglutinability, immunizing properties and susceptibility to bacteriophage. From albus strains aureus strains can be recovered by cultivating the albus strains for prolonged periods in mediums containing high concentrations of antialbus serum. The relation between aureus and albus strains is essentially similar to that between S and R strains of other micro-organisms.

**Bacteriology of Bronchiectasis.**—Greey did not find a uniform bacterial flora in nine cases of bronchiectasis. Bacteria of various types were obtained in each of the cases studied. The absence of spirochetes in five of the cases suggests that their presence in the other four was a chance invasion. This also holds true for the other micro-organisms isolated. Pure cultures of a single type of streptococcus were obtained from the bronchi following lobectomy on three occasions, which indicates that a mixed infection is not necessarily present. The variety of micro-organisms recovered suggests that no specific type is an etiologic factor but that many bacteria are capable of producing bronchial damage sufficient to favor dilatation.

**Nature and Properties of Virus of Herpes.**—Holden states that the enhanced resistance of desiccated herpes virus to deterioration, heat and the action of certain chemicals is striking when compared with the resistance of moist herpes virus to the same factors. A comparison of the resistance of pneumococci, both moist and dried, to chemical agents and heat, with the resistance of herpes virus under similar conditions, furnishes results that are not inconsistent with the assumption of the living nature of the virus.

**Absorption of Precipitins.**—Hektoen and Delves describe experiments in which they demonstrated that precipitins in multivalent serum may be removed successively with reasonable success by the selective action of single antigens. The successive absorptions were carried out by treating the same sample of antiserum with several antigens, one after another. After each treatment or absorption, the precipitate was removed by centrifugation and the serum tested with the antigens involved in the experiment.

**Action of Bacteriophage Against Colon Bacillus.**—Applebaum and MacNeal report that purulent exudate, even when diluted, exerts an interfering influence on the lytic action of bacteriophage against the colon bacillus, provided the colon bacillus is capable of active growth in the medium employed. Human blood serum and rabbit blood serum exert a similar but less powerful interfering influence, which becomes evident when pathogenic strains of the colon bacillus recently obtained from human infections are employed. Whole blood produces an effect similar to that of serum. Suspensions of erythrocytes in an indifferent medium seem to exert little, if any, influence on the bacteriophage phenomenon in relation to the colon bacillus. These observations have a bearing on the use of bacteriophage in the treatment of infectious disease.

## New England Journal of Medicine, Boston

**206:** 659-716 (March 31) 1932

*Clinical Significance of Precordial Tenderness: Relationship to Pain. F. Kellogg, San Francisco, and P. D. White, Boston.—p. 659.
*Electrosurgical Method for Aseptic Anastomosis of Intestine. J. E. Briggs and L. R. Whitaker, Boston.—p. 662.
Industrial Dermatoses and Their Treatment: Review of Ten Years' Literature. J. G. Downing and C. E. Welch, Boston.—p. 666.
Notes on Alexander Ramsay and His Anatomic Manuscripts. J. F. Ballard, Boston.—p. 681.
Progress in Pediatrics. J. L. Morse, Boston.—p. 683.

**Significance of Precordial Tenderness.**—Kellogg and White call attention to the fact that precordial tenderness may occur in an individual with a hypersensitive nervous system, whether or not there is serious heart disease. In a series of 328 cases of definite precordial tenderness that they observed, the condition was more often found when there was a combination of heart disease and nervousness than with either condition alone. The factor of nervous irritability and fatigue is certainly of greater importance in the production of the sign than is organic cardiovascular disease itself, for in cases of very severe acute and fatal coronary thrombosis there may be no tenderness whatever, and in many nervous individuals with perfectly normal hearts there is well marked precordial tenderness.

**Aseptic Anastomosis of Intestine.**—Briggs and Whitaker describe a new method for aseptic anastomosis of the intestine by electrosurgery. It consists essentially in devitalization by fulguration of an area the size of the proposed stoma on either end or side of the intestine to be joined, followed by careful approximation and fixation with a double row of mattress sutures. The advantages are ease of execution, reduction of trauma and danger of contamination to a minimum, and accurate coaptation of the joined edges without excessive infolding. The only disadvantage is blockage of the intestine for from twelve to twenty-four hours until the devitalized "button" sloughs out. Since, however, in obstructive cases enterostomy or colostomy should always be performed, there is no real objection on this ground. Experimental results have been excellent.

## New York State Journal of Medicine, New York

**32:** 375-436 (April 1) 1932

Judgment in Gynecologic Problems. G. B. Broad, Syracuse.—p. 375.
Volkmann's Contracture of Leg. E. K. Cravener, Schenectady.—p. 381.
Oral Surgery of Interest to Medical and Dental Practitioner. T. Blum, New York.—p. 383.
Responsibility of Practitioner in Menopausal Bleeding. J. E. King, Buffalo.—p. 385.
Propeptan Therapy of Luithlen-Urbach in Treatment of Allergic Skin Diseases Caused by Food. J. M. Markin, Rochester.—p. 390.
Recent Age Trends in Poliomyelitis. Mildred Weeks Wells, New York.—p. 393.
Renal Anomalies. J. R. Lisa and J. Levine, New York.—p. 395.

## Public Health Reports, Washington, D. C.

**47:** 711-763 (March 25) 1932

*Relation of Oxidation to Proteolysis in Malignant Tumors. C. Voegtlin and Mary E. Maver.—p. 711.

**47:** 765-835 (April 1) 1932

Rat Infestation Inspection of Vessels. C. L. Williams.—p. 765.

**Relation of Oxidation to Proteolysis in Malignant Tumors.**—Voegtlin and Maver believe that for the proper understanding of the proteolytic mechanism of the tissues in living animals it is essential to perform experiments in vitro under conditions approximating those in vivo. They made an attempt in this direction in the case of malignant tissues by reducing the oxygen tension and adjusting the hydrogen ion concentration accordingly. The in vitro autolysis of two malignant tumors showed that both $p_H$ and oxygen tension are controlling factors in tissue proteolysis. These factors apparently operate through their influence on the sulphydryl system of the tissues. The authors present evidence which indicates that not only glutathione but also proteins containing SH groups are concerned in tissue proteolysis. Confirmatory evidence is obtained from experiments dealing with (1) the digestive action of papain on coagulated egg white containing protein SH groups, and (2) the action of papain on gelatin and fibrin in the presence of reduced glutathione. The results afford substantial proof for the coupling of oxidation-reduction and proteolysis in tissues.

## Radiology, St. Paul

**18:** 471-712 (March) 1932

Important Anatomic Data of Digestive Tract. The Cole Collaborators, New York.—p. 471.
Capacity of Roentgen-Ray Tubes as Influenced by Geometric Design of Focal Spot, Including Advantages and Limitations of Line Focus Principle. P. M. Andrus and A. Hambleton, London, Ont., Canada. —p. 521.
Functional Interrelationships of Thyroid Gland and Autonomic Nervous System. A. Kuntz, St. Louis.—p. 532.
Surgical Aspect of Thyrotoxicosis. W. Bartlett and W. Bartlett, Jr., St. Louis.—p. 536.
*Surgical Treatment of Thyrotoxicosis. H. M. Richter, Chicago.—p. 542.
Medical Aspect of Thyrotoxicosis. C. Elliott, Chicago.—p. 549.
*Roentgen-Ray Treatment in Goiter Illness: Results Reported and Comments Made on Two Hundred Individually Controlled Cases. A. H. Williams, Grand Rapids, Mich.—p. 553.
Radiologic Aspect of Thyrotoxicosis. L. J. Menville, New Orleans. —p. 568.
Radium Treatment of Toxic Types of Goiter. D. T. Quigley, Omaha. —p. 576.
Prevention of Hyperplasia of Thyroid in Opossum by Roentgen Rays. O. M. Walter, B. J. Anson and A. C. Ivy, Chicago.—p. 583.
Skeletal Disturbances and Anomalies: Clinical Report and Review of Literature. I. Cohn, New Orleans.—p. 592.
Note on International Comparison of Roentgen-Ray Standards. L. S. Taylor, Washington, D. C.—p. 627.
How We May Reduce Number of Malpractice Suits. I. S. Trostler, Chicago.—p. 628.

**Surgical Treatment of Thyrotoxicosis.**—Richter performed radical thyroidectomy on 1,235 patients suffering from thyrotoxicosis. But few of these patients were not completely relieved of their symptoms by the operation. Reoperation was done on twenty-three, and, of these, twenty-one were relieved as shown by clinical symptoms and metabolism tests. One patient required a third operation to secure this result. Three patients made normal recoveries and had two or more normal postoperative metabolism tests, to be followed by recurrence of thyrotoxicosis. These cases can be properly designated as "relapses." One of these was shown to be due to inadequate removal of thyroid tissue. On the basis of his observations the author concludes that, in the hands of competent surgeons, radical thyroidectomy seems to be the most satisfactory treatment for thyrotoxicosis. The evidence presented showing the value of radiologic treatment is faulty because of failure to present adequate preoperative and postoperative studies of the patients treated. The immediate mortality with the radiologic treatment, while low, is misleading in view of the shortening of life expectancy with the incomplete relief from the thyrotoxicosis that may occur in many of the cases.

**Roentgen Treatment in Goiter Illness.**—Williams reports the results he obtained in 200 cases of goiter by means of roentgen irradiation. The patients averaged ten treatments over a period of three and one-half months. The average drop in pulse was 24.2 beats; average gain in weight, 8 pounds (17.6 Kg.), and lowering in metabolic rate, 23 points. One hundred and sixty-one patients, or 80.5 per cent, were definitely cured. Twenty-seven, or 13.5 per cent, were improved, making a total of 188, or 94 per cent, either cured or improved. Eight, or 4 per cent, recurred after one year, five of which were later retreated and cured. Only two patients, or 1 per cent, developed subthyroid symptoms, and only one case, or 0.5 per cent, showed telangiectases. The author emphasizes the importance of unhurried diagnosis and frequent metabolic rate check.

## Tennessee State Medical Assn. Journal, Nashville

**25:** 85-126 (March) 1932

Aschheim-Zondek Test: Its Value in Tubal Pregnancy by Case Report. J. R. Reinberger, Memphis.—p. 85.
Acute Otitis Media with Pain in Trigeminal Region. R. G. Reaves, Knoxville.—p. 88.
*Syphilis of Eighth Nerve and Its Branches. W. A. Garrott, Chattanooga. —p. 95.
Some Behaviorism Considerations of Childhood. W. E. van Order, Chattanooga.—p. 101.
Proposed Amendments to World War Veterans' Act, Together with Parts of Act Affected by Amendment. H. H. Shoulders, Nashville. —p. 108.

**Syphilis of Eighth Nerve.**—According to Garrott, syphilis of the eighth nerve occurs in two chief forms, neurolabyrinthitis syphilitica, or early auditory syphilis, and labyrinthitis syphilitica tarda, or late auditory syphilis. Neurolabyrinthitis syphilitica responds favorably to treatment in the majority of cases; labyrinthitis syphilitica tarda does not always respond as favorably in as many cases, but many of the cases are checked or stopped in their progress. The author believes that syphilis of the eighth nerve or its branches is more common than the diagnostic records of most otologists would indicate. If diminished bone conduction is just ground for suspicion of syphilis of the eighth nerve and its branches, and if it is an early manifestation of nervous system syphilis, otologists should be more alert and watch for it more carefully. Though one may not relieve all the auditory symptoms, one is obliged to recognize the systemic nature of the infection and cooperate with competent serologists in the treatment of it. By the same token, the serologist and the general practitioner should remember the possibility of eighth nerve involvement and consult the otologist. And he should attempt to outline his treatment according to the degree of involvement as determined by the otologist.

## Texas State Journal of Medicine, Fort Worth

**27:** 767-836 (March) 1932

Interesting Blood Dyscrasia: Report of Case. T. L. Denson and J. E. Robinson, Temple.—p. 773.
Benign Stricture of Rectum. C. Rosser, Dallas.—p. 777.
Fractures of Distal End of Radius. G. W. N. Eggers, Galveston.— p. 780.
Intussusception Due to Benign Tumors of Small Intestine. O. Roan, San Antonio.—p. 782.
Agranulocytosis: Report of Case. C. A. Poindexter, Crystal City, and B. F. Stout, San Antonio.—p. 787.
Polymorphonuclear Leukopenia. J. S. Sweeney, Dallas.—p. 790.
Comparison of End-Results in More Common Types of Uterine Suspension. H. O. Smith, Marlin.—p. 795.
Emotional and Psychic Factors in Production of Gastro-Intestinal Disease. G. M. Underwood, Dallas.—p. 798.
Cathartic Colitis. D. C. McBride, Dallas.—p. 801.
Mechanics of Constipation and Its Treatment. W. S. Horn, Fort Worth. —p. 803.
Breast Feeding. J. F. Perkins, Dallas.—p. 808.
Larynx in Tuberculous. S. A. Schuster and F. P. Schuster, El Paso. —p. 812.

## West Virginia Medical Journal, Charleston

**28:** 145-192 (April) 1932

Nervous Patient and General Practitioner. W. H. Mayer, Pittsburgh. —p. 145.
*Cutaneous Manifestations of Syphilis. J. C. Matthews, Huntington. —p. 149.
Management and Obstetric Care. J. P. Lilly, Charleston.—p. 155.
Headache and Its Significance. A. P. Hudgins, Hinton.—p. 158.
Malnutrition During Early Childhood. J. L. Blanton, Fairmont.—p. 163.
Pleuro-Enteritis. C. M. Bray, Morgantown.—p. 167.

**Cutaneous Manifestations of Syphilis.**—Matthews enumerates the characteristics of late syphilis of the skin as follows: (1) solitary, or at most few lesions; (2) asymmetry, though by no means invariable; (3) induration, deep palpable infiltration; (4) indolence; a relatively low grade inflammatory process; (5) arciform configuration, the borders being polycyclic or forming segments of circles, both in the individual lesions and in the group of lesions; (6) sharp margination, punched out appearance in ulcers; (7) tissue destruction and replacement without ulceration; (8) tendency to central or one-sided healing with peripheral extension; (9) scar formation: superficial, atrophic and noncontractile scar retaining the arciform shape of the original lesion, and (10) peripheral hyperpigmentation of rather persistent character. No one of these ten individual items can be accepted alone, but the combination often becomes an element of great value and should be carefully considered in interpreting the Wassermann reaction.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

**1:** *507-550 (March 19) 1932*

*Influence of Cereal-Free Diet Rich in Vitamin D and Calcium on Dental Caries in Children. May Mellanby and C. L. Pattison.—p. 507.
*Malignant Disease of Hypopharynx and Its Treatment by Excision. W. Trotter.—p. 510.
*Management of Urinary Calculi. A. Jacobs.—p. 513.
Conditioned Reflexes and Habit Formation. W. H. Gantt.—p. 517.
Thoracic Metastases in Ovarian Carcinoma: Report of Case with Remarks. H. T. Evans and G. I. Strachan.—p. 519.

**Cereal-Free Diet and Dental Caries.**—Mellanby and Pattison gave a group of children averaging 5½ years of age a cereal-free diet rich in vitamin D and calcium for a period of six months. The teeth of the children were defective in structure (hypoplastic), and much active dental caries was present at the beginning of the investigation. Initiation and spread of caries were almost eliminated by these diets, and the results were better than those of a previous investigation in which the vitamin D alone was increased in a diet containing bread and other cereals. Active caries was arrested on this cereal-free diet to a greater extent than in the previous investigations, when cereals were extensively used. The practicability of giving a cereal-free diet to children has, of course, to be considered. No difficulty was encountered in the elimination of cereals from the food, although the children did not like giving up bread. These children were in an institution and were confined to bed, but it would obviously be more difficult to give the diet to active children, especially if living at home. The tests do not indicate that in order to prevent dental caries children must live on a cereal-free diet, but in association with the results of the other investigations on animals and children they do indicate that the amount of cereal eaten should be reduced, particularly during infancy and in the earlier years of life, and should be replaced by an increased consumption of milk, eggs, butter, potatoes, and other vegetables. They also indicate that a sufficiency of vitamin D and calcium should be given from birth, and before birth, by supplying a suitable diet to the pregnant mother. The teeth of the children would be well formed and more resistant to dental caries instead of being hypoplastic and badly calcified.

**Malignant Disease of Hypopharynx.**—Trotter believes that the final results of operative treatment in malignant disease of the hypopharynx must be considered from two points of view: first, freedom from recurrence, and, second, the condition in which the patient survives. He emphasizes the value of precise local knowledge of the epitheliomas of the pharynx in dealing with them by operation. Such knowledge makes possible the exact orientation of any necessary operation, and so increases the prospect of cure and at the same time diminishes the need for mutilation. The view is sometimes expressed that the more extensive an excision the more likely is it to be successful; this is by no means necessarily true, for if the operation is not exactly oriented in regard to the growth its mere extent is unlikely to save it from failure. This criticism applies to many cases in which extirpation of the larynx is practiced in dealing with pharyngeal growths. There are only a few cases in which that formidable mutilation is of use in the treatment of such growths. Most of the cases in which the tumor cannot be removed without laryngectomy are incurable by any operation, and when the tumor can be removed by local excision the mere addition of laryngectomy gives no further security. In a small number of illustrative cases mentioned, the only residual disabilities left have been the occasional fixation of one vocal cord, and in one case some fibrous constriction of the esophagus. The author would not feel able to record as a true success the cure of a pharyngeal carcinoma won at the expense of laryngectomy. He considers that one of the most beneficent effects of the introduction of radiotherapy has been its tendency to make one look with increasingly critical eyes at treatment by crudely mutilating operations.

**Management of Urinary Calculi.**—Jacobs states that, except in some special circumstances, stones in the kidney should be removed. If that is not done destruction of the organ will generally result, bringing in its train chronic ill health and possibly death from renal failure. It should also be remembered that the irritation produced by a calculus of long standing may predispose to squamous carcinoma of the renal pelvis. The author has had two patients who confirm this hypothesis. In both, the kidney was removed because of extensive destruction resulting from multiple calculi, and histologic examination revealed the presence of a squamous carcinoma which had not been suspected prior to operation. One patient was a man of 54, whose history suggested that calculus formation had started eighteen years previously. The other patient was a man of 69, who dated back the onset of his symptoms to boyhood. If a minute renal calculus is not causing the patient much pain an expectant attitude may be adopted, particularly when the pyelogram shows that no damage is being caused to the kidney. The patient should take abundant bland fluids and be kept on urinary antiseptics. Periodic lavage of the renal pelvis through a ureteral catheter, followed by an instillation of silver nitrate, may help to mobilize the stone and keep the kidney free from infection.

### Lancet, London

**1:** *601-652 (March 19) 1932*

*Pathology and Treatment of Anemia. L. J. Witts.—p. 601.
*Disseminated Sclerosis: Clinical and Serologic Observations During Experimental Vaccine Treatment. J. Purves-Stewart and F. D. M. Hocking.—p. 605.
*Complement Fixation in Rift Valley Fever. J. C. Broom and G. M. Findlay.—p. 609.
Rift Valley Fever. R. Daubney and J. R. Hudson.—p. 611.

**Treatment of Anemia.**—Witts states that, in the treatment of acute hemolytic anemia, iron, arsenic and removal of septic foci do no good. Liver has been introduced too recently for its value to be assessed, and it has been used only in cases in which the patients might well have recovered by their own forces. The most striking feature of the treatment of acute hemolytic anemia is the dramatic effect of transfusion, often observed in patients who seemed moribund. The temperature falls and a rapid recovery sets in. More than one transfusion may be necessary to arrest the hemolytic process, but in cases properly treated by transfusion, death is a rare event.

**Multiple Sclerosis.**—Purves-Stewart and Hocking report that in 22 early cases of multiple sclerosis in which treatment by autogenous vaccine was used all the patients except 2 showed arrest or clinical improvement. In 62 moderate cases one fifth continued to deteriorate, while the remaining four fifths either ceased to progress or improved. In 17 advanced cases, 5 continued to progress while 12 remained unchanged. Of 22 early cases, all of which yielded positive cultures of spherules in the cerebrospinal fluid, 3 became culturally negative after treatment by an autogenous vaccine and 6 became less marked, while 15 remained unchanged. Of 62 moderate cases, 4 became culturally negative, 17 became less marked and 34 remained unchanged, while the remaining 7 became more strongly marked. Of 17 advanced cases, 3 became culturally negative, 3 became less marked and 10 remained unchanged, while 1 became more marked. The presence of a characteristic colloidal gold curve was confirmed. In 8 of 101 cases, this curve became negative. Definite improvement was seen in 35 cases; 11 cases became more marked, while 47 remained unchanged. The globulin reaction was positive in 72 cases at the outset; in 24 of these the reaction became negative or very faintly positive. The albumin content in all cases was within normal limits.

**Complement Fixation in Rift Valley Fever.**—According to Broom and Findlay, Rift Valley fever, the etiology of which was first determined by Daubney, Hudson and Garnham in 1931, is a virus disease of no little importance to sheep and cattle farmers in British East Africa, where it causes a high mortality in young lambs and pregnant ewes. The fact that the disease is transmissible to man and that in certain respects the clinical symptoms resemble those of dengue, sandfly fever and yellow fever, renders accurate diagnosis essential. Specific complement fixation occurs with the serums of men, monkeys, sheep, rats and mice recovered from Rift Valley fever when an antigen of the livers of rats and mice infected with Rift Valley fever is employed. Complement-fixing antibodies are well developed in the serum fourteen days after infection, and they persist for at least six months. Complement-fixing antibodies may appear in the serum in the absence of any definite illness as a result of repeated exposures to infection. The degree of complement fixation is in the case of men, sheep and monkeys roughly proportional to the severity of the clinical symptoms. Mice and rats produce only small quantities of both complement-fixing antibodies and protective antibodies. Dried liver as an antigen gives less satisfactory results than fresh livers of infected animals.

### Medical Journal of Australia, Sydney

**1**: 315-346 (March 5) 1932

*Tuberculosis in Childhood: Incidence of Bovine Infection in Victoria. R. Webster.—p. 315.
Puerperal Hemorrhage. P. L. Hipsley.—p. 320.
Some Operations on Frontal Sinus. E. P. Blashki.—p. 323.
Palliation and Roentgen Radiation. A. T. Nisbet.—p. 327.

**Tuberculosis in Childhood.**—Webster presents the results of an investigation of eighty-one children with varied manifestations of tuberculosis, and five adults with bone and joint tuberculosis. Bone and joint tuberculosis, bronchial lymph node and lung tuberculosis, and tuberculosis of the brain and meninges were found to be due invariably to the human type of Bacillus tuberculosis. Tuberculosis of the cervical lymph nodes and tonsils was shown to be of bovine origin to a predominating extent, the number of bovine infections in a series of twenty-four cervical lymph nodes being seventeen (70.8 per cent). A small number of mesenteric lymph nodes examined all yielded the bovine type of Bacillus tuberculosis. In no case was the bovine bacillus encountered outside the tonsils or the cervical or mesenteric lymph nodes. A discussion is included on the not infrequent failure of the guinea-pig inoculation test for the recovery of Bacillus tuberculosis.

### South African M. Assn. Journal, Cape Town

**6**: 141-176 (March 12) 1932

"Avertin" Anesthesia. B. Weinbren.—p. 143.
Dental Problem: Prevention of Dental Disease. J. C. M. Shaw.—p. 147.

### Journal of Oriental Medicine, South Manchuria

**16**: 33-39 (March) 1932

Effect of Alcohol on Labyrinth Reflex. M. Shinomiya, H. Nagami and H. Tsukamoto.—p. 33.
Difference in Normal Constituents of Urine in Japanese and Chinese Convicts. T. Shidoh, A. Abiko, M. Kobayashi and M. Watanabe. —p. 34.
Malaria in Manchuria. K. Hiyeda.—p. 36.
Amebic Dysentery in Manchuria. K. Hiyeda.—p. 37.
Development of Tarsal Bone-Nuclei in Chinese Children. T. Kitahara. —p. 38.
Unusual Unilateral Absence of Oviduct. K. Saito.—p. 39.

### Bulletin Médical, Paris

**46**: 163-182 (March 5) 1932

*Gaseous Abdominal Abscesses. P. Mocquot.—p. 167.

**Gaseous Abdominal Abscesses.**—Mocquot reports six cases of gaseous abdominal abscesses to show the clinical aspects and the diagnostic difficulties they may present. Two of the cases concern abscesses of the upper part of the abdomen, especially the subhepatic region; three, of appendicular origin, were located in the right iliac fossa and the umbilical region; the sixth was in the pelvis, ascending into the hypogastric region and the left iliac fossa. What makes diagnosis difficult in cases of this kind is that, with a clinical history and general symptoms pointing to an inflammatory process, one can find none of the physical signs of a localized abdominal abscess; there is no doughiness, and the hardness so characteristic of suppuration, as well as dulness on percussion, is wholly lacking. The abdomen is sometimes considerably distended; the meteorism is so pronounced it may cause compression of the chest and dyspnea and one finds a tympanitic resonance everywhere, which one is tempted to attribute to distention of the intestinal loops. Sometimes a pyogaseous collection, if contained in a well circumscribed cavity, possesses a definite perceptible contour, which would make one think of intestinal occlusion if the general symptoms did not contradict that diagnosis. While the customary signs of localization of an intra-abdominal suppuration (indicated by the general symptoms) are missing, there are a few symptoms to put one on the right track. The tympanites is not always uniform, the bulging is often more perceptible at the site of the abscess, there is sometimes a more pronounced tension of the wall in that region, and the resonance is more tympanitic than in the rest of the abdomen. The author thinks palpation of the anterior wall of the abdomen is deceiving and stresses the importance of bimanual palpation to acquire a precise idea of an abnormal tension, an increase in thickness, and a fulness, which is the sign of a gaseous collection. Above all, it is necessary to have the gaseous abscess in mind to arrive at a correct interpretation of seemingly contradictory symptoms. The value of hematologic and especially roentgenologic examinations is mentioned. The author also discusses the source of the gas filling the cavity of the abscess.

### Gazette des Hôpitaux, Paris

**105**: 334-348 (March 5) 1932

Hypophyseal Syndromes. C. Dejean.—p. 337.
*Spontaneous Pleural Epilepsy: Case. R. Mignot and L. Couderc.—p. 343.

**Spontaneous Pleural Epilepsy.**—Mignot and Couderc state that epileptic crises of pleural and so-called spontaneous origin (independent of any intervention in the pleura) are rare, and they report the case of a woman who died following an epileptiform crisis occurring in the course of a serofibrinous pleurisy, which was apyretic and not recognized; no medical intervention on the pleura determined the convulsive phenomena. A woman, aged 49, was interned in an asylum because she suffered from hallucinations. No organic disturbances were noted, with the exception, perhaps, of a small quantity of pus in the urine. A condition of stupor soon developed, confining the patient to bed. During occasional lucid intervals, she complained of terrifying hallucinations. Death resulted from an epileptiform crisis about fifteen months after entry into the asylum. A week before death, zoopsic hallucinations and increased agitation were observed; no symptoms of organic disturbance were noted, and the patient did not cough or express any complaint and did not have a fever. Stertorous respiration was noticed the night preceding the crisis and again during the fatal crisis. The aspect of the brain and meninges at necropsy was normal, and there were no pathologic changes in the abdominal viscera, but opening of the thorax revealed a large serous effusion in the left plueral cavity; the lung was reduced to an atelectatic stump, firmly fixed to the wall by adhesions.

### Paris Médical

**1**: 313-324 (April 9) 1932

Maxillary Sinusitis of Dental Origin. C. Ruppe.—p. 313.
Return Circulation and Gestation. C. Laubry, E. Lévy-Solal and A. Tzanck.—p. 321.
*Interesting Form of Breast Cancer: Degenerated Adenoma. A. Schwartz.—p. 323.

**Form of Breast Cancer: Degenerated Adenoma.**—Schwartz reports the case of a woman who came to him with a tumor of the breast, the symptoms of which resembled those of a fibro-adenoma but were not quite as marked as those of a true fibro-adenoma. The tumor mass, which was the size of a small orange, was movable, but the mobility was not as extensive as in a normal fibro-adenoma; also the movement of the skin over the tumor was not absolutely free, a beginning adherence being found. These two characteristics determined the diagnosis of degenerated fibro-adenoma, which was confirmed by intervention. The case report is followed by a discussion of the clinical aspects which a fibro-adenoma may present. In certain cases the degenerated fibro-adenoma, while assuming entirely the appearance of a cancer, keeps for a long time its definitely circumscribed character, which permits it to be differentiated from pure cancer although leaving no doubt as to its neoplastic nature. In other cases, the degeneration exists but nothing permits one to suspect it. The author here warns against assuring a patient with certainty that a tumor is benign. When a fibro-adenoma is removed, the clinician should tell the patient that a histologic examination will be made to confirm the absence of suggestive cells; if the examination reveals neoplastic degeneration and amputation of the breast is necessary, the patient, already forewarned, may be told that a few suggestive cells were found and while the tumor is, on the whole, benign, a more extensive operation will be necessary. Between the two types of clinical aspects described stands the case in which a doubt exists. In these cases the tumor should be removed under local anesthesia and an immediate histologic examination undertaken. The author considers it bad to remove such a tumor and a few days later amputate the breast, as it may lead to an early and rapid generalization of the neoplasm. He advises above all to try to make a clinical diagnosis of the malignant change so that one can perform the necessary operation immediately.

## Revue Française de Gynécologie et d'Obst., Paris

**27:** 157-204 (April) 1932

Technics of Abdominal Cervical Cesarean Section. J. L. Wodon.—p. 163.
New Method for Diagnosis of Lesions of Mammary Gland: Transillumination, or Diascopy. P. Ulrich.—p. 182.
*External Strangulation of Uterus. S. W. Kissine.—p. 194.

**External Strangulation of Uterus.**—Kissine reports an unusual case of external strangulation of the uterus associated with its prolapse and discusses the literature. The patient was a woman, aged 70, who had been suffering from occasional prolapse of the uterus for eleven years. Reduction of the uterus had always been accomplished by the patient, in horizontal position, without difficulty. On the occasion when the author was called, the uterus had again prolapsed but could not be reduced by the patient. It protruded from the genital opening like a tumor one and a half times the size of a fist. The external orifice of the cervix inclined toward the perineum. The prolapsed tissue, which seemed wedged in place, was reduced by the author only after repeated attempts and the application of a certain amount of physical force. Bimanual examination immediately after the reduction revealed a firm, slightly enlarged uterus with an elongated cervix and to the left of it a round, hard, mobile tumor the size of an apple, apparently associated with the ovary. The author considers it unlikely that the resistance of the uterus to reduction was due to edema, as it had been reduced easily a short time previously, or to inversion, because of the external aspect and the presence of the cervical orifice, but attributes it to the tumor. He thinks it probable that the tumor usually remained in the abdominal cavity but in this instance was forced out by considerable intra-abdominal pressure or pulled out by the utero-ovarian ligament during the descent of the uterus, so that the ovarian tumor was in front of the pubic arch, and the uterus, in anteflexion, was in front of the tumor. The two organs could not be returned to the interior together, and it was necessary to return the ovary before the uterus could be reduced.

## Archivos Argentinos de Pediatría, Buenos Aires

**3:** 131-208 (March) 1932

Splenectomy in Some Hematosplenic Syndromes in Children. M. Acuña.—p. 131.
Encysted Streptococcal Peritonitis Complicating Scarlatinal Nephrosis and Acute Anemia in Child. E. A. Beretervide and S. Mindlin.—p. 150.
Apnea in Infancy. J M. Macera.—p. 160.
*Vertebral and Costal Osteomyelitis in Early Infancy. M. Gamboa and H. L. Montarcé—p. 178.
Congenital Xanthelomatous Angiolymphangioma of Gingival Margin. J. M. Jorge, S. I. Nudelman and M. Gringauz.—p. 190.

**Vertebral and Costal Osteomyelitis in Early Infancy.**—Gamboa and Montarcé state that the localization of osteomyelitis in the vertebrae is rare and indicates a grave form of the disease. The lumbar vertebrae are the most frequently involved, but there is a possibility of development of the disease in any other vertebra. The seriousness of the disease bears a relation to the seat of localization of the osteomyelitic lesion, either in the bodies of the vertebrae or in the vertebral arches (more grave when involving the bodies of the vertebrae than when involving the vertebral arches), and not with its segmental localization (in the cervical, thoracic or lumbar segments of the vertebral column). The involved vertebrae, surrounded by blood and pus, undergoes a process of destruction caused by the infiltration of the spongy tissue with pus. The symptoms are in relation to the intensity of the pyemic infection, the irritation of the spinal nerves, the spinal cord involvement and the general condition of the patient. In rare cases the osteomyelitic abscess, instead of following an evolution of exteriorization, progresses toward the spinal canal, thus giving origin to the appearance of symptoms of medullary compression, such as paraplegia, hemiplegia or relaxation of the sphincters. In this case the abscess may rupture into the spinal canal. The meningeal reaction in this type of osteomyelitis is grave, and usually death occurs. In subacute forms the pyemic infection is attenuated, the meningeal reactions are less severe, and if the patients are properly treated, about 54 per cent of recoveries is obtained. In acute cases the treatment is solely surgical. It is advisable to remove and drain the septic foci as soon as possible. In subacute cases the evacuation of the pus, by a puncture of the abscess, the administration of pyogenic vaccines, the immobilization of the spine in a cast, and the proper treatment to improve the patient's general condition, give good results. The authors report a case of vertebral and costal osteomyelitis in an infant, aged 40 days. The patient presented five days after birth a tumor on the right hip bone (probably a benign hematoma caused by either obstetric or postpartum trauma). Some days later he presented the symptoms of an acute infection and a gibbosity of the thoracic segment of the vertebral column which proved to be an osteomyelitic abscess involving the sixth, seventh and eighth thoracic vertebrae with extension of the lesion to the heads of the sixth, seventh and eighth ribs. The abscess was situated in the vertebrae and nevertheless the infection and the meningeal reactions (opisthotonos) were of a subacute type. The roentgen examination showed that a process of bone healing of the involved vertebrae and heads of the ribs was produced under the influence of the treatment. From the pus obtained by puncture of the abscess of the hip bone, in this case, streptococci were identified. The authors believe that, in their case, an umbilical infection may have been the portal of entry of the infection. The passage of pyogenic bacteria into the blood may have caused the infection of the tumor of the hip bone, followed by the development of the vertebral osteomyelitic lesion. The gibbosity disappeared and the patient recovered.

## Beiträge zur klinischen Chirurgie, Berlin

**155:** 1-160 (March 16) 1932

Extension Bed for Traction Bandages. M. Kirschner.—p. 1.
Suprarenals as Measuring Apparatus for Qualities of Blood. R. Schweizer.—p. 17.
Experimental Investigations on Resorption Processes in Joints Under Various Physical Conditions. W. Müller and H. J. Lauber.—p. 39.
Anatomic-Roentgenologic Studies on Problem of Congenital Malformation of Foot. K. Horsch.—p. 51.
*Treatment of Malignant Tumors with Radium and Surgery: Results. A. Láng.—p. 67.
Lymphatic Vessels of Tubular Bones. H. U. Kallius.—p. 109.
Teratoid Tumor of Abdominal Cavity. F. Weier.—p. 125.
*Diagnosis and Treatment of Chronic Abscesses of Bones. H. Kment.—p. 129.
Intravenous Pyelography and Its Relation to Renal Function. H. J. Lauber.—p. 146.

**Treatment of Malignant Tumors with Radium and Surgery.**—Láng advocates the use of radium in such localizations and in those stages of cancers in which surgical interventions are impossible or will give less favorable results. He considers radium therapy especially helpful in cancers of the oral cavity. The results he obtained with radium in these cases are such that surgical interventions involving considerable mutilation are no longer justified. However, not only in cancers of the oral cavity but also in those of the nasal cavity, of the larynx and of the palate, that is, in regions in which surgical interventions are extremely dangerous and difficult, radium produces favorable results. For cancers of the face and the lips, radium is superior because of its more favorable cosmetic effects. The author emphasizes that he obtained his favorable results with comparatively small quantities of radium. He thinks that the experienced surgeon can use radium to greater advantage than the irradiation specialist, for the reason that in many cases the surgeon can place the substance more favorably.

**Diagnosis and Treatment of Chronic Abscesses of Bones.**—Kment points out that chronic abscess of the bone may be mistaken for such conditions as articular rheumatism, syphilis, gout or tumors, but he thinks that such erroneous diagnoses can be avoided if careful attention is given to the anamnesis. After mentioning the chief symptoms, he describes the characteristic roentgenogram. Especially in the metaphysis of the long bones, such as the tibia and the femur, the abscess cavity appears as a spherical or oval, sharply outlined area of decreased density with greater density of the surrounding bone tissues. On the basis of several case reports, the author then shows that the term "chronic abscess of the bone" as denoting a separate disease entity is not justified but that this condition is a form of the hematogenic, chronic, suppurative osteomyelitis without abscess formation. In regard to the treatment, he states that he has abandoned the former practice of a wide opening of the cavity of the bone in such abscesses, for it involves certain difficulties on account of the nearness of the joint, in that usually there remains a funnel-shaped opening, which it is impossible to obliterate by muscle flaps, since there is generally little muscular tissue in the region of the abscess. For this reason the author has for years employed a half-fluid iodoform preparation as a filling for the abscess cavity. The filling is introduced after the abscess cavity has been evacuated and then dried by prolonged tamponade. It is essential that no air filled spaces remain but that the filling close the entire cavity. Following the filling the periosteum is carefully closed over the drill canal and the soft parts are sutured in layers. The wound heals by primary intention, but in some instances fistulas develop after the operation. These, however, usually do not originate in the bony cavity but rather are due to the particles of iodoform that during the introduction of the preparation entered the soft tissues. A later roentgenoscopy nearly always revealed that the cavity was completely filled.

## Deutsche medizinische Wochenschrift, Leipzig

**58:** 437-474 (March 18) 1932

Goethe and Nature. A. Liebert.—p. 437.
Persons with Endocrine Deficiencies. J. Bauer.—p. 439.
*Form of Endocarditis Caused by Anaerobic Streptococci. K. Bingold. —p. 443.
Treatment of Cleft Lip and of Cleft Palate. M. Wassmund.—p. 445.
Experiences with Acetic Aldehyde as Circulatory Remedy. H. Burchard. —p. 448.
Chronic Benzine Poisoning. H. G. Schwarz.—p. 449.
*Significance of Lactic Acid Content of Vagina. I. Traube and L. J. Weber.—p. 450.

**Endocarditis Caused by Anaerobic Streptococci.**—Bingold points out that although the pathogenic character of anaerobic streptococci has been established, it was not known until recent years that they may cause endocarditis. Because of the peculiar pathogenesis of such cases and because of certain characteristic aspects, the author gives the detailed histories of two cases that he observed recently and short reviews of other cases that had been reported before. In the summary he mentions the following as the most characteristic aspects of endocarditis caused by anaerobic streptococci: 1. The disease always takes a fatal course. 2. The slight pathologic changes on the cardiac valves and on the other portions of the heart do not correspond to this unfavorable prognosis. The lesions do not have an ulcerous character. 3. Compared with endocarditis lenta, the course is more acute or subacute. 4. In contradistinction to the endocarditis caused by aerobic organisms (staphylococci and streptococci), in which, as a rule, there exists a continuous fever, the endocarditis caused by anaerobic streptococci is characterized by frequent attacks of chills. 5. In spite of frequently observed continuous bacteremia, there is an almost complete lack of metastases, in contrast to the septic endocarditis caused by streptococci and staphylococci. Emboli are found almost exclusively in the lungs. 6. Ports of entry of the anaerobic organism are primarily the female genitalia, the tonsils, the middle ear and the intestinal tract. 7. The occurrence of numerous anaerobic streptococci in the blood culture (outside of the attacks of chills) makes the diagnosis of anaerobic streptococcic endocarditis possible during life, even when heart murmurs are absent. The treatment may be the same as in other forms of septic endocarditis, but in all the cases that came under the author's observation it failed.

**Significance of Lactic Acid Content of Vagina.**—Traube and Weber call attention to the fact that the vaginal secretion has an acid reaction and that the acid content consists primarily of lactic acid. It has been determined that the acidity varies in different women and also that it varies in the same woman at different times of the menstrual cycle. It is highest during menstruation and lowest midway between two menstrual periods. It has also been found that spermatozoa are impaired by a high concentration of lactic acid. The latter factor makes it understandable why in sterile women, with a high acid content of the vagina, conception has been facilitated by vaginal douches with alkaline solutions. On the other hand, conception can be prevented by introduction of substances containing lactic acid or by irrigation with lactic acid or acetic acid solutions. The injurious effect of lactic acid on the spermatozoa is explained by colloidochemical processes. Acid solutions, especially lactic acid solutions, cause swelling of lyophil colloids, and since spermatozoa consist mainly of lyophil colloids, it is understandable that the swelling action of lactic acid impairs their functions.

**58:** 519-558 (April 1) 1932. Partial Index

*Postoperative Circulatory Therapy. G. von Bergmann.—p. 519.
Clinical Aspects of Sarcoma. F. König.—p. 523.
Rectal Strictures and Lymphogranuloma Inguinale. A. W. Fischer and Schmidt-La Baume.—p. 527.
Rectal Analgesia with Magnesium. P. Kotzoglu.—p. 535.
Simple Apparatus for Quantitative Determination of Sugar in Urine. E. Herzfeld.—p. 536.
Anesthesia: Experiences in America. H. Widenhorn.—p. 536.
Value of Cinematography in Psychiatric Neurologic Research. E. Herz. —p. 539.
Cinematography and Photography in Surgery. A. W. Fischer.—p. 540.

**Postoperative Circulatory Therapy.**—In discussing postoperative shock or collapse, von Bergmann does not refer only to the collapse that develops during the anesthesia or immediately after the intervention, but even more to those threatening conditions that develop on the following day or even several days later, and also to the usually less harmful conditions that develop after the patient first gets up again, such as attacks of fainting, cold extremities and general weakness. He shows that these conditions are not caused by a cardiac weakness but are primarily the result of a disturbance in the distribution of the blood. The decomposition of protein that takes place after surgical interventions, and the resulting autointoxication, influence the peripheral circulation in such a way that large quantities of blood are retained in the periphery, and the amount of blood received by the heart is not adequate. It should therefore be the object of the treatment to empty the peripheral blood depots. The so-called autotransfusion by bandaging the extremities is helpful to some extent. However, it should be considered that neither this transfusion nor transfusion from a donor can be of much help as long as a large portion of the vessels are pathologically dilated. It has been proved that camphor and camphor-like substances are helpful for this condition and that strychnine and injections of caffeine are the remedies of choice. The author thinks that in life-endangering conditions several of the remedies can be tried at intervals of from two to three hours. The use of digitalis he considers necessary only when the cardiac action fails, and the prophylactic application of digitalis preparatory to an operation he considers as entirely ineffective.

## Deutsches Archiv für klinische Medizin, Berlin

**172:** 429-694 (March 21) 1932. Partial Index

*Calcium and Potassium Contents of Blood Serum and Ultrafiltrability of These Minerals in Renal Insufficiency. H. G. Scholtz.—p. 472.
*Value of Alimentary Galactosuria in Diagnosis of Diseases of Liver. W. Hochheim and B. Misske.—p. 511.
*Therapeutic Modification of Mineral Composition of Blood in Tetany. H. G. Scholtz.—p. 539.

**Calcium and Potassium Contents of Blood Serum.**—Scholtz made tests on the calcium and potassium contents of the serum of patients with renal insufficiency and also considered the ultrafiltrable portions. In some cases of contracted kidney and of acute nephritis, he detected low values of calcium in the serum. In the majority of cases of contracted kidney, the ultrafiltrable portion of calcium was reduced and the percental content of colloidal calcium was increased. This manifestation has no relation to the amount of the rest nitrogen and does not increase the predisposition to spasm, but it is assumed that it has some connection with changes in the protein bodies. An increased potassium content of the serum was found, especially in anuria. When the potassium content of the serum is increased, the potassium appears largely in the colloidal form. The ratio of calcium and potassium in renal insufficiency has no apparent relationship to the clinical manifestations.

**Alimentary Galactosuria in Diseases of Live**
Hochheim and Misske show that the clinical value of P

galactose test has not been definitely demonstrated as yet. They think that the galactose test can have value only if it can be done in a simple manner and if it helps in clearing the diagnosis in questionable cases. Blood sugar curves have only theoretical value. The authors performed the test on 225 patients, of whom 100 had hepatic or biliary disorders and the other 125 had various other disorders. It was found that in severe toxic icterus the test gives usually, but not always, a positive reaction. However, in mild cases of toxic icterus the test fails, which of course reduces its diagnostic value considerably. The test was plainly positive in a case of Addison's disease.

**Therapeutic Modification of Mineral Composition of Blood in Tetany.**—Scholtz describes changes that he observed in the calcium, potassium, sodium and phosphorus pentoxide contents of the serum, and changes in the physical conditions of these minerals during idiopathic tetany, while the patient underwent treatment with calcium, with parathyroidal preparations or with ammonium chloride. Administration of small quantities of calcium did not increase the calcium values of the serum, but the same doses of calcium caused a noticeable hypercalcemia in normal persons. By administration of large doses, the calcium content of the serum of the patient with tetany became nearly normal and there was also an increase in the ultrafiltrable calcium. However, the ratio of the colloidal to the truly solute portion of calcium remained, as before the treatment, in favor of the colloidal portion. Besides this there developed during medication with large quantities of calcium a considerable increase in the phosphate content of the serum, which otherwise was only slightly increased, and the increase was entirely in colloidal phosphorus. The parathyroid hormone modified the ultrafiltrable calcium and the clinical manifestations even before it increased the calcium content of the serum. When doses of calcium, which alone did not effect an increase in the calcium content of the serum, were administered simultaneously with the parathyroid hormone, there was an increase in the calcium content of the serum and the solubility conditions were normal. Accordingly it is assumed that the parathyroid hormone effects a mobilization of calcium in the tissues and that it perhaps also influences the solubility conditions of the calcium. Ammonium chloride, when administered alone, caused a considerable reduction in the calcium content of the serum but also increased its solubility. When administered together with calcium, the ammonium chloride produced apparently normal calcium conditions in the serum. A characteristic behavior of the potassium values of the serum was not noticeable. The sodium values were normal.

## Klinische Wochenschrift, Berlin

**11:** 489-528 (March 19) 1932

*Changes in Function of Liver During Pregnancy. C. Kaufmann.—p. 493.
Latent Hepatopathy Following Pregnancy Toxicosis. F. Stroebe.—p. 495.
*Significance of Heavy Metals for Treatment of Anemia. K. W. Schultze.—p. 497.
Modification of Insulin by Red and Ultraviolet Irradiations. H. Küstner and W. Eissner.—p. 499.
Calcium Metabolism of Isolated Surviving Bone During Venous Blood Perfusion. W. Rieder and H. Never.—p. 501.
Predisposition for Thrombosis and Its Prophylaxis. G. Bankow.—p. 502.
Influence of Thyroxine or of Solution of Potassium Hydroxide, Respectively, on Tuberculin Skin Reaction. P. Kallós and W. Müller.—p. 504.
Leukocytosis and Fever in Carcinoma. A. Leszler.—p. 506.
Registration of Acidity Fluctuations in Stomach by Electrochemical Method Without Withdrawal. H. Taterka and L. Dinkin.—p. 508.
Little Regarded Inhibition Manifestation in Isohemagglutination. F. Schiff.—p. 509.
Power of Organism to Produce Changes in Bacteria. G. Bernhardt.—p. 510.
Influence of Preceding Nutrition or of Insulinization on Sugar Tolerance Test. R. Boller and K. Ueberrack.—p. 511.
Chemical Nature of Wassermann Antigens. O. Fischer.—p. 512.
Lymphogranuloma Inguinale Reaction. W. Frei.—p. 512.

**Changes in Function of Liver During Pregnancy.**—Kaufmann, in testing the various functions of the liver during normal pregnancy, found a high percentage of abnormalities. These changes are characterized by a deficiency in the carbohydrate assimilation of the liver, a deficiency in the elimination of administered bilirubin, and a reduced glycogen content of the liver. The author then discusses whether this abnormal reaction is a weakness or is a partial manifestation of the changes in the entire metabolism. He thinks that the changes in the metabolism overtax the function of the liver. As a result of this the liver does not have a sufficient reserve power to cope with tolerance tests. The abnormal course of the functional tests of the liver is thus a result of the metabolic changes that develop during pregnancy. But one should not designate this course of the reaction as "pathologic." However, that the great functional requirements of the liver may also produce a weakness was proved by postpuerperal after-examinations on two women. In both of them, functional tests of the liver revealed disturbances as late as six months after confinement, and neither of the women nursed her infant. Moreover, a careful anamnesis gave no indications that a disturbance of the liver had existed before the pregnancy. It is possible that these cases are exceptions, yet even in that case it can be concluded that a normal pregnancy may be the cause of a latent hepatopathy.

**Significance of Heavy Metals for Treatment of Anemia.**—Following a review of the literature, Schultze reports his own studies on rats. He emphasizes that in these studies two factors have to be kept apart: (1) the formation of hemoglobin, which according to the present status of knowledge is possible only if iron is present, but which is probably catalytically influenced by other metals, and (2) the formation of erythrocytes. It was his object to determine whether synthesis of hemoglobin and formation of erythrocytes are separate functions, and also whether the elements to which a catalytic effect is ascribed influence the hematopoietic system without the presence of iron. His tests were made with nickel, cobalt, copper and iron. He found that whereas iron influences both the hemoglobin synthesis and the formation of erythrocytes, the other elements—cobalt, nickel and copper—stimulate the erythropoiesis without being able to influence the hemoglobin synthesis in the absence of iron. The catalytic effect of the various metals is due to the fact that they exert a formative stimulation on the red bone marrow. The effect of liver therapy in the treatment of anemia is probably largely due to the action of copper.

**11:** 529-576 (March 26) 1932. Partial Index

Surgical Significance of Liver and Its Functional Disturbances. E. Rehn and H. Eitel.—p. 529.
Juvenile Gangrene. K. Neubürger.—p. 533.
Postappendicitic Mesenteric Pyemia: Its Treatment. O. Kleinschmidt.—p. 535.
Indications for and Results of Early Splenectomy. R. Nissen and V. Schilling.—p. 537.
New Opinions on Thrombosis and Embolism. H. Lampert.—p. 539.
Aspects of "Pseudocholelithiasis" and "Accidental" Pains in Abdomen. R. Schmidt.—p. 545.
*Treatment of Posttonsillitic Pyemia by Ligation of Jugular Vein. E. Melchior.—p. 548.
Tests on Resorption of Tetiothalein Sodium. H. Eitel.—p. 551.
Technic of Suture of Vessels. F. Meythaler and T. Naegeli.—p. 552.
Demonstrability of Spleen in Roentgenogram as Test Method of Function of Spleen. W. König and F. Weber.—p. 552.
Galactose as Substitute Carbohydrate. H. Kosterlitz and H. W. Wedler.—p. 553.
Determination of Amount of Filtration by Glomeruli in Renal Diseases. A. Bergwall.—p. 554.
Treatment of Intestinal Invagination in Adults and in Nurslings. H. Meltzer.—p. 554.

**Treatment of Posttonsillitic Pyemia.**—Melchior thinks that the pyemic form of tonsillitis and the possibility of influencing it by ligation of the jugular vein is not sufficiently known by the general practitioner, who usually is consulted for such cases. The author admits that there are some forms that begin with chills and yet take a favorable course, but he advises that if the chills recur, and the temperature is unusually high so that the local processes do not provide a sufficient explanation, and if primary diseases of the blood such as agranulocytosis and leukemia can be excluded, ligation of the jugular vein should be resorted to, before it is too late. Two cases proved to him the significance of this procedure. In one patient the condition had progressed too far for treatment, but in the other the ligation led to recovery. The author emphasizes that the ligation does not have to be postponed until the vein has become involved; that is, after thrombosis has set in. He does not agree with those throat specialists who advise removal of the involved tonsil at this time. He considers tonsillectomy in the still infected region neither necessary nor helpful, and in some cases dangerous.

## Medizinische Klinik, Berlin

**28:** 463-500 (April 1) 1932

Pathogenesis and Forms of Jaundice. T. Brugsch.—p. 463.
*Changes in Conception of Nature of Vitamins. E. Abderhalden.—p. 466.
Significance of Terms Inorganic, Organic and Organized, for Pharmacology. E. Starkenstein.—p. 466.
*Regulation of Insulin Production. E. Grafe.—p. 468.
Brucella Abortus Infections with Fatal Outcome. H. Curschmann.—p. 471.
Diverticulosis of Colon and Carcinoma of Sigmoid. H. Strauss.—p. 473.
Tumors Compressing Spinal Cord. M. Nonne.—p. 475.
Warning Against Thymol and Substances Containing Thymol, Mouthwashes and Tooth Pastes in Patients with Goiter. E. Edens.—p. 477.
Treatment of Phosphaturia and Formation of Phosphate Concrements of Urinary Passages in Alkali Therapy of Gastric and Duodenal Ulcers. O. Porges and E. Deutsch-Essenyi.—p. 479.
Cure of Rabbit Syphilis During Late Stage. W. Kolle and R. Prigge.—p. 482.
Immunity Conditions Toward Toxins of Streptococci and of Staphylococci in Septic Infections. O. Erlsbacher and P. Saxl.—p. 483.
Treatment of Vascular Spasms. G. Roesler.—p. 484.
Treatment of Hypothyroidism in Nurslings by Means of Thyroxine. K. Kern.—p. 485.
Fatal Cerebral Apoplexy Cause or Result of Fall? W. Brandis.—p. 485.

**Changes in Conception of Nature of Vitamins.**—Abderhalden states that formerly vitamins were considered as preformed substances that were contained in certain foods. In recent times, observations have been reported which make it appear probable that the substances contained in the foods do not represent the products that exert the vitamin action but rather develop from them, following resorption in certain tissues. If this assumption is true, the effective substances that develop from the "provitamins" could be compared with the hormones. The author's object in calling attention to this was to encourage investigations as to whether vitamins are formed in the organisms out of subtances contained in certain foods. If it should be shown that the real vitamins are formed beyond the intestinal wall, research would have new problems to solve, such as what types of cells are necessary for the different vitamins. The author is convinced that such studies would solve many problems in the action of vitamins, which as yet are not understood.

**Regulation of Insulin Production.**—Grafe shows that the regulatory system of insulin production is much more complicated than it appears at first. According to the law of the double or threefold security, which obtains in nearly all important metabolic processes, there are at least three interacting mechanisms. The superior and the one with the most delicate function is the central nervous system. There is probably a center in the thalamus, which responds directly to the fluctuations in the blood sugar, and which according to need sends its impulses by way of the vagus directly to the islands of Langerhans. In addition to this the sugar, like a hormone, also acts directly on the production centers of insulin. Fluctuations in the activity of the suprarenals likewise act directly on the insulin production. Whether the external secretion of the pancreas also exerts a regulatory influence on the insulin production has not been definitely established as yet, and it is considered improbable.

## Monatsschrift für Kinderheilkunde, Berlin

**52:** 177-260 (March 17) 1932

*Influence of Rickets on Development of Jaws and Teeth. J. Kirsch and S. Rosenbaum.—p. 177.
*Acid-Base Economy in Children. A. Hottinger and G. Hottinger.—p. 204.
Local Blood Picture During Tuberculosis in Children. Gertrud Kehling.—p. 239.
Pathogenesis of Functional Albuminuria. H. Lewitus and W. Rabinowitsch.—p. 250.

**Influence of Rickets on Development of Jaws and Teeth.**—Kirsch and Rosenbaum examined twenty children during the nursling period and also during the period following for the presence of rachitic symptoms but never detected such symptoms, and during the period of dentition the children were also examined by dentists. Control examinations were made on children who had passed through severe rickets and also on a small group, who presumably had had a mild form of rickets. On the basis of these studies the authors reach the following conclusions: 1. Deformities of the jaws are found almost exclusively in children that have passed through a severe or a mild form of rickets. 2. Caries of the deciduous teeth is found frequently in children who are entirely free from rickets; however, in children who have passed through severe rickets the carious destruction of the deciduous teeth is still more pronounced. 3. Caries of the teeth of the second dentition is comparatively rare in children who have been free from rickets, but in those who had had rickets it was noted in 50 per cent of the cases. 4. Delayed dentition (appearance of the first deciduous tooth later than the eighth month) is also found in children without rickets.

**Acid-Base Economy in Children.**—In rachitic nurslings and in rachitic premature infants, the Hottingers observed a considerable increase in the elimination of organic acids, which reached normal levels again on recovery. Ammonia and the amino-acids showed a similar behavior. In the earliest stage of rickets there is no increase in the elimination of the organic acids, and for this reason the manifestation is of no value for the early diagnosis of rickets. If in the course of rickets a tetany develops, the erstwhile increased elimination decreases to normal levels or at least shows a slight reduction. Test on a healthy gravida during the seventh month of pregnancy revealed that the elimination of organic acids was normal. The new-born, who had icterus, showed a low elimination during the period of loss of weight. During dyspepsias that do not cause great changes in the metabolism there is a decreased elimination of organic acids, whereas during dyspepsias with atrophy there is an increased elimination. Likewise caused by secondary atrophy are the high values of organic acids in cases of pylorospasm, for in the early stages of this condition the elimination of organic acids is not increased. In exudative diathesis, the organic acid content of the urine fluctuates considerably. A child with diabetes eliminated enormous quantities of organic acids not only as long as acetone bodies were demonstrable in the urine but also after diacetic acid, acetone and sugar had disappeared from the urine. The authors also studied the influence of exogenic factors on the elimination of organic acids, such as irradiation with the quartz lamp, restriction of water intake, feeding with cow's milk instead of breast milk, and increased intake of proteins, fats or carbohydrates.

## Wiener klinische Wochenschrift, Vienna

**45:** 417-448 (April 1) 1932

History of Anatomic Illustrations. A. Kronfeld.—p. 422.
Experimental Modification of Cerebellar Function by Irradiation with Short Waves. H. Hoff and E. Weissenberg.—p. 425.
*Influence of Diuretics on Impaired Heart. F. Donath —p. 427.
*Demonstration of Tubercle Bacilli in Blood Stream (Löwenstein Method) in Skin Diseases. J. Konrad.—p. 430.
Panmyelophthisis Refractory to Therapeutic Measures. F. Lasch.—p. 434.
Treatment in Cases of Poisoning. J. Pal.—p. 435.
Medicinal Treatment of Incretory Diseases. A. Fröhlich.—p. 436.
Differential Diagnostic Significance of Pyuria. V. Blum.—p. 437.
Aspects of Arsenic Dermatoses. G. Nobl.—p. 438.

**Influence of Diuretics on Impaired Heart.**—Donath states that although the use of diuretics is of great value in the therapy of cardiac disorders, especially in conditions of decompensation, there are also cases in which potent diuretics cause undesirable complications. The author illustrates this by several case histories. On the basis of his observations, he advises one to strengthen the heart by medication with digitalis previous to employing a potent diuretic, or to combine the administration of the diuretic with strophanthin. During the time the diuretic is active, all bodily and psychic exertion should be avoided by the patient. If possible, the patient should be kept in bed for twenty-four hours. When not absolutely necessary, the use of potent diuretics should be avoided and those acting more slowly should be used. The author further suggests that in some cases the heart can be excluded from the diuretic work by resorting to surgical procedures, such as puncture in hydrothorax and in ascites.

**Demonstration of Tubercle Bacilli in Blood Stream in Skin Diseases.**—Konrad relates the results that have been obtained with Löwenstein's culture method in a dermatologic clinic in Vienna. His report covers a period of approximately two years. Löwenstein's culture method was employed mainly on blood specimens from patients with true tuberculosis of the skin, with tuberculids and with lupus erythematosus, but also in patients with so-called rheumatic dermatoses such as e thema exudativum multiforme, erythema nodosum and pura rheumatica, and finally in a group of persons that served as controls. Tests on fifty-two persons gave positive results in twenty-two instances. In tuberculous diseases of the skin, the blood culture was found positive in 50 per cent of the cases. The percentage of positive reactions was especially high in lupus erythematosus. That the tests are more often positive during spring and summer than during fall and winter was noticeable during 1930 and 1931; but this was not so noticeable during 1931 and 1932. The positive outcome of the culture test in one case each of lymphatic leukemia and mycosis fungoides indicates the necessity of further investigation.

## Zentralblatt für Chirurgie, Leipzig

**59:** 769-832 (March 26) 1932

*Subcutaneous Rupture of Pectoralis Major, a Little Known but Typical Injury. E. Borchers and P. Tontscheff.—p. 770.
Problems in Treatment of Fractures: Early, Functional Treatment with Pendulum Splints. M. Tiegel.—p. 774.
Avulsion Fracture of Spina Iliaca Anterior Inferior. L. Rothbart.—p. 781.
Ileus Caused by Ascarids. N. Onaca.—p. 783.
Treatment of Tetanus with Procaine Hydrochloride. F. Mandl.—p. 785.
Myxoma of Neck with Paralysis of Recurrent Nerve. M. Shimizu.—p. 786.
Peptic Ulcer of Jejunum. A. Fischer.—p. 790.
Improvement of Ether Anesthesia by Higher Evaporation Temperature. M. Tiegel.—p. 797.

**Subcutaneous Rupture of Pectoralis Major.**—Borchers and Tontscheff relate the clinical history of a miner, aged 50, who, while lifting a heavy load, was accidentally pushed from the back so that the tensely contracted pectoralis major was forced against the edge of a cart. The man felt a severe pain on the left side of the chest, and on the following day marked swelling had developed, which was ascribed to a contusion of a rib. Several other physicians, who examined the patient, likewise failed to recognize the injury of the muscle, and when after eighteen months the man had not yet regained the full use of his arm, he came under the authors' observation. He complained of a weakness in the left arm and it was noticed that the left side of the chest was flatter. When the patient was told to try to adduct the arm while the examiner held it, it was noted that the lower two thirds of the muscle, namely, the pars abdominalis and the pars sternocostalis, appeared as if rolled together, and between this elevation and the upper arm there was a depression. This proved that the lower two thirds of the pectoralis had lost their connection with the tendinous attachment on the upper arm, whereas the upper third of the muscle, the pars clavicularis, had not been injured. Thus, if all three portions of the muscle are taken as a whole, there was a tear into the muscle. A careful review of the literature revealed that only ten similar cases have been reported, but it is noteworthy that a tearing of the muscle is more likely than a detachment of the tendon from the upper arm. In regard to the treatment, the authors state that in the reported case active treatment was not resorted to, but they think that in younger persons it might be attempted to reunite the muscle by a suture or even resort to plastic repair. In the conclusion, the main symptoms of the tearing of the pectoralis major are once more summarized.

## Zentralblatt für Gynäkologie, Leipzig

**56:** 769-832 (March 26) 1932

Ovarian Tumor of Type Brenner and Its Position Among Tumors of Ovaries. R. Meyer.—p. 770.
Actinomycosis of Female Genitalia. Y. Ikeda and K. Ikeda.—p. 782.
*Roentgenologic Demonstration of Hydatidiform Mole by Means of Contrast Filling. E. Bortini.—p. 784.
*Roentgenologic Investigations on Pathology of Female Vertebral Column: Relation to Gynecologic Backache. H. Uebermuth.—p. 787.
Treatment of Ovarian Disturbances by Means of Urine from Gravidas. W. Schildberg.—p. 801.
Experiences with Aschheim-Zondek's Pregnancy Reaction: Its Forensic Significance. H. Hellendall.—p. 804.
Hematin Reaction in Extra-Uterine Pregnancy. S. Wolowa.—p. 812.
Experimental Biologic Interruption of Pregnancy. W. K. Tschaikowsky.—p. 815.

**Roentgenologic Demonstration of Hydatidiform Mole.**—According to Bortini, the early diagnosis of hydatidiform mole is often difficult since it has to be based on symptoms that are also found in other conditions. Absolutely certain is the diagnosis only after vesicles have been discharged. Following enumeration of the different symptoms on which the diagnosis is usually based, the author describes his method of roentgenologic demonstration. He points out that after three months a pregnancy can be recognized by means of roentgenography. If at this period repeated roentgenographies do not show portions of a fetus, it is permissible to resort to hysterography by introducing a contrast medium. The author employed an iodized oil and found the resulting roentgenologic picture so characteristic for a hydatidiform mole that it could not be mistaken for other conditions, such as cancer or myoma. The iodized oil enters between the vesicles of the mole and thus the roentgenogram has irregular outlines; it shows zones of various sizes and of various degrees of density and dark irregular stripes. In nine cases the author could confirm the diagnosis of hydatidiform mole with this method and in one instance he could base his diagnosis on this method of examination. He stresses that it is absolutely necessary to precede the injection of the contrast medium by a simple roentgenoscopy, so as to make sure that a normal pregnancy is not interfered with.

**Investigation of Female Vertebral Column in Relation to Gynecologic Backache.**—On the basis of former studies, Uebermuth reasons that gynecologic backache is sometimes the result of changes in the intervertebral disks. To find supporting evidence for this assumption, he made roentgenologic examinations of fifty women who complained of backache. He found that degenerative changes in the intervertebral disks can be recognized indirectly from certain conditions of the vertebrae. As indications he considers the following: a basin-shaped depression of the caudal and cranial vertebral surfaces, also sclerotization of these surfaces, and "transverse areas of hardening" underneath the terminal bony plate of the vertebral body (spongiosa plates). The latter manifestations indicate that the organism tends to replace the lost elasticity of the intervertebral disks by a greater solidity. The secondary manifestations in the bone develop quite early; namely, in the third decade of life. This corresponds to the early manifestations of wear and of age degeneration in the intervertebral disks. The circumscribed areas of increased density in the substantia spongiosa underneath the terminal bony plates may be interpreted as calcified cartilaginous nodules or as circumscribed spongiosa plates. These manifestations have clinical significance since they indicate degeneration of the intervertebral disks. During the progressive stage the changes cause disturbances in the static mechanical function of the vertebral column, which may result in backaches. The author considers overburdening of the female vertebral column during pregnancy as one of the main causes of the disturbances.

## Polska Gazeta Lekarska, Lwów

**11:** 213-232 (March 20) 1932

Problem of Tuberculosis in 1882 and in 1932. S. Sterling.—p. 213.
Obligatory Medical Examination of Prospective Students of John Casimir University and Its Importance in Fighting Tuberculosis Among the Academic Youth. Z. Czeżowska, W. Grabowski and S. Hornung.—p. 218.
*Air Emboli During Insufflation in Artificial Pneumothorax. Z. Szczepański.—p. 223.
Clinical Onset of Chronic Pulmonary Tuberculosis in Adults. M. Ungar.—p. 225.

**Air Emboli During Insufflation in Artificial Pneumothorax.**—Of the four cases reported by Szczepański, severe symptoms of embolism occurred in three. In one case the result was fatal. In each of the three severe cases the author had to deal with a pneumothorax complicated by adhesions; embolism appeared during complemental insufflation, not during the original operation. Most probably, in the fatal case, death was caused by plugging of the coronary vessels, because cerebral symptoms were absent. The second case was the only one that occurred during the original insufflation. The symptoms were slight. In the third case, symptoms of embolism appeared after the operation was completed. In this and in the fourth case there were cerebral symptoms, characterized especially by onset of temporary blindness, without, however, any recognizable changes in the ocular fundus. According to the author's experience, the danger of embolism is imminent in cases with partial pneumothorax, complicated by adhesions. For this reason, he adds, it is best to avoid high pressures, which tend to rupture the adhesions and to open the vessels.

## Przeglad Dermatologiczny, Warsaw

**26**: 207-354, 1931

Life and Work of the Late Professor F. Krzyształowicz. M. Grzybowski. —p. 207.
Structure of the Plate of a Nail. J. Alkiewicz.—p. 221.
Onychia Syphilitica Sicca. K. Sieńko.—p. 230.
*Ability of Blood to Neutralize Salicylic Acid in Allergic Skin Diseases and Other Dermatoses. W. Chylewski.—p. 236.
Women's Dermatoses with Hormonic Background. R. Leszczyński and S. Liebhart.—p. 243.
Serologic Reactions in Experimental Syphilis in Rabbits. T. Chorążak and K. Zisch.—p. 259.
Blood Coagulability in Syphilitic Persons with Reference to Amount of Calcium in Serum and Blood Types. M. Mienicki.—p. 274.
Presence of Neisser's Diplococci in Blood in Cases of Gonorrhea. S. Fedosewicz and E. Sawicki.—p. 305.
Urticaria Hereditaria (Familiaris) in Three Generations. K. Tropauer. —p. 317.
Case of Cysticercosis of Central Nervous System and Skin. B. Stepień and M. Grzybowski.—p. 321.

**Salicylic Acid in Allergic Skin Diseases.**—Among the allergic skin diseases there is a certain form of eruption, called by Rost "Spätexsudatives Ekzematoid." In this disease the ability of the blood to neutralize or bind salicylic acid is diminished and the patients are hypersensitive to salicylates. Chylewski completed a research in fifty-seven cases for the purpose of establishing in which of the allergic skin diseases minimal quantities of salicylic acid are neutralized, as compared with normal blood, and with other dermatoses. The author noted the quantities of free salicylic acid per milligram of ether extract of blood, in the following groups: (1) Rost's eczematoid; (2) urticaria; (3) strophulus; (4) tuberculosis of the skin; (5) secondary syphilis; (6) control, and (7-9) nonallergic: mycotic, staphylococcic and streptococcic. The results are: In urticaria perstans the blood binds or neutralizes minimal quantities of salicylic acid. In nonallergic dermatoses the ability of the blood to neutralize salicylic acid is not diminished but increased, which is, in the author's opinion, a new observation.

## Klinicheskaya Meditsina, Moscow

**9**: 939-1040 (Nov.) 1931

Arterial Hypertonia and Arteriosclerosis. E. M. Kastanoyan.—p. 939.
Blood Pressure and Age. E. P. Orlova.—p. 945.
Spirometry in Study of Cardiac Function. V. M. Solomyaniy.—p. 948.
Comparison of Results in Measurement of Venous Pressure Using Volumetric Method and Blood Route Methods of Moritz and Tabora-Valdman. Ya. S. Leitman, S. A. Gilyarevskiy and A. L. Vilkoviskiy. p. 953.
Influence of Aeronautic Service on Cardiovascular System. V. G. Mirolubov.—p. 958.
Differential Diagnosis of Endocardial and Sclerotic Dystrophies of Bicuspid Valve. V. F. Kokh.—p. 971.
High Altitude of Arzny as Resort in Treatment of Cardiac Diseases. A. A. Lozinskiy.—p. 975.
Histologic Changes in Diaphragm as Related to Its Function. A. I. Strukov.—p. 982.
Pneumonoconiosis Among Porcelain Ware Workers and Its Connection with Tuberculosis. L. L. Golst.—p. 986.
*Immunity Against Bacteria of Gas Gangrene. I. Velikanov and F. Kavenoki.—p. 1003.
Experimental Cancer of Skin in Relation to Present Day Oncology. I. Ismail-Zade.—p. 1006.
Electrosurgery in Treatment of Cancer of Skin. A. M. Slutskiy and V. N. Preobrajenskiy.—p. 1011.
*Specificity and Practical Value of Davis Cancer Reaction. O. Gubanova. —p. 1017.

**Immunity Against Bacteria of Gas Gangrene.**—Velikanov and Kavenoki found that when they cultivated Clostridium oedematiens under strict anaerobic conditions the toxicity was increased so that 0.001 cc. was fatal for rabbits. When cultures were treated with a 0.5 per cent solution of formaldehyde and incubated at 37 C. for thirty days, the cultures became avirulent and harmless. Cultures so treated were used for immunization of animals. Rabbits were immunized with toxoid and mixtures of equal quantities of toxoid and vaccine; doses of 2, 3 and 5 cc. were injected intramuscularly at intervals of ten days; the animals were bled from fifteen to twenty-five days after the last injection, but titrations were not made until one or two months after bleeding. After immunization, rabbits tolerated easily 2, 5 and 10 lethal doses of culture. The serums examined two months after storage and diluted 1:5 neutralized two lethal doses of a three day culture of C. oedematiens. Horses were immunized with progressively increased doses, beginning with 25 cc. of a formaldehyde treated culture. The horses were bled eighty days after the first injection. The horse serum diluted 1:8,000 was found to neutralize 2 lethal doses of a three day culture of C. oedematiens. The serum stored for one year under different conditions still retained its protective power in a 1:1,000 dilution. The serum may prove beneficial in therapy.

**Practical Value of Davis Cancer Reaction.**—Gubanova states that her survey of the literature indicates a renewed interest in the Davis reaction as an adjuvant in the diagnosis of cancer. During her study, careful attention was paid to the technic. The test as first described by Davis required a slightly acid reaction of the urine (10 cc. of hydrochloric acid was added to 100 cc. of urine, the mixture was warmed to boiling, cooled, and 30 cc. of water-free ether added, the bottle was stoppered and placed in a cool dark place and the reaction was read in twenty-four hours). The author found that twenty-four hour or two to four hour old samples of urine gave negative Davis reactions even when acidified and with a specific gravity not less than 1.010, whereas freshly voided samples from the same patients gave strongly positive reactions even when the urine had a neutral reaction. Examinations for protein, sugar, acetone, urobilin, indican, blood, bile pigments, and the diazo reaction did not demonstrate any relationship to the Davis test. Boiling of the urine did not affect the results of the reaction. Care was taken to place the urine-ether suspension directly in a dark cool place, since light itself always gives a pink color to the ether. In reading the test, both the color of the ether phase and the sediment that came down after heating was noted. The reaction was considered negative when the ether phase after twenty-four hours was colorless and the precipitate was brown or dark brown; questionable, when the ether was orange and the precipitate brown; slightly positive, when the ether and the precipitate were rose colored; distinctly positive, when the ether was raspberry red and the precipitate raspberry colored; and strongly positive, when both the ether and the precipitate assumed a raspberry red. Among thirty-five patients with malignant neoplasms, thirty-two had positive Davis reactions without regard to the localization, while one with sarcoma and two with hypernephroma had negative reactions. The author also examined 160 patients without malignant tumors. The Davis test was found negative in one group of thirty patients with nonspecific and functional disturbances of the gastro-intestinal tract; negative in all but two (slightly positive in one instance of tuberculosis and another of lobar pneumonia) in a group of twenty-eight patients with diseases characterized by tissue breakdown and large quantities of protein breakdown products, as in tuberculosis, various abscesses, nephritis, gangrene; negative in two instances of cardiac decompensation; negative in twenty-eight cases of endocrine disturbance (the menstrual period did not influence the reaction); negative in eight instances of renal disturbance and also in another group of hepatic disturbance with large erythrocyte breakdown; in ulcer of the stomach and duodenum the reaction was negative; however, a group of twenty patients with circulatory disturbance, five with pernicious anemia and two with myeloid leukemia, had strongly positive Davis reactions; and among five patients with acute neurasthenia, three had distinctly positive Davis reactions. The reaction was negative in six instances of essential hypertonia and diabetes mellitus and in four instances of visceral syphilis, while two persons in a group of apparently healthy individuals gave positive reactions. It was noted that the reactions were similar in intensity and color of the ether phase and the precipitate in the cancer, pernicious anemia, myeloid leukemia, several instances of tapeworm infection, in women in the first month of pregnancy, and in the apparently healthy individuals.

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**Lymphogranulomatosis: Disease of Paltauf-Sternberg.**—Oks states that the clinical course of lymphogranulomatosis is in favor of an infectious process. Statistics of this disease are few; the percentage is larger for men than for women; there are no age limits, although the majority of cases seem to occur in the age group 30 to 40. An accurate diagnosis of lymphogranulomatosis is possible only when the progress of the generalized process is typical and when the usual symptoms are present: enlargement of the lymph nodes and spleen, characteristic recurring elevation of temperature, and changes in the blood. Accurate diagnosis in localized lymphogranulomatosis is infrequent (thirteen cases were diagnosed accurately in a group of forty-seven); mistakes are generally due to the consideration of the disease as a systemic disease of the lymphatic apparatus only, and lack of recognition of the primary stages of the disease. It is now known that lymphogranulomatosis is a disease not only of the lymphatic apparatus but also of organs free from lymphoid tissue (nervous, bone). The large area of incidence leads to confusion with malignant neoplasms. The experimental, bacteriologic study of the blood is valuable in differential diagnosis. The diazo reaction usually appears in this disease. The author suggests the classification of glandular, mediastinal, splenomegalic, gastric, intestinal, pulmonary, dermal (mycosis fungoides), osteoperiosteal lymphogranulomatosis. Mistakes in diagnosis may be decreased if (1) in every case of glandular disease histologic and biopsy examinations are made, if (2) microscopic examinations are made in tumors and ulcers of the stomach and colon, and if (3) in cases of sepsis, typhoid, and miliary tuberculosis, experimental and bacteriologic examinations are made of the blood.

**Two Aspects of Cardiac Decompensation in Relation to General Blood Circulation.**—Basok and Shesterikova state that blood circulation in the organism is regulated not only by rhythmic action of the heart but by the whole vascular system. The exchange of fluids and electrolytes between the blood and the body tissues due to the blood circulation is influenced by blood pressure, rate of flow, and quantity of circulating blood. For the latter the authors used intravenous injections of colloid solutions of congo red and found that this method caused no accidents (seventy-five instances). Two kinds of decompensation were studied; namely, "plus decompensation," which indicated increased volumes of circulating blood, and "minus decompensation," which indicated small volumes of the circulating blood. The normal figures obtained from the study of individuals with healthy cardiovascular systems showed the circulating plasma to be from 35 to 45 cc. for each kilogram of body weight and the circulating blood to be from 65 to 83 cc. for each kilogram of body weight and the proportion of the entire body weight for plasma was from 3.5 to 4.5 per cent and for circulating blood from 6.5 to 8.3 per cent of the body weight. Pyknotic and hypersthenic individuals had smaller volumes of circulating blood (from 6.5 to 7.4 per cent of body weight) than asthenic individuals (from 8 to 8.3 per cent of body weight). The review of the clinical facts does not show what forms of decompensation are specific for increased or decreased circulating blood volume. Some workers have reported a decreased volume in patients with primary disturbance in the gaseous exchange in the lungs. From the point of view of treatment, patients with plus decompensation were treated with digitalis, the patients ordered to sit with the feet hanging down, and given a diet poor in nitrogen and salt; substances that increase blood circulation volume, such as camphor and caffeine, were also administered. Digitalis in cases of minus decompensation is indicated only according to the condition of the heart. The authors conclude that the whole volume of blood is present in the blood circulation of the body; and a part is present in the various organ depots. All things equal, each individual has a more or less constant volume of blood in his circulation. Patients with compensated conditions of the heart have a normal circulating blood volume; patients with decompensation have either a large circulating or small circulating blood volume: plus or minus decompensation.

**Treatment of Cholecystitis and Angiocholitis with Duodenal Instillations.**—Triger reports that, since 1924, 125 cases of diseases of the biliary tract have been studied in detail and treated by duodenal sound instillations. Treatment consisted of instillation of 40 cc. of from 30 to 33 per cent solutions of magnesium sulphate or, for stronger action, from 40 to 50 cc. of olive oil, every day for three or four days or, for torpid forms, from twelve to sixteen days. Occasionally hypophyseal extracts were also used in treatment. Hospitalization is necessary to insure results. In some instances, in addition to the intubation, the patients also received hot surface applications in the region of the liver, three glasses of mineral water a day, belladonna, papaverine and methenamine. The clinical picture after treatment was characterized (1) by an approach of the physical state of the bile to normal, decrease in leukocytes and a reappearance of the umbilical reflex; (2) by a gradual approach to normal and a reappearance of the umbilical reflex at the end of treatment (the majority were in this group); and (3) by an absence of change in duodenal contents, but improvement, with temperature back to normal, decrease in hepatic pain, decrease in the jaundice, and subjective improvement with disappearance of painful attacks. The treatment should be discontinued if no improvement is noted after two or three instillations. The treatment is indicated in all chronic forms of cholecystitis accompanied by spasms and in parasitic invasions as lambliasis (purely mechanical). Failures in 7 per cent consisted primarily of cases of acute cholangeitis, with large quantities of mucus and leukocytes in C bile, enlarged liver and subfebrile temperature (three of these were lamblia infestations). In some instances, improvement in the cholecystitis was accompanied by disappearance of the migraine and the tachycardia and systolic murmurs.

**Multiple Cystic Degeneration of Kidneys.**—Barkagan states that his detailed case history of multiple cystic degeneration of the kidneys is interesting because, aside from the typical symptoms with characteristic changes in the kidneys, nephritis and uremia, there are clinical manifestations, especially those that relate to the glands of internal secretion. Part of these disturbances were noted during life and part at necropsy. Deficiency on the part of the endocrine glands may be due to a sclerosing process or to defects in development. The author found neither in life nor at necropsy any signs of a chronic infectious process. The cystic process in the instance described spread to the liver and to the pancreas. This disturbance may be present for years without subjective or objective symptoms. The symptoms, when they appear, may be secondary, together with acute azotemia and loss of strength and ability to work; the disease is then in its final stages. An intervention is indicated only when the disease is unilateral with hematuria or a suppurative process in one kidney. Opotherapy should be a symptomatic indication.

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Medical and Particularly Neuropsychiatric Indications for Induced Abortion. N. C. Borberg.—p. 399.
*Influence of Thyrotoxic Conditions on Arteries, Particularly in Exophthalmic Goiter. J. Ipsen.—p. 407.
Rare Case of Sarcoma of Uterus. H. Okkels and F. Therkelsen.—p. 415.

**Influence of Thyrotoxic Conditions on Arteries.**—Ipsen says that in exophthalmic goiter the foot temperature is higher than in normal cases; if the metabolism is over 130 per cent the foot temperature is above 35.5 C. (95.5 F.). Change in metabolism due to operation causes a fall in the foot temperature, even if the rectal temperature is unaffected. On operation of goiter patients under local anesthesia an acute rise in the foot temperature occurs, explained as a thyrotoxic effect on the arteries, possibly through the sympatheticus. In a case of myxedema, both the metabolism and the foot temperature rose on treatment with thyroidine. In a case of Raynaud's disease the arterial spasms could be checked or reduced parallel to the thyroidine treatment.